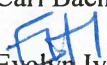
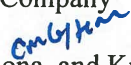



## TECHNICAL MEMORANDUM

TO: Carl Bach, The Boeing Company  
FROM:  Evelyn Ives, Colette Gaona, and Kristy J. Hendrickson, P.E.    
DATE: October 17, 2014  
RE: **FENCELINE AREA INTERIM ACTION  
2014 GROUNDWATER COMPLIANCE MONITORING RESULTS  
NORTH BOEING FIELD, SEATTLE, WASHINGTON**

This technical memorandum presents results of the 2014 groundwater compliance monitoring events in the fenceline interim action area at North Boeing Field (NBF) in Seattle, Washington. A vicinity map is provided on Figure 1. The NBF fenceline area is located within the Propulsion Engineering Labs (PEL) area at NBF and near the southwest fenceline of the Georgetown Steam Plant (GTSP). Groundwater compliance monitoring was performed in 2014 as part of the 2011 fenceline area interim action conducted by The Boeing Company (Boeing) in conjunction with the interim action conducted by the city of Seattle at the GTSP. The primary objective of the 2011 fenceline area interim action was to remove accessible soil that contained concentrations of polychlorinated biphenyls (PCBs) greater than the interim action level (IAL) approved by the Washington State Department of Ecology (Ecology). The interim action is described in the *Fenceline Area Soil Excavation Interim Action Report* (Landau Associates 2012a).

Groundwater monitoring in the fenceline interim action area was performed in accordance with *Groundwater Compliance Monitoring Plan Fenceline Area Soil Excavation* (CMP; Landau Associates 2012b). Three groundwater monitoring wells (NGW521, NGW 522, and NGW 523) were installed, developed, and sampled for four quarters in 2013 in accordance with the CMP. Groundwater monitoring results for 2013 are presented in the *Fenceline Area Interim Action 2013 Groundwater Compliance Monitoring Results* technical memorandum (Landau Associates 2014). Based on the recommendations presented in the technical memorandum (Landau Associates 2014), the frequency of monitoring was decreased to semi-annual for 2014. Monitoring events conducted in February and August 2014 consisted of measuring groundwater elevations and collecting semi-annual groundwater samples for analysis of PCBs.

The total PCB results from each quarterly monitoring event were compared to the groundwater IAL for total PCBs [0.01 micrograms per liter ( $\mu\text{g/L}$ )]. In addition to the IAL, the PCB results from each quarterly monitoring event were also compared to the Remedial Investigation Screening Level (RISL) for total PCBs in groundwater, 0.044  $\mu\text{g/L}$ . The RISL was established in the *NBF/Georgetown Steam Plant (GTSP) Remedial Investigation/Feasibility Study Work Plan* (RI/FS Work Plan; Leidos 2013) after the

interim action was completed and the CMP was submitted to and approved by Ecology. The RISLs are provided in Table 6-4 of the RI/FS Work Plan (Leidos 2013).

This technical memorandum provides a summary of 2014 groundwater monitoring results and recommendations for continued monitoring.

## **GROUNDWATER MONITORING**

Groundwater samples were collected from NGW521, NGW522, and NGW523 in February and August of 2014. Groundwater levels were measured at each well with an electronic water interface probe before the wells were purged or sampled. Groundwater elevations for the fenceline and GTSP area wells are presented in Table 1. Groundwater elevation contours for the August 2014 monitoring event for the NBF fenceline and GTSP interim action areas are provided on Figure 2. Generally, groundwater flows to the southwest toward the Lower Duwamish Waterway.

Monitoring wells were sampled using low flow sampling techniques [U.S. Environmental Protection Agency (EPA)/540/S-95/504] with a peristaltic pump and disposable polyethylene tubing. Low-flow purging was performed until groundwater parameters [pH, temperature, conductivity, and dissolved oxygen (DO)] stabilized. Samples were collected directly from the monitoring equipment into laboratory-supplied containers and stored on ice in a cooler. One blind duplicate was collected during each monitoring event. All sample bottles were labeled with well name, date, and time of sample collection and delivered to an Ecology-accredited laboratory under standard chain-of-custody procedures.

## **LABORATORY ANALYSES AND ANALYTICAL RESULTS**

Groundwater samples were analyzed for PCBs by EPA Method SW8082 at Analytical Resources, Inc. (ARI) laboratory located in Tukwila, Washington. Laboratory analytical reports are provided in Attachment 1. Analytical results were tabulated and validated as described in the CMP. Total PCB results for 2013 and 2014 monitoring at NGW521, NGW522, and NGW523 are presented in Table 2 and on Figure 3. In 2013, both unfiltered and filtered samples were analyzed for PCBs during selected sampling events, as shown in Table 1 and on Figure 3. In 2014, only unfiltered samples were analyzed for PCBs.

Detected total PCBs concentrations in 2014 were generally consistent with previously detected concentrations in 2013. At NGW521, total PCBs were detected at 0.77 µg/L during the February 2014 monitoring event and 0.79 µg/L during the August 2014 monitoring event. At NGW522, total PCBs were 0.20 µg/L during the February 2014 monitoring event and 0.44 µg/L during the August 2014 monitoring event. At NGW523, total PCBs were detected at 0.32 µg/L during the February 2014 monitoring event and 0.35 µg/L during the August 2014 monitoring event.

## RECOMMENDATIONS

The groundwater monitoring results from 2014 indicate that detected concentrations of total PCBs in all three fenceline area wells remain above the IAL of 0.01 µg/L and the RISL of 0.044 µg/L. As discussed above, the RISL was established in the RI/FS Work Plan (Leidos 2013) after the interim action was completed and the CMP was submitted to and approved by Ecology. The Ecology-approved RISL of 0.044 µg/L will be used during the NBF RI as the screening level for total PCBs in groundwater. Boeing proposes that the RISL be used for comparison with the compliance samples in the fenceline interim action area, to be consistent with the RISL established in the RI/FS Work Plan (0.044 µg/L).

Groundwater monitoring will continue on a semi-annual basis in 2015 because PCBs were detected above the RISL in one or more of the 2014 semi-annual monitoring events. It is recommended that the semi-annual monitoring continue to be conducted during February and August. The need for continued monitoring will be evaluated on an annual basis, or when concentrations of PCBs from two consecutive monitoring events are below the RISL. Upon Ecology's approval of this change, compliance conditions associated with the fenceline interim action area will be considered to have been met when groundwater compliance monitoring results are at or below the RISL, or below final cleanup levels developed during the RI/FS process, for two consecutive monitoring events. Once compliance conditions are met, groundwater monitoring at NGW521, NGW522, and NGW523 will cease.

