

April 14, 2017

Washington State Department of Ecology
Northwest Regional Office
3190 160th Ave SE
Bellevue, WA 98008-5452

Attn: Robin Harrover

Transmitted via email to: *rhar461@ecy.wa.gov*

**Re: Status Report No. 58, January through March 2017 Activity Period
Boeing Auburn Facility
WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345
Auburn, Washington
Project No.0025164.140.501**

Dear Ms. Harrover:

The Resource Conservation and Recovery Act (RCRA) Corrective Action Agreed Order (Auburn Agreed Order) became effective on August 14, 2002. As required under Section VI.13 of the Auburn Agreed Order, The Boeing Company (Boeing) is providing Status Report No. 58, which covers the 3-month activity period of January through March 2017.

References

1. January 5, 2017. Ecology Listserv (Boeing Fabrication Auburn Site): Boeing Auburn Groundwater Cleanup Remedial Investigation Report in 2017.
2. January 6, 2017. Email: Ecology Document Request. From Sarah Fees, LAI, to Robin Harrover and Neal Hines, Ecology.
3. January 9, 2017. Email: Ecology Document Request. From Robin Harrover, Ecology, to Sarah Fees, LAI. (Attachments: Area 1 Letter of Determination and Safeway Letter of Determination.)
4. January 12, 2017. Boeing Auburn Document review. Deadline: Friday, January 20 COB. From Thea Levkovitz, Ecology, to Representatives of LAI, Boeing, and Ecology. (Attachments: Six documents for review regarding public comment period for RI Report.)
5. January 16, 2017. Letter: Status Report No. 57, October Through December 2016 Activity Period, Boeing Auburn Facility, WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345. From Jennifer Wynkoop, LAI, to Robin Harrover, Ecology.
6. January 20, 2017. Email: Boeing Auburn document review. Deadline: Friday, January 20 COB. From Megan Hilfer, Boeing, to Representatives of LAI, Boeing, and Ecology. (Attachments: Boeing and LAI comments on outreach documents.)

7. January 26, 2017. Email: Boeing Fabrication Auburn Site – Status Report 57, Oct – Dec 2016. From Robin Harrover, Ecology, to Representatives of City of Algona, City of Auburn, City of Pacific, and (WDOH).
8. January 26, 2017. Email: Water Quality Criteria applicable to the Auburn 400 Ponds, Outlet Collection Ponds, and Conveyance Ditches in Auburn and Algona. From Robin Harrover, Ecology, to James Bet, Boeing.
9. January 30, 2017. Letter: Ecology Comments and Approval of Draft 2016 Tier II Commercial Vapor Intrusion Report for Los Cabos Property, Boeing Auburn Facility Auburn Washington., September 14, 2016 by Landau Associates Inc. for the Boeing Company, dated September 14, 2016; FS #2018; CS #5049; EPA #WAD041337130. From Neal Hines, Ecology, to James Bet, Boeing.
10. January 31, 2017. Report: 2016 Tier II Commercial Vapor Intrusion Report for Los Cabos Property, Boeing Auburn Facility, Auburn, Washington.
11. February 9, 2017. Draft Remedial Investigation Report, Boeing Auburn Facility, Auburn, Washington.
12. February 9, 2017. Letter: Response to Ecology Comments on the Draft Remedial Investigation Report, Boeing Auburn, Auburn, Washington. From Sarah Fees and Jennifer Wynkoop, LAI, to Robin Harrover and Neal Hines, Ecology.
13. February 13, 2017. Email: Format for Repositories. From Robin Harrover, Ecology, to Jennifer Wynkoop, LAI.
14. February 13, 2017. Email: Sampling at Well AGW276. From Sarah Fees, LAI, to Robin Harrover and Neal Hines, Ecology. (Attachment: AGW276 Time Series Plots.)
15. February 15, 2017. Email: Navigation Tool for the RI Report. From Robin Harrover, Ecology, to James Bet, Boeing. (Attachment: Draft navigation tool.)
16. February 21, 2017. Email: Agenda for Thursday's Meeting. From Robin Harrover, Ecology, to Jennifer Wynkoop, LAI, and James Bet, Boeing.
17. February 22, 2017. Email: March Surface Water Sampling. From Sarah Fees, LAI, to Robin Harrover and Neal Hines, Ecology.
18. February 22, 2017. Email: Navigation Tool for the RI Report. From Sarah Fees, LAI, to Robin Harrover and Thea Levkovitz, Ecology. (Attachment: Revisions to the Navigation Tool.)
19. February 23, 2017. Conference call: Discussion of RI Report Public Comment Period. Attendees: Representatives of Boeing, LAI, and Ecology.
20. February 24, 2017. Email: Ecology approval of additional SW Sampling at SW-18 location. From Robin Harrover, Ecology, to Sarah Fees, LAI, and Neal Hines, Ecology.
21. February 27, 2017. Email: Sampling of Well AGW276. From Robin Harrover, Ecology, to James Bet, Boeing.
22. February 27, 2017. File Transfer: Boeing Auburn RI Report – Web Version. From Sarah Fees, LAI, to Robin Harrover, Thea Levkovitz, and Neal Hines, Ecology.
23. March 1, 2017. Draft Report: Draft Algona Pilot Test Report, Boeing Auburn Facility.

24. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, Auburn School District Warehouse Property Wells, Auburn, Washington. From Jennifer Wynkoop, LAI, to Cindi Blansfield, Assistant Superintendent of Business and Operations, Auburn School District.
25. March 1, 2017. Letter: Groundwater Monitoring Results: September and December 2016, City of Algona Wells, Algona, Washington. From Jennifer Wynkoop, LAI, to David Hill, Mayor, City of Algona.
26. March 1, 2017. Letter: Groundwater Monitoring Results: November and December 2016, City of Auburn Wells, Auburn Washington. From Jennifer Wynkoop, LAI, to Chris Thorn, Water Quality Program Coordinator, City of Auburn.
27. March 1, 2017. Letter: Groundwater Monitoring Results: November 2016, Sentry Wells, Auburn, Washington. From Jennifer Wynkoop, LAI, to Jim Morgan, Public Works Manager, City of Pacific.
28. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, Coastal Farm and Ranch Well, Auburn, Washington. From Jennifer Wynkoop, LAI, to Byron Baule, Operations Manager, Coastal Farm and Ranch.
29. March 1, 2017. Letter: Groundwater Monitoring Results: September and December 2016, 840 Industry Drive North Well, Algona, Washington. From Jennifer Wynkoop, LAI, to Ben Brodsky, Senior Development and Construction Manager, DCTI.
30. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, Boeing Wells on Fana Auburn 234 LLC property, Auburn, Washington. From Jennifer Wynkoop, LAI, to John Powers, Fana Group of Companies.
31. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, Boeing Wells on Fana Auburn LLC Property, Auburn, Washington. From Jennifer Wynkoop, LAI, to John Powers, Fana Group of Companies.
32. March 1, 2017. Letter: Groundwater Monitoring Results: November 2016, U.S. General Services Administration Wells, Auburn, Washington. From Jennifer Wynkoop, LAI, to George Karl, Auburn Senior Property Manager, GSA.
33. March 1, 2017. Letter: Groundwater Monitoring Results: September and November 2016, Primus Wells, Algona, Washington. From Jennifer Wynkoop, LAI, to Peter Wazlawek, Primus.
34. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, Boeing Wells along the Interurban Trail, Auburn and Algona, Washington. From Jennifer Wynkoop, LAI, to Kurt Krebs, PSE.
35. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, WP Glimcher Wells, Auburn, Washington. From Jennifer Wynkoop, LAI, to Christian Faltenberger, General Manager, WP Glimcher.
36. March 1, 2017. Letter: Groundwater Monitoring Results: December 2016, Washington State Department of Transportation Well, Auburn, Washington. From Jennifer Wynkoop, LAI, to Amir Ahmadi, Regional Materials Engineer, WSDOT.
37. March 8, 2017. Ecology Listserv: Ecology wants your comments – Boeing Auburn Draft Remedial Investigation Comment Period starts today.
38. March 13, 2017. Letter: Ecology Comments and Conditional Approval of Draft Technical Memorandum, 2015 Surface Water Investigation, Boeing Auburn Facility, Auburn, Washington

by Landau Associates Inc. for the Boeing Company, dated August 18, 2016; FS #2018; CS #5049; EPA #WAD041337130. From Neal Hines, Ecology to James Bet, Boeing.