## REFERENCES

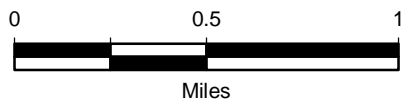
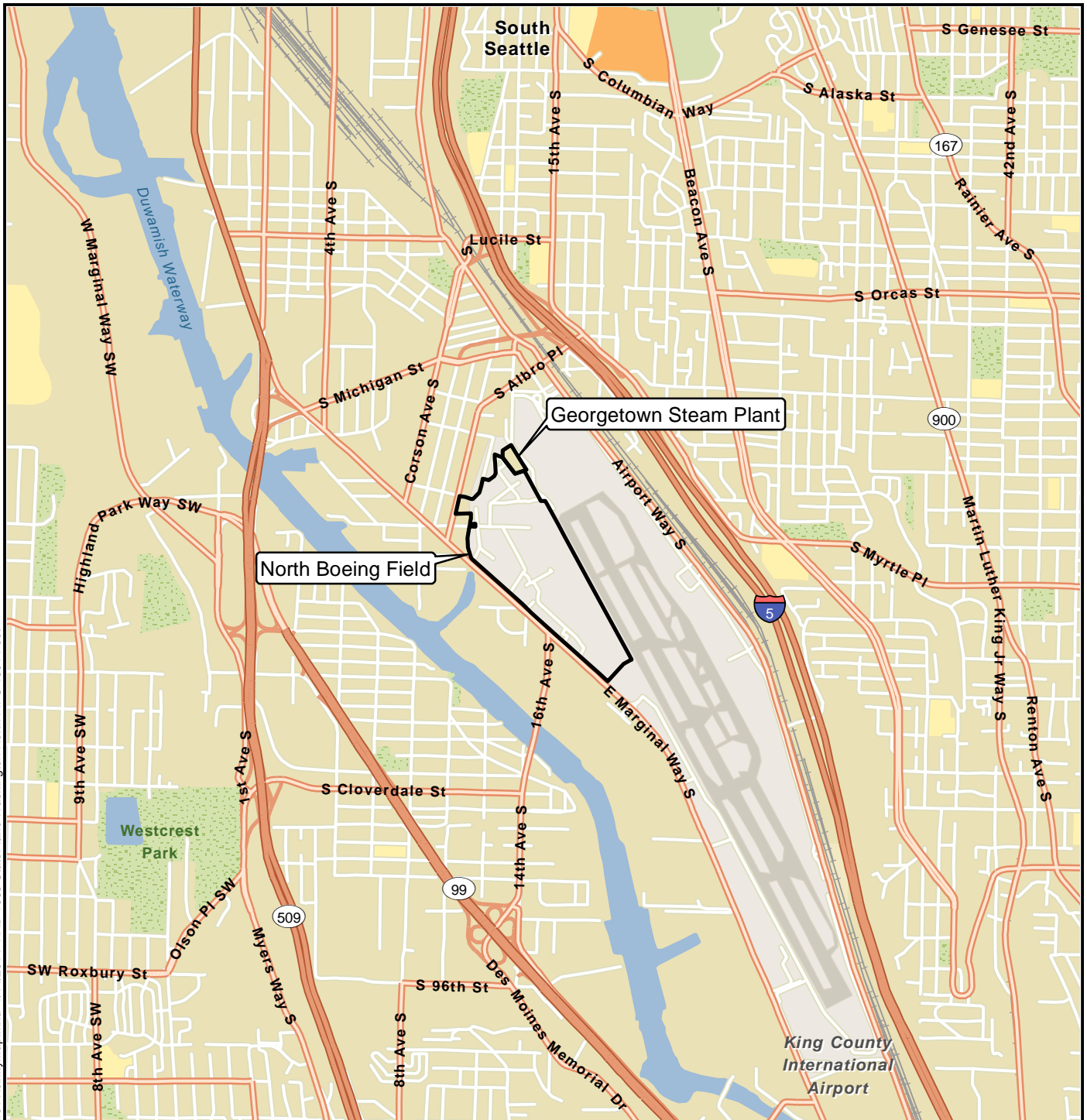
- Landau Associates. 2014. Technical Memorandum to Carl Bach, the Boeing Company, re: *Fenceline Area Interim Action, 2013 Groundwater Monitoring Results, Remedial Investigation, North Boeing Field, Seattle, Washington*. March 3.
- Landau Associates. 2012a. *Interim Action Completion Report, 2011 Fenceline Area Soil Excavation, North Boeing Field, Seattle, Washington*. Prepared for The Boeing Company. August 22.
- Landau Associates. 2012b. *Groundwater Compliance Monitoring Plan Fenceline Area Soil Excavation North Boeing Field Seattle, Washington*. Prepared for The Boeing Company. August 22.
- Leidos. 2013. North Boeing Field/Georgetown Steamplant Site, Remedial Investigation/Feasibility Study, Remedial Investigation/Feasibility Study Work Plan, Final. Prepared for the Washington State Department of Ecology, Toxics Cleanup Program, Bellevue, Washington. November 11.

EHI/CMG/KJH/tam

Attachments

Figure 1	Vicinity Map
Figure 2	PEL Area Groundwater Monitoring Contours
Figure 3	Fenceline Area Groundwater Compliance Monitoring Total PCB Results
Table 1	Groundwater Elevations
Table 2	PCB Analytical Results for Groundwater Samples Fenceline Compliance Monitoring
Attachment	Laboratory Analytical Reports

G:\Projects\025\082\214\001\RFIS GW Monitoring\Figure1VicinityMap.mxd 1/14/2014 NAD 1983 StatePlane Washington North FIPS 4601 Feet



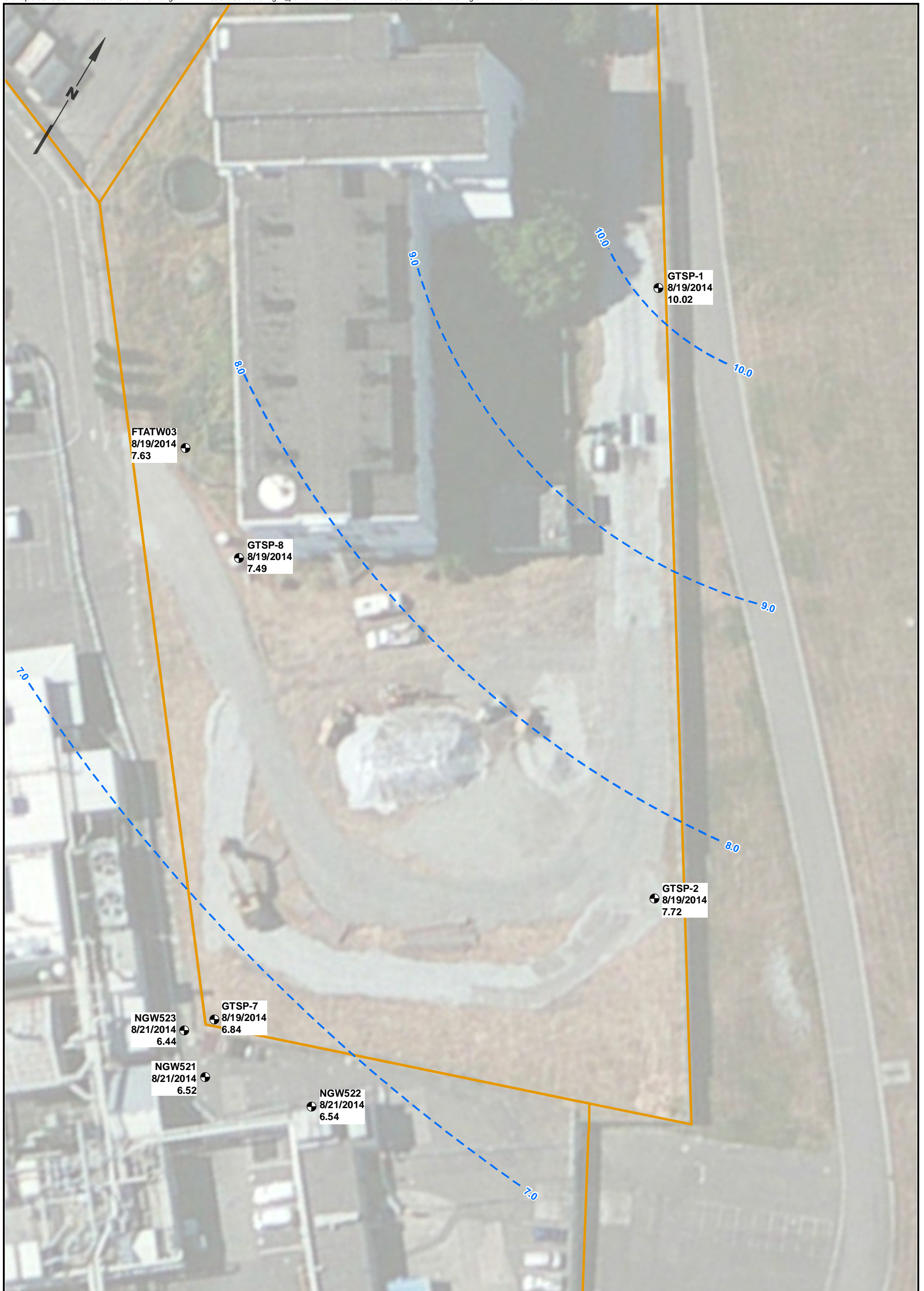
Data Source: Esri 2012



North Boeing Field  
Seattle, Washington

Vicinity Map

Figure  
1

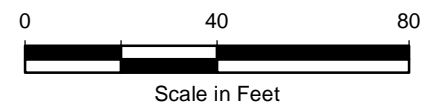


**Legend**

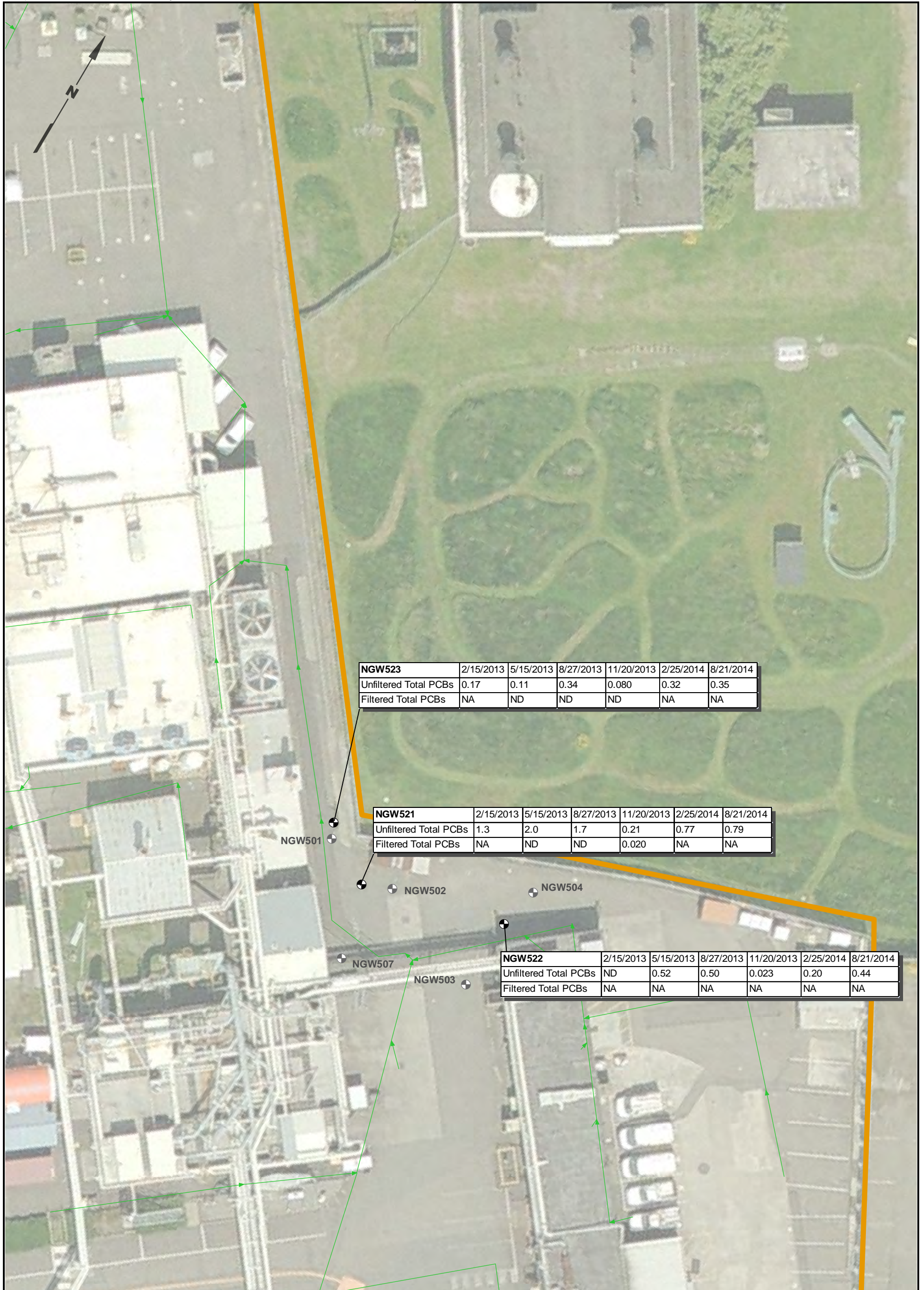
- Groundwater Monitoring Well Locations
- Approximate Groundwater Elevation Contour
- Site Boundary

**Notes**

1. NM = Not Measured
2. Vertical Datum: NVGD29, US feet.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Data Source: Esri World Imagery.



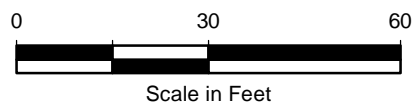
NGW523	2/15/2013	5/15/2013	8/27/2013	11/20/2013	2/25/2014	8/21/2014
Unfiltered Total PCBs	0.17	0.11	0.34	0.080	0.32	0.35
Filtered Total PCBs	NA	ND	ND	ND	NA	NA

NGW521	2/15/2013	5/15/2013	8/27/2013	11/20/2013	2/25/2014	8/21/2014
Unfiltered Total PCBs	1.3	2.0	1.7	0.21	0.77	0.79
Filtered Total PCBs	NA	ND	ND	0.020	NA	NA

NGW522	2/15/2013	5/15/2013	8/27/2013	11/20/2013	2/25/2014	8/21/2014
Unfiltered Total PCBs	ND	0.52	0.50	0.023	0.20	0.44
Filtered Total PCBs	NA	NA	NA	NA	NA	NA

**Legend**

- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- North Lateral
- ▭ PEL Boundary



**Notes**

1. All results shown in µg/L.
2. NA = Not Analyzed ND = Not Detected  
PCBs = Polychlorinated Biphenyls.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

**TABLE 1  
GROUNDWATER ELEVATIONS  
NORTH BOEING FIELD**

Location	Well ID	Date	Top Pipe Elevation (Ft) (a)	Depth to Water (ft)	Calculated Groundwater Elevation (ft)
North Boeing Field	NGW521	2/15/2013	8.61	2.36	6.25
		5/15/2013		2.72	5.89
		8/27/2013		3.90	4.71
		11/20/2013		3.49	5.12
		2/25/2014		2.36	6.25
		8/21/2014		2.09	6.52
North Boeing Field	NGW522	2/15/2013	9.82	3.49	6.33
		5/15/2013		3.85	5.97
		8/27/2013		5.03	4.79
		11/20/2013		4.67	5.15
		2/25/2014		3.49	6.33
		8/21/2014		3.28	6.54
North Boeing Field	NGW523	2/15/2013	8.74	2.54	6.20
		5/15/2013		2.90	5.84
		8/27/2013		4.02	4.72
		11/20/2013		3.66	5.08
		2/25/2014		2.58	6.16
		8/21/2014		2.30	6.44
Georgetown Steam Plant	GTSP-1	2/15/2013	15.57	7.93	7.64
		5/17/2013		NM	NM
		8/29/2013		9.30	6.27
		11/20/2013		9.34	6.23
		8/19/2014		5.55	10.02
Georgetown Steam Plant	GTSP-2	2/15/2013	13.35	6.49	6.86
		5/17/2013		NM	NM
		8/29/2013		8.35	5.00
		11/20/2013		7.90	5.45
		8/19/2014		5.63	7.72
Georgetown Steam Plant	GTSP-7	2/15/2013	8.69	2.46	6.23
		5/17/2013		2.77	5.92
		8/29/2013		3.88	4.81
		11/20/2013		3.50	5.19
		8/19/2014		1.85	6.84
Georgetown Steam Plant	GTSP-8	2/15/2013	13.26	6.59	6.67
		5/17/2013		6.79	6.47
		8/29/2013		7.75	5.51
		11/20/2013		7.59	5.67
		8/19/2014		5.77	7.49
Georgetown Steam Plant	FTATW03	2/15/2013	14.51	7.75	6.76
		5/17/2013		NM	NM
		8/29/2013		NM	NM
		11/20/2013		8.79	5.72
		8/19/2014		6.88	7.63

NM = Not Measured.

(a) Vertical Datum: NVGD29, US feet.  
To convert NGVD29 elevations to NAV88 elevations add 3.59 feet.

**TABLE 2  
PCB ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES  
FENCELINE COMPLIANCE MONITORING  
NORTH BOEING FIELD**

Sample ID	Dup of NGW521		Dup of NGW521		NGW521	Dup of NGW521		Dup of NGW521		NGW521	Dup of NGW521		NGW521	Dup of NGW521	
	NGW521	DUP1	NGW521	DUP2	Filtered (a)	DUP2 Filtered (a)	NGW521	DUP2	Filtered (a)	DUP2 Filtered (a)	NGW521	DUP2	Filtered (a)	DUP2 Filtered (a)	
SDG	1370133	1370133	1390911	1390911	1390911	1390911	XC43	XC43	XC43	XC43	XP15C	XP15D	XP15F	XP15G	
Lab ID	6958898	6958900	7061576	7061572	7061577	7061573	XC43B	XC43D	XC43F	XC43G					
Sample Date	2/15/2013	2/15/2013	5/15/2013	5/15/2013	5/15/2013	5/15/2013	8/27/2013	8/27/2013	8/27/2013	8/27/2013	11/20/2013	11/20/2013	11/20/2013	11/20/2013	
<b>PCBs (µg/L)</b>															
<b>Method SW8082A</b>															
Aroclor 1016	0.048 U	0.048 U	0.097 U	0.096 U	0.0095 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1242	<b>1.3 J</b>	<b>0.97 J</b>	<b>2.0</b>	<b>1.9</b>	0.0095 U	0.0095 U	<b>1.7</b>	<b>1.7</b>	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1248	0.048 U	0.048 U	0.097 U	0.096 U	0.0095 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.75 U	0.75 U	0.062 U	0.075 U	
Aroclor 1254	0.048 U	0.048 U	0.097 U	0.096 U	0.0095 U	0.0095 U	0.25 U	0.25 U	0.010 U	0.010 U	<b>0.21</b>	<b>0.22</b>	<b>0.020 J</b>	<b>0.023 J</b>	
Aroclor 1260	0.048 U	0.048 U	0.097 U	0.096 U	0.0095 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
Aroclor 1221	0.048 U	0.048 U	0.097 U	0.096 U	0.0095 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
Aroclor 1232	0.048 U	0.048 U	0.097 U	0.096 U	0.0095 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
Aroclor 1262							0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
Aroclor 1268							0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
Total PCBs	<b>1.3</b>	<b>0.97</b>	<b>2.0</b>	<b>1.9</b>	ND	ND	<b>1.7</b>	<b>1.7</b>	ND	ND	<b>0.21</b>	<b>0.22</b>	<b>0.020 J</b>	<b>0.023 J</b>	
<b>Field Parameters</b>															
Temperature (°C)	9.1		16.15				23.84	23.84			13.44	13.44			
Conductivity (uS/cm)	78.6		116.2				1059	1059			909	909			
Dissolved Oxygen (mg/L)	1.05		0.66				0.18	0.18			0.16	0.16			
pH	6.71		6.62				6.81	6.81			6.52	6.52			
Oxygen Reduction Potential (mV)	NM		48.7				-51.1	-51.1			-16.3	-16.3			
Turbidity (NTU)	NM		NM				NM	NM			NM	NM			



**TABLE 2  
PCB ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES  
FENCELINE COMPLIANCE MONITORING  
NORTH BOEING FIELD**

Sample ID	Dup of NGW521		Dup of NGW521		NGW522	NGW522	NGW522	NGW522	NGW522	NGW522	NGW523			
	NGW521	DUP2	NGW521	DUP2							NGW523	NGW523	Filtered (a)	NGW523
SDG	YA52C	YA52B	YX39B	YX39F	1370133	1390911	XC43	XP15B	YA52D	YX39C	1370133	1390911	1390911	XC43
Lab ID					6958899	7061578	XC43C				6958897	7061574	7061575	XC43A
Sample Date	2/25/2014	2/25/2014	8/21/2014	8/21/2014	2/15/2013	5/15/2013	08/27/2013	11/20/2013	2/25/2014	08/21/2014	2/15/2013	5/15/2013	5/15/2013	08/27/2013
<b>PCBs (µg/L)</b>														
<b>Method SW8082A</b>														
Aroclor 1016	0.010 U	0.010 U	0.010 U	0.010 U	0.15 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.0097 U	0.0095 U	0.0095 U	0.010 U
Aroclor 1242	<b>0.77</b>	<b>0.82</b>	<b>0.79</b>	<b>0.74</b>	0.15 U	<b>0.52</b>	<b>0.50 P</b>	0.010 U	<b>0.20 P</b>	<b>0.44</b>	<b>0.090</b>	<b>0.11</b>	0.0095 U	<b>0.34</b>
Aroclor 1248	0.010 U	0.010 U	0.010 U	0.010 U	0.048 U	0.0095 U	0.010 U	0.12 U	0.010 U	0.010 U	0.0097 U	0.0095 U	0.0095 U	0.010 U
Aroclor 1254	0.10 U	0.10 U	0.10 U	0.10 U	0.048 U	0.0095 U	0.025 U	<b>0.023 P</b>	0.020 U	0.050 U	<b>0.077</b>	0.0095 U	0.0095 U	0.030 U
Aroclor 1260	0.010 U	0.010 U	0.010 U	0.010 U	0.048 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.0097 U	0.0095 U	0.0095 U	0.010 U
Aroclor 1221	0.010 U	0.010 U	0.010 U	0.010 U	0.048 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.0097 U	0.0095 U	0.0095 U	0.010 U
Aroclor 1232	0.010 U	0.010 U	0.010 U	0.010 U	0.50 U	0.0095 U	0.010 U	0.010 U	0.010 U	0.010 U	0.0097 U	0.0095 U	0.0095 U	0.010 U
Aroclor 1262	0.010 U	0.010 U	0.010 U	0.010 U			0.010 U	0.010 U	0.010 U	0.010 U				0.010 U
Aroclor 1268	0.010 U	0.010 U					0.010 U	0.010 U	0.010 U	0.010 U				0.010 U
Total PCBs	<b>0.77</b>	<b>0.82</b>	<b>0.79</b>	<b>0.74</b>	ND	<b>0.52</b>	<b>0.50 P</b>	<b>0.023 P</b>	<b>0.20 P</b>	<b>0.44</b>	<b>0.167</b>	<b>0.11</b>	ND	<b>0.34</b>
<b>Field Parameters</b>														
Temperature (°C)	8.60	8.60	23.76	23.76	12.2	13.30	17.14	13.44	11.01	20.32	10.6	13.61		
Conductivity (uS/cm)	1106	1106	798	798	86.4	1467	1019	909	805	1047	88.5	930		
Dissolved Oxygen (mg/L)	0.63	0.63	0.55	0.55	1.24	0.29	0.19	0.16	0.32	0.44	1.45	0.81		
pH	6.68	6.68	6.75	6.75	6.56	6.24	6.61	6.52	6.70	6.67	6.51	6.54		
Oxygen Reduction Potential (mV)	68.1	68.1	86.9	86.9	NM	-107.5	-65.2	-16.3	53.5	19.7	NM	-59.4		
Turbidity (NTU)	4.02	4.02	0.83	0.83	NM	NM	NM	NM	19.74	33.24	NM	NM		

**TABLE 2  
PCB ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES  
FENCELINE COMPLIANCE MONITORING  
NORTH BOEING FIELD**

Sample ID	NGW523		NGW523		
	Filtered (a)	NGW523	Filtered (a)	NGW523	NGW523
SDG	XC43	XP15A	XP15E	YA52A	YX39D
Lab ID	XC43E				
Sample Date	08/27/2013	11/20/2013	11/20/2013	2/25/2014	08/21/2014
<b>PCBs (µg/L)</b>					
<b>Method SW8082A</b>					
Aroclor 1016	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1242	0.012 U	0.010 U	0.010 U	<b>0.20</b>	<b>0.35</b>
Aroclor 1248	0.010 U	0.25 U	0.010 U	0.010 U	0.010 U
Aroclor 1254	0.010 U	<b>0.080</b>	0.010 U	<b>0.12</b>	0.050 U
Aroclor 1260	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1221	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1232	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1262	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Aroclor 1268	0.010 U	0.010 U	0.010 U	0.010 U	
Total PCBs	ND	<b>0.080</b>	ND	<b>0.32</b>	<b>0.35</b>
<b>Field Parameters</b>					
Temperature (°C)		12.11	19.13	10.16	18.69
Conductivity (uS/cm)		337.3	718	980	657
Dissolved Oxygen (mg/L)		2.00	0.22	3.28	0.70
pH		6.62	6.65	6.71	6.59
Oxygen Reduction Potential (mV)		162.5	-56.9	67.2	53.0
Turbidity (NTU)		NM	NM	5.51	18.86

<sup>0</sup>  
 µg/L = micrograms per liter  
 C = degrees celsius  
 uS/cm = microsiemens per centimeter  
 mg/l = milligrams per liter  
 mV = millivolt  
 NTU = nephelometric turbidity unit  
 NM = not measured  
 ND - Not Detected.  
 PCBs = Polychlorinated Biphenyls.

U = Indicates the compound was undetected at the reported concentration.  
 J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  
 P = The analyte was detected on both chromatographic columns but the quantified values differ by 40% RPD with no obvious chromatographic interference. The higher of the two values is reported by the laboratory.  
 Bold = Detected compound.

(a) = Samples were filtered to evaluate the concentration of total PCBs in the dissolved phase.

# Laboratory Analytical Reports



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

March 7, 2014

Kris Hendrickson  
Landau Associates, Inc.  
130 Second Ave  
Edmonds, WA 98020

**RE: Project: NBF – Fenceline CMP**  
**ARI Job: YA52**

Dear Kris:

Please find enclosed the Chain of Custody (COC) record, sample receipt documentation, and analytical results for the above referenced project. Analytical Resources, Inc. (ARI) accepted four water samples and a trip blank in good condition on February 25, 2015. The cooler was received with a temperature of 4.8°C.

The samples were analyzed for PCBs and VOCs, as requested on the COC.

The VOCs CCAL is out of control high for chloroethane. All associated samples that contain analyte have been flagged with a “Q” qualifier.

There were no other irregularities with the samples.

Quality control analysis results are included for your review. Copies of the reports and all associated raw data will be kept on file electronically at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,  
ANALYTICAL RESOURCES, INC

  
Kelly Bottem  
Client Services Manager  
(206) 695-6211  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Carl Bach, The Boeing Company, P.O. Box 3707, M/S 1W-12, Seattle, WA 98124-2207

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# Sample ID Cross Reference Report



ARI Job No: YA52  
Client: The Boeing Company  
Project Event: 025082.214.005  
Project Name: NBF

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. NGW523-022514	YA52A	14-3137	Water	02/25/14 13:50	02/25/14 15:37
2. DUP-2-02514	YA52B	14-3138	Water	02/25/14 12:00	02/25/14 15:37
3. NGW521-022514	YA52C	14-3139	Water	02/25/14 14:30	02/25/14 15:37
4. NGW522-022514	YA52D	14-3140	Water	02/25/14 14:45	02/25/14 15:37
5. Trip Blanks	YA52E	14-3141	Water	02/25/14	02/25/14 15:37



# Cooler Receipt Form

ARI Client: Boeing

Project Name: NBF

COC No(s): \_\_\_\_\_ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: YASZ

Tracking No: \_\_\_\_\_ NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO

Were custody papers included with the cooler? YES  NO

Were custody papers properly filled out (ink, signed, etc.) YES  NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry) 4.8 4.8

Time: \_\_\_\_\_

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90877952

Cooler Accepted by: TS Date 2-25-14 Time 1537

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO

What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA  YES  NO

Were all bottles sealed in individual plastic bags? YES  NO

Did all bottles arrive in good condition (unbroken)? YES  NO

Were all bottle labels complete and legible? YES  NO

Did the number of containers listed on COC match with the number of containers received? YES  NO

Did all bottle labels and tags agree with custody papers? YES  NO

Were all bottles used correct for the requested analyses? YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs).. NA  YES  NO

Were all VOC vials free of air bubbles? NA  YES  NO

Was sufficient amount of sample sent in each bottle? YES  NO

Date VOC Trip Blank was made at ARI: \_\_\_\_\_ NA  YES  Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: TS Date: 2-25-14 Time: 1640

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By: \_\_\_\_\_ Date: \_\_\_\_\_

<p>Small Air Bubbles - 2mm</p>	<p>Peabubbles 2-4 mm</p>	<p>LARGE Air Bubbles &gt; 4 mm</p>	Small → "sm" (< 2 mm)
			Peabubbles → "pb" (2 to < 4 mm)
			Large → "lg" (4 to < 6 mm)
			Headspace → "hs" (> 6 mm)

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW523-022514**  
**SAMPLE**

Lab Sample ID: YA52A  
 LIMS ID: 14-3137  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: 02/25/14  
 Date Received: 02/25/14

Date Extracted: 02/27/14  
 Date Analyzed: 03/05/14 21:33  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.010</b>	<b>0.20</b>
12672-29-6	Aroclor 1248	0.010	< 0.010 U
<b>11097-69-1</b>	<b>Aroclor 1254</b>	<b>0.010</b>	<b>0.12</b>
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	< 0.010 U
11100-14-4	Aroclor 1268	0.010	< 0.010 U

Reported in µg/L (ppb)


**PCB Surrogate Recovery**

Decachlorobiphenyl	83.0%
Tetrachlorometaxylene	70.8%



**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: DUP-2-02514**  
**SAMPLE**

Lab Sample ID: YA52B  
 LIMS ID: 14-3138  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: 02/25/14  
 Date Received: 02/25/14

Date Extracted: 02/27/14  
 Date Analyzed: 03/05/14 21:55  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.010</b>	<b>0.69 E</b>
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.10	< 0.10 Y
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	< 0.010 U
11100-14-4	Aroclor 1268	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	88.0%
Tetrachlorometaxylene	84.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: DUP-2-02514**  
**DILUTION**

Lab Sample ID: YA52B  
 LIMS ID: 14-3138  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: 02/25/14  
 Date Received: 02/25/14

Date Extracted: 02/27/14  
 Date Analyzed: 03/06/14 11:03  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 5.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.050	< 0.050 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.050</b>	<b>0.82</b>
12672-29-6	Aroclor 1248	0.050	< 0.050 U
11097-69-1	Aroclor 1254	0.12	< 0.12 Y
11096-82-5	Aroclor 1260	0.050	< 0.050 U
11104-28-2	Aroclor 1221	0.050	< 0.050 U
11141-16-5	Aroclor 1232	0.050	< 0.050 U
37324-23-5	Aroclor 1262	0.050	< 0.050 U
11100-14-4	Aroclor 1268	0.050	< 0.050 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	99.0%
Tetrachlorometaxylene	86.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW521-022514**  
**SAMPLE**

Lab Sample ID: YA52C  
 LIMS ID: 14-3139  
 Matrix: Water  
 Data Release Authorized: *JS*  
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: 02/25/14  
 Date Received: 02/25/14

Date Extracted: 02/27/14  
 Date Analyzed: 03/05/14 22:17  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.010</b>	<b>0.66 E</b>
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.10	< 0.10 Y
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	< 0.010 U
11100-14-4	Aroclor 1268	0.010	< 0.010 U


Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	80.2%
Tetrachlorometaxylene	76.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW521-022514**  
**DILUTION**

Lab Sample ID: YA52C  
 LIMS ID: 14-3139  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: 02/25/14  
 Date Received: 02/25/14

Date Extracted: 02/27/14  
 Date Analyzed: 03/06/14 11:25  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 5.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.050	< 0.050 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.050</b>	<b>0.77</b>
12672-29-6	Aroclor 1248	0.050	< 0.050 U
11097-69-1	Aroclor 1254	0.12	< 0.12 Y
11096-82-5	Aroclor 1260	0.050	< 0.050 U
11104-28-2	Aroclor 1221	0.050	< 0.050 U
11141-16-5	Aroclor 1232	0.050	< 0.050 U
37324-23-5	Aroclor 1262	0.050	< 0.050 U
11100-14-4	Aroclor 1268	0.050	< 0.050 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	91.1%
Tetrachlorometaxylene	76.9%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW522-022514**  
**SAMPLE**

Lab Sample ID: YA52D  
 LIMS ID: 14-3140  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: 02/25/14  
 Date Received: 02/25/14

Date Extracted: 02/27/14  
 Date Analyzed: 03/05/14 22:39  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.010</b>	<b>0.20 P</b>
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.020	< 0.020 Y
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	< 0.010 U
11100-14-4	Aroclor 1268	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	81.0%
Tetrachlorometaxylene	75.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-022714**  
**METHOD BLANK**

Lab Sample ID: MB-022714  
 LIMS ID: 14-3137  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 02/27/14  
 Date Analyzed: 03/05/14 18:37  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	< 0.010 U
11100-14-4	Aroclor 1268	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	72.2%
Tetrachlorometaxylene	66.0%

**SW8082/PCB WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: YA52-The Boeing Company  
Project: NBF  
025082.214.005

<u>Client ID</u>	<u>DCBP % REC</u>	<u>DCBP LCL-UCL</u>	<u>TCMX % REC</u>	<u>TCMX LCL-UCL</u>	<u>TOT OUT</u>
MB-022714	72.2%	32-108	66.0%	31-100	0
LCS-022714	76.5%	32-108	68.2%	31-100	0
LCSD-022714	71.5%	32-108	70.2%	31-100	0
NGW523-022514	83.0%	19-111	70.8%	21-100	0
DUP-2-02514	88.0%	19-111	84.5%	21-100	0
DUP-2-02514 DL	99.0%	19-111	86.5%	21-100	0
NGW521-022514	80.2%	19-111	76.0%	21-100	0
NGW521-022514 DL	91.1%	19-111	76.9%	21-100	0
NGW522-022514	81.0%	19-111	75.5%	21-100	0

Prep Method: SW3510C  
Log Number Range: 14-3137 to 14-3140

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
 Page 1 of 1

**Sample ID: LCS-022714**  
**LCS/LCSD**

Lab Sample ID: LCS-022714  
 LIMS ID: 14-3137  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 03/06/14

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005  
 Date Sampled: NA  
 Date Received: NA

Date Extracted LCS/LCSD: 02/27/14

Sample Amount LCS: 1000 mL

Date Analyzed LCS: 03/05/14 19:43  
 LCSD: 03/05/14 20:05

Final Extract Volume LCS: 0.50 mL  
 LCSD: 0.50 mL

Instrument/Analyst LCS: ECD7/JGR  
 LCSD: ECD7/JGR

Dilution Factor LCS: 1.00  
 LCSD: 1.00

GPC Cleanup: No  
 Sulfur Cleanup: Yes

Silica Gel: Yes  
 Acid Cleanup: Yes

Analyte	Spike		LCS		Spike		RPD
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	
Aroclor 1016	0.045	0.050	90.0%	0.046	0.050	92.0%	2.2%
Aroclor 1260	0.043	0.050	86.0%	0.045	0.050	90.0%	4.5%

**PCB Surrogate Recovery**

	LCS	LCSD
Decachlorobiphenyl	76.5%	71.5%
Tetrachlorometaxylene	68.2%	70.2%

Results reported in µg/L  
 RPD calculated using sample concentrations per SW846.



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: NGW523-022514**

Page 1 of 2

**SAMPLE**

Lab Sample ID: YA52A


QC Report No: YA52-The Boeing Company

LIMS ID: 14-3137

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: 

Date Sampled: 02/25/14

Reported: 02/28/14

Date Received: 02/25/14

Instrument/Analyst: NT2/LH

Sample Amount: 10.0 mL

Date Analyzed: 02/27/14 10:52

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
<b>79-01-6</b>	<b>Trichloroethene</b>	<b>0.20</b>	<b>0.54</b>	
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Page 2 of 2



Sample ID: NGW523-022514

SAMPLE

Lab Sample ID: YA52A

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3137

Project: NBF

Matrix: Water

025082.214.005

Date Analyzed: 02/27/14 10:52

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	97.9%
d8-Toluene	93.2%
Bromofluorobenzene	99.5%
d4-1,2-Dichlorobenzene	99.9%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: DUP-2-02514**

Page 1 of 2

**SAMPLE**

Lab Sample ID: YA52B


QC Report No: YA52-The Boeing Company

LIMS ID: 14-3138

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: 

Date Sampled: 02/25/14

Reported: 02/28/14

Date Received: 02/25/14

Instrument/Analyst: NT2/LH

Sample Amount: 10.0 mL

Date Analyzed: 02/27/14 11:19

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: DUP-2-02514**

Page 2 of 2

**SAMPLE**

Lab Sample ID: YA52B

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3138

Project: NBF

Matrix: Water

025082.214.005

Date Analyzed: 02/27/14 11:19

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	106%
d8-Toluene	98.3%
Bromofluorobenzene	92.8%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: NGW521-022514**

Page 1 of 2

**SAMPLE**

Lab Sample ID: YA52C

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3139

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: *[Signature]*

Date Sampled: 02/25/14

Reported: 02/28/14

Date Received: 02/25/14

Instrument/Analyst: NT2/LH

Sample Amount: 10.0 mL

Date Analyzed: 02/27/14 11:45

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: NGW521-022514**

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**SAMPLE**

Lab Sample ID: YA52C

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3139

Project: NBF

Matrix: Water

025082.214.005

Date Analyzed: 02/27/14 11:45

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	106%
d8-Toluene	98.3%
Bromofluorobenzene	98.3%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: NGW522-022514**

Page 1 of 2

**SAMPLE**

Lab Sample ID: YA52D

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3140

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: *AS*

Date Sampled: 02/25/14

Reported: 02/28/14

Date Received: 02/25/14

Instrument/Analyst: NT2/LH

Sample Amount: 10.0 mL

Date Analyzed: 02/27/14 12:12

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: NGW522-022514**

Page 2 of 2

**SAMPLE**

Lab Sample ID: YA52D

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3140

Project: NBF

Matrix: Water

025082.214.005

Date Analyzed: 02/27/14 12:12

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	104%
d8-Toluene	94.4%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	98.0%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: Trip Blanks**

Page 1 of 2

**SAMPLE**

Lab Sample ID: YA52E


QC Report No: YA52-The Boeing Company

LIMS ID: 14-3141

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: 

Date Sampled: 02/25/14

Reported: 02/28/14

Date Received: 02/25/14

Instrument/Analyst: NT2/LH

Sample Amount: 10.0 mL

Date Analyzed: 02/27/14 12:39

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: Trip Blanks  
SAMPLE**

Page 2 of 2

Lab Sample ID: YA52E

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3141

Project: NBF

Matrix: Water

025082.214.005

Date Analyzed: 02/27/14 12:39

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	102%
d8-Toluene	95.4%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MB-022714A**

Page 1 of 2

**METHOD BLANK**

Lab Sample ID: MB-022714A

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3137

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: 

Date Sampled: NA

Reported: 02/28/14

Date Received: NA

Instrument/Analyst: NT2/LH

Sample Amount: 10.0 mL

Date Analyzed: 02/27/14 10:25

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

Page 2 of 2



**Sample ID: MB-022714A**

**METHOD BLANK**

Lab Sample ID: MB-022714A

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3137

Project: NBF

Matrix: Water

025082.214.005

Date Analyzed: 02/27/14 10:25

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	96.1%
d8-Toluene	96.5%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	101%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: YA52-The Boeing Company  
 Project: NBF  
 025082.214.005

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-022714A	Method Blank	10	96.1%	96.5%	103%	101%	0
LCS-022714A	Lab Control	10	96.5%	94.3%	97.9%	100%	0
LCSD-022714A	Lab Control Dup	10	97.6%	95.5%	99.4%	102%	0
YA52A	NGW523-022514	10	97.9%	93.2%	99.5%	99.9%	0
YA52B	DUP-2-02514	10	106%	98.3%	92.8%	100%	0
YA52C	NGW521-022514	10	106%	98.3%	98.3%	101%	0
YA52D	NGW522-022514	10	104%	94.4%	96.8%	98.0%	0
YA52E	Trip Blanks	10	102%	95.4%	97.0%	101%	0

LCS/MB LIMITS

QC LIMITS

SW8260C

(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-130)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B  
 Log Number Range: 14-3137 to 14-3141

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-022714A**

Page 1 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-022714A

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3137

Project: NBF

Matrix: Water

025082.214.005

Data Release Authorized: *AB*

Date Sampled: NA

Reported: 02/28/14

Date Received: NA

Instrument/Analyst LCS: NT2/LH

Sample Amount LCS: 10.0 mL

LCSD: NT2/LH

LCSD: 10.0 mL

Date Analyzed LCS: 02/27/14 09:33

Purge Volume LCS: 10.0 mL

LCSD: 02/27/14 09:59

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	8.75	10.0	87.5%	9.35	10.0	93.5%	6.6%
Bromomethane	8.49	10.0	84.9%	10.2	10.0	102%	18.3%
Vinyl Chloride	9.28	10.0	92.8%	10.4	10.0	104%	11.4%
Chloroethane	10.7 Q	10.0	107%	11.7 Q	10.0	117%	8.9%
Methylene Chloride	10.1	10.0	101%	10.2	10.0	102%	1.0%
Acetone	46.3	50.0	92.6%	47.4	50.0	94.8%	2.3%
Carbon Disulfide	9.55	10.0	95.5%	9.99	10.0	99.9%	4.5%
1,1-Dichloroethene	9.81	10.0	98.1%	10.0	10.0	100%	1.9%
1,1-Dichloroethane	9.85	10.0	98.5%	9.82	10.0	98.2%	0.3%
trans-1,2-Dichloroethene	9.57	10.0	95.7%	9.44	10.0	94.4%	1.4%
cis-1,2-Dichloroethene	9.69	10.0	96.9%	10.1	10.0	101%	4.1%
Chloroform	9.31	10.0	93.1%	9.94	10.0	99.4%	6.5%
1,2-Dichloroethane	9.90	10.0	99.0%	9.43	10.0	94.3%	4.9%
2-Butanone	52.3	50.0	105%	50.6	50.0	101%	3.3%
1,1,1-Trichloroethane	9.10	10.0	91.0%	10.0	10.0	100%	9.4%
Carbon Tetrachloride	8.72	10.0	87.2%	9.48	10.0	94.8%	8.4%
Vinyl Acetate	10.4	10.0	104%	10.1	10.0	101%	2.9%
Bromodichloromethane	9.33	10.0	93.3%	9.29	10.0	92.9%	0.4%
1,2-Dichloropropane	9.81	10.0	98.1%	9.85	10.0	98.5%	0.4%
cis-1,3-Dichloropropene	10.2	10.0	102%	9.41	10.0	94.1%	8.1%
Trichloroethene	8.86	10.0	88.6%	9.34	10.0	93.4%	5.3%
Dibromochloromethane	9.73	10.0	97.3%	9.66	10.0	96.6%	0.7%
1,1,2-Trichloroethane	9.85	10.0	98.5%	9.65	10.0	96.5%	2.1%
Benzene	9.91	10.0	99.1%	10.0	10.0	100%	0.9%
trans-1,3-Dichloropropene	9.57	10.0	95.7%	9.27	10.0	92.7%	3.2%
2-Chloroethylvinylether	9.52	10.0	95.2%	8.60	10.0	86.0%	10.2%
Bromoform	10.3	10.0	103%	9.73	10.0	97.3%	5.7%
4-Methyl-2-Pentanone (MIBK)	52.8	50.0	106%	53.9	50.0	108%	2.1%
2-Hexanone	53.7	50.0	107%	52.2	50.0	104%	2.8%
Tetrachloroethene	10.1	10.0	101%	9.84	10.0	98.4%	2.6%
1,1,2,2-Tetrachloroethane	10.7	10.0	107%	10.1	10.0	101%	5.8%
Toluene	9.84	10.0	98.4%	9.79	10.0	97.9%	0.5%
Chlorobenzene	10.1	10.0	101%	9.82	10.0	98.2%	2.8%
Ethylbenzene	10.3	10.0	103%	10.2	10.0	102%	1.0%
Styrene	10.3	10.0	103%	10.2	10.0	102%	1.0%
Trichlorofluoromethane	9.00	10.0	90.0%	9.67	10.0	96.7%	7.2%
1,1,2-Trichloro-1,2,2-trifluoroethane	9.32	10.0	93.2%	10.0	10.0	100%	7.0%
m,p-Xylene	21.2	20.0	106%	21.0	20.0	105%	0.9%

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-022714A**

Page 2 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-022714A

QC Report No: YA52-The Boeing Company

LIMS ID: 14-3137

Project: NBF

Matrix: Water

025082.214.005

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	10.0	10.0	100%	10.8	10.0	108%	7.7%
1,2-Dichlorobenzene	9.82	10.0	98.2%	9.83	10.0	98.3%	0.1%
1,3-Dichlorobenzene	10.0	10.0	100%	9.89	10.0	98.9%	1.1%
1,4-Dichlorobenzene	9.92	10.0	99.2%	9.94	10.0	99.4%	0.2%
Acrolein	55.3	50.0	111%	54.9	50.0	110%	0.7%
Iodomethane	9.27	10.0	92.7%	9.78	10.0	97.8%	5.4%
Bromoethane	10.2	10.0	102%	10.1	10.0	101%	1.0%
Acrylonitrile	9.23	10.0	92.3%	9.30	10.0	93.0%	0.8%
1,1-Dichloropropene	9.72	10.0	97.2%	10.2	10.0	102%	4.8%
Dibromomethane	9.33	10.0	93.3%	9.17	10.0	91.7%	1.7%
1,1,1,2-Tetrachloroethane	9.58	10.0	95.8%	10.1	10.0	101%	5.3%
1,2-Dibromo-3-chloropropane	9.31	10.0	93.1%	9.61	10.0	96.1%	3.2%
1,2,3-Trichloropropane	10.2	10.0	102%	9.71	10.0	97.1%	4.9%
trans-1,4-Dichloro-2-butene	10.3	10.0	103%	9.35	10.0	93.5%	9.7%
1,3,5-Trimethylbenzene	10.8	10.0	108%	10.5	10.0	105%	2.8%
1,2,4-Trimethylbenzene	10.6	10.0	106%	10.3	10.0	103%	2.9%
Hexachlorobutadiene	9.33	10.0	93.3%	9.44	10.0	94.4%	1.2%
1,2-Dibromoethane	8.82	10.0	88.2%	8.60	10.0	86.0%	2.5%
Bromochloromethane	9.89	10.0	98.9%	10.4	10.0	104%	5.0%
2,2-Dichloropropane	9.29	10.0	92.9%	9.76	10.0	97.6%	4.9%
1,3-Dichloropropane	10.6	10.0	106%	9.10	10.0	91.0%	15.2%
Isopropylbenzene	10.9	10.0	109%	10.5	10.0	105%	3.7%
n-Propylbenzene	10.6	10.0	106%	10.3	10.0	103%	2.9%
Bromobenzene	10.0	10.0	100%	9.30	10.0	93.0%	7.3%
2-Chlorotoluene	10.7	10.0	107%	10.1	10.0	101%	5.8%
4-Chlorotoluene	10.5	10.0	105%	9.92	10.0	99.2%	5.7%
tert-Butylbenzene	11.0	10.0	110%	10.1	10.0	101%	8.5%
sec-Butylbenzene	10.3	10.0	103%	10.1	10.0	101%	2.0%
4-Isopropyltoluene	10.7	10.0	107%	10.2	10.0	102%	4.8%
n-Butylbenzene	10.2	10.0	102%	9.83	10.0	98.3%	3.7%
1,2,4-Trichlorobenzene	10.4	10.0	104%	10.6	10.0	106%	1.9%
Naphthalene	10.8	10.0	108%	11.3	10.0	113%	4.5%
1,2,3-Trichlorobenzene	11.6	10.0	116%	11.9	10.0	119%	2.6%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

	LCS	LCSD
d4-1,2-Dichloroethane	96.5%	97.6%
d8-Toluene	94.3%	95.5%
Bromofluorobenzene	97.9%	99.4%
d4-1,2-Dichlorobenzene	100%	102%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

September 1, 2014

Kris Hendrickson  
Landau Associates, Inc.  
130 Second Ave  
Edmonds, WA 98020

**RE: Project: NBF – RI Sampling Semi Annual**  
**ARI Job: YX39**

Dear Kris:

Please find enclosed the Chain of Custody (COC) record, sample receipt documentation, and analytical results for the above referenced project. Analytical Resources, Inc. (ARI) accepted six water samples in good condition on August 21, 2014. The coolers were received with temperatures of 13.4 and 14.7°C.

The samples were analyzed for PCBs, as requested on the COC.

The PCBs matrix spike and matrix spike duplicate are out of control high for aroclor 1016.

There were no other irregularities with the samples.

Quality control analysis results are included for your review. Copies of the reports and all associated raw data will be kept on file electronically at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,  
ANALYTICAL RESOURCES, INC

Kelly Bottem  
Client Services Manager  
(206) 695-6211  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

cc: Carl Bach, The Boeing Company, P.O. Box 3707, M/S 1W-12, Seattle, WA 98124-2207

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# Cooler Receipt Form

ARI Client: LA<sup>N</sup> Boeing

Project Name: NBF

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier  Hand Delivered  Other: \_\_\_\_\_

Assigned ARI Job No: YX39

Tracking No: \_\_\_\_\_ NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO

Were custody papers included with the cooler?  YES  NO

Were custody papers properly filled out (ink, signed, etc.)  YES  NO

Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry)  
Time: 1630 13.4 14.7 \_\_\_\_\_

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: CA Date: 8/21/14 Time: 1630

*Complete custody forms and attach all shipping documents*

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO

What kind of packing material was used?  Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA  YES  NO

Were all bottles sealed in individual plastic bags? YES  NO

Did all bottles arrive in good condition (unbroken)?  YES  NO

Were all bottle labels complete and legible?  YES  NO

Did the number of containers listed on COC match with the number of containers received?  YES  NO

Did all bottle labels and tags agree with custody papers?  YES  NO

Were all bottles used correct for the requested analyses?  YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...  NA  YES  NO

Were all VOC vials free of air bubbles?  NA  YES  NO

Was sufficient amount of sample sent in each bottle?  YES  NO

Date VOC Trip Blank was made at ARI..  NA \_\_\_\_\_

Was Sample Split by ARI.  NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AV Date: 8/21/14 Time: 1700

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions: Samples collected recently

By: \_\_\_\_\_ Date: \_\_\_\_\_

			Small → "sm" (< 2 mm)
			Peabubbles → "pb" (2 to < 4 mm)
			Large → "lg" (4 to < 6 mm)
			Headspace → "hs" (> 6 mm)

# Sample ID Cross Reference Report



ARI Job No: YX39  
Client: The Boeing Company  
Project Event: 0025082.214.005  
Project Name: NBF

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. NGW520-082114	YX39A	14-17230	Water	08/21/14 12:25	08/21/14 16:30
2. NGW521-082114	YX39B	14-17231	Water	08/21/14 14:25	08/21/14 16:30
3. NGW522-082114	YX39C	14-17232	Water	08/21/14 15:25	08/21/14 16:30
4. NGW523-082114	YX39D	14-17233	Water	08/21/14 13:45	08/21/14 16:30
5. DUP-1-082114	YX39E	14-17234	Water	08/21/14 15:00	08/21/14 16:30
6. DUP-2-082114	YX39F	14-17235	Water	08/21/14 15:30	08/21/14 16:30

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW520-082114**  
**SAMPLE**

Lab Sample ID: YX39A  
 LIMS ID: 14-17230  
 Matrix: Water  
 Data Release Authorized: *helly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 15:46  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: No  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.0025	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.0025	0.025	< 0.025 Y
<b>11097-69-1</b>	<b>Aroclor 1254</b>	<b>0.0025</b>	<b>0.010</b>	<b>0.030</b>
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	66.2%
Tetrachlorometaxylene	54.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW521-082114**  
**SAMPLE**

Lab Sample ID: YX39B  
 LIMS ID: 14-17231  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 16:08  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: No  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.0025</b>	<b>0.010</b>	<b>0.70 E</b>
12672-29-6	Aroclor 1248	0.0025	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.0025	0.10	< 0.10 Y
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	69.2%
Tetrachlorometaxylene	60.8%

Sample ID: NGW521-082114  
DILUTION

Lab Sample ID: YX39B  
LIMS ID: 14-17231  
Matrix: Water  
Data Release Authorized: Kelly  
Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
Project: NBF  
0025082.214.005  
Date Sampled: 08/21/14  
Date Received: 08/21/14

Date Extracted: 08/27/14  
Date Analyzed: 08/29/14 09:02  
Instrument/Analyst: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
Final Extract Volume: 0.50 mL  
Dilution Factor: 5.00  
Silica Gel: Yes  
Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.012	0.050	< 0.050 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.012</b>	<b>0.050</b>	<b>0.79</b>
12672-29-6	Aroclor 1248	0.012	0.050	< 0.050 U
11097-69-1	Aroclor 1254	0.012	0.12	< 0.12 Y
11096-82-5	Aroclor 1260	0.014	0.050	< 0.050 U
11104-28-2	Aroclor 1221	0.012	0.050	< 0.050 U
11141-16-5	Aroclor 1232	0.012	0.050	< 0.050 U
37324-23-5	Aroclor 1262	0.014	0.050	< 0.050 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	77.2%
Tetrachlorometaxylene	63.2%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW522-082114**  
**SAMPLE**

Lab Sample ID: YX39C  
 LIMS ID: 14-17232  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 16:29  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.0025</b>	<b>0.010</b>	<b>0.44</b>
12672-29-6	Aroclor 1248	0.0025	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.0025	0.050	< 0.050 Y
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	68.5%
Tetrachlorometaxylene	61.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW522-082114**  
**MATRIX SPIKE**

Lab Sample ID: YX39C  
 LIMS ID: 14-17232  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 16:51  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.010	0.010	---
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.010</b>	<b>0.010</b>	<b>0.44</b>
12672-29-6	Aroclor 1248	0.010	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.075	0.075	< 0.075 Y
11096-82-5	Aroclor 1260	0.010	0.010	---
11104-28-2	Aroclor 1221	0.010	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	66.2%
Tetrachlorometaxylene	55.8%



**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW522-082114**  
**MATRIX SPIKE DUP**

Lab Sample ID: YX39C  
 LIMS ID: 14-17232  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 17:13  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.010	0.010	---
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.010</b>	<b>0.010</b>	<b>0.51 E</b>
12672-29-6	Aroclor 1248	0.010	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.075	0.075	< 0.075 Y
11096-82-5	Aroclor 1260	0.010	0.010	---
11104-28-2	Aroclor 1221	0.010	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.010	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.010	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	70.8%
Tetrachlorometaxylene	62.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: NGW523-082114**  
**SAMPLE**

Lab Sample ID: YX39D  
 LIMS ID: 14-17233  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 17:35  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: No  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.0025</b>	<b>0.010</b>	<b>0.35</b>
12672-29-6	Aroclor 1248	0.0025	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.0025	0.050	< 0.050 Y
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	64.5%
Tetrachlorometaxylene	53.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: DUP-1-082114**  
**SAMPLE**

Lab Sample ID: YX39E  
 LIMS ID: 14-17234  
 Matrix: Water  
 Data Release Authorized: *8/14*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 17:57  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: No  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.0025	0.020	< 0.020 Y
12672-29-6	Aroclor 1248	0.0025	0.010	< 0.010 U
<b>11097-69-1</b>	<b>Aroclor 1254</b>	<b>0.0025</b>	<b>0.010</b>	<b>0.022</b>
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	61.2%
Tetrachlorometaxylene	54.2%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: DUP-2-082114**  
**SAMPLE**

Lab Sample ID: YX39F  
 LIMS ID: 14-17235  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 18:19  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: No  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.0025</b>	<b>0.010</b>	<b>0.65 E</b>
12672-29-6	Aroclor 1248	0.0025	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.0025	0.10	< 0.10 Y
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	63.2%
Tetrachlorometaxylene	56.5%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: DUP-2-082114**  
**DILUTION**

Lab Sample ID: YX39F  
 LIMS ID: 14-17235  
 Matrix: Water  
 Data Release Authorized: *Xelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: 08/21/14  
 Date Received: 08/21/14

Date Extracted: 08/27/14  
 Date Analyzed: 08/29/14 09:24  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 5.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.012	0.050	< 0.050 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.012</b>	<b>0.050</b>	<b>0.74</b>
12672-29-6	Aroclor 1248	0.012	0.050	< 0.050 U
11097-69-1	Aroclor 1254	0.012	0.15	< 0.15 Y
11096-82-5	Aroclor 1260	0.014	0.050	< 0.050 U
11104-28-2	Aroclor 1221	0.012	0.050	< 0.050 U
11141-16-5	Aroclor 1232	0.012	0.050	< 0.050 U
37324-23-5	Aroclor 1262	0.014	0.050	< 0.050 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	73.0%
Tetrachlorometaxylene	58.9%

**ORGANICS ANALYSIS DATA SHEET**  
**PCB by GC/ECD Method SW8082A**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-082714**  
**METHOD BLANK**

Lab Sample ID: MB-082714  
 LIMS ID: 14-17232  
 Matrix: Water  
 Data Release Authorized: *Kelly*  
 Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
 Project: NBF  
 0025082.214.005  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/27/14  
 Date Analyzed: 08/28/14 13:34  
 Instrument/Analyst: ECD7/JGR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 1000 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00  
 Silica Gel: Yes  
 Acid Cleanup: Yes

CAS Number	Analyte	DL	LOQ	Result
12674-11-2	Aroclor 1016	0.0025	0.010	< 0.010 U
53469-21-9	Aroclor 1242	0.0025	0.010	< 0.010 U
12672-29-6	Aroclor 1248	0.0025	0.010	< 0.010 U
11097-69-1	Aroclor 1254	0.0025	0.010	< 0.010 U
11096-82-5	Aroclor 1260	0.0028	0.010	< 0.010 U
11104-28-2	Aroclor 1221	0.0025	0.010	< 0.010 U
11141-16-5	Aroclor 1232	0.0025	0.010	< 0.010 U
37324-23-5	Aroclor 1262	0.0028	0.010	< 0.010 U

Reported in µg/L (ppb)

**PCB Surrogate Recovery**

Decachlorobiphenyl	54.8%
Tetrachlorometaxylene	50.5%

**SW8082/PCB WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: YX39-The Boeing Company  
Project: NBF  
0025082.214.005

<u>Client ID</u>	<u>DCBP % REC</u>	<u>DCBP LCL-UCL</u>	<u>TCMX % REC</u>	<u>TCMX LCL-UCL</u>	<u>TOT OUT</u>
NGW520-082114	66.2%	29-120	54.0%	32-120	0
NGW521-082114	69.2%	29-120	60.8%	32-120	0
NGW521-082114 DL	77.2%	29-120	63.2%	32-120	0
MB-082714	54.8%	29-120	50.5%	32-120	0
LCS-082714	63.0%	29-120	53.5%	32-120	0
LCSD-082714	53.8%	29-120	51.2%	32-120	0
NGW522-082114	68.5%	29-120	61.5%	32-120	0
NGW522-082114 MS	66.2%	29-120	55.8%	32-120	0
NGW522-082114 MSD	70.8%	29-120	62.5%	32-120	0
NGW523-082114	64.5%	29-120	53.5%	32-120	0
DUP-1-082114	61.2%	29-120	54.2%	32-120	0
DUP-2-082114	63.2%	29-120	56.5%	32-120	0
DUP-2-082114 DL	73.0%	29-120	58.9%	32-120	0

Prep Method: SW3510C  
Log Number Range: 14-17230 to 14-17235

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PCB by GC/ECD Method SW8082A  
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Sample ID: NGW522-082114  
MS/MSD

Lab Sample ID: YX39C  
LIMS ID: 14-17232  
Matrix: Water  
Data Release Authorized: *mm*  
Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
Project: NBF  
0025082.214.005  
Date Sampled: 08/21/14  
Date Received: 08/21/14

Date Extracted MS/MSD: 08/27/14  
Date Analyzed MS: 08/28/14 16:51  
MSD: 08/28/14 17:13  
Instrument/Analyst MS: ECD7/JGR  
MSD: ECD7/JGR  
GPC Cleanup: No  
Sulfur Cleanup: Yes

Sample Amount MS: 1000 mL  
MSD: 1000 mL  
Final Extract Volume MS: 0.5 mL  
MSD: 0.5 mL  
Dilution Factor MS: 1.00  
MSD: 1.00  
Silica Gel: Yes  
Acid Cleanup: Yes

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Aroclor 1016	< 0.010	0.320	0.050	640%	0.371	0.050	742%	14.8%
Aroclor 1260	< 0.010	0.038	0.050	76.0%	0.041	0.050	82.0%	7.6%

Results reported in µg/L  
RPD calculated using sample concentrations per SW846.



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PCB by GC/ECD Method SW8082A  
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Sample ID: LCS-082714  
LCS/LCSD

Lab Sample ID: LCS-082714  
LIMS ID: 14-17232  
Matrix: Water  
Data Release Authorized: *NW*  
Reported: 08/29/14

QC Report No: YX39-The Boeing Company  
Project: NBF  
0025082.214.005  
Date Sampled: NA  
Date Received: NA

Date Extracted LCS/LCSD: 08/27/14

Sample Amount LCS: 1000 mL  
LCSD: 1000 mL

Date Analyzed LCS: 08/28/14 13:56  
LCSD: 08/28/14 14:18

Final Extract Volume LCS: 0.50 mL  
LCSD: 0.50 mL

Instrument/Analyst LCS: ECD7/JGR  
LCSD: ECD7/JGR

Dilution Factor LCS: 1.00  
LCSD: 1.00

GPC Cleanup: No  
Sulfur Cleanup: Yes

Silica Gel: Yes  
Acid Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	0.038	0.050	76.0%	0.040	0.050	80.0%	5.1%
Aroclor 1260	0.036	0.050	72.0%	0.035	0.050	70.0%	2.8%

**PCB Surrogate Recovery**

	LCS	LCSD
Decachlorobiphenyl	63.0%	53.8%
Tetrachlorometaxylene	53.5%	51.2%

Results reported in µg/L  
RPD calculated using sample concentrations per SW846.