39. March 16, 2017. Email: Cover Letter for the RI Report. From Robin Harrover, Ecology, to Jennifer Wynkoop, LAI.
40. March 16, 2017. Conference call: Applicability of Surface Water quality criteria. Attendees: representatives of Boeing, LAI, Ecology.
41. March 20, 2017. Ecology Listserv: Talk to Ecology! Submit Comments. Open House, March 23, 5 – 7 PM.
42. March 24, 2017. Technical Memorandum: 2015 Surface Water Investigation, Boeing Auburn Facility, Auburn, Washington. From Sarah Fees and Jennifer Wynkoop, LAI, to Robin Harrover and Neal Hines, Ecology.

Work Conducted

General Site-wide Corrective Action Activities

On January 16, 2017, Landau Associates, Inc. (LAI) submitted Status Report No. 57 regarding fourth quarter 2016 activities to Washington State Department of Ecology (Ecology) and other stakeholders¹ for their records (Reference #5).

As part of various offsite monitoring well access agreement and right-of-way (ROW) permits, Boeing provides semi-annual groundwater data submittals. Third quarter groundwater sampling was conducted in September 2016 and fourth quarter groundwater sampling was conducted in November and December 2016. The following semi-annual groundwater data submittals were distributed during the first quarter 2017:

- Data for AGW237(D), AGW238(I), and AGW239(S) located on the Auburn School District warehouse property from the fourth quarter 2016 sampling events to the Auburn School District (Reference #24)
- Data for 35 wells located on City of Algona ROW from the third and fourth quarter 2016 sampling events to the City of Algona (Reference #25)
- Data for 32 wells located on City of Auburn ROW and City of Auburn property from the fourth quarter 2016 sampling events to the City of Auburn (Reference #26)
- Sentry well data from the fourth quarter 2016 sampling event to the City of Pacific (Reference #27)
- AGW236(S) data from the fourth quarter 2016 sampling event to Coastal Farm and Ranch (Reference #28)

¹ A list of stakeholders that receive copies of the quarterly status reports are listed at the end of this document. Ecology also forwards quarterly status reports via email to representative of the cities of Algona, Auburn, and Pacific, and Washington State Department of Health (WDOH; Reference #7).

- AGW276(M) data from the third and fourth quarter 2016 sampling events to DCT Industrial (DCTI; Reference #29)
- AGW179(I) and AGW180(D) data from the fourth quarter 2016 sampling event to Fana Auburn 234 LLC (Reference #30)
- AGW177(I) and AGW178(D) data from the fourth quarter 2016 sampling event to Fana Auburn LLC (Reference #31)
- Data for AGW256(I), AGW257(S), and AGW258(S) from the fourth quarter 2016 sampling event to General Services Administration (GSA; Reference #32)
- Data for 12 wells from the third and fourth quarter 2016 sampling events to Primus International, Inc. (Primus; Reference #33)
- Data for 16 wells located on the Interurban Trail from the fourth quarter 2016 sampling event to Puget Sound Energy (PSE; Reference #34)
- Data for 17 wells located on The Outlet Collection property from the fourth quarter 2016 sampling event to WP Glimcher (Reference #35)
- Data for APP-057 from the fourth quarter 2016 sampling event to Washington State Department of Transportation (WSDOT; Reference #36).

Ecology project managers, Robin Harrover and Neal Hines, continued to attend regularly scheduled monthly conference calls² with Boeing, LAI, and the City of Algona's environmental consultant, ICF International (ICF). The primary purpose of these calls is to discuss technical aspects of the project scope and schedule, data results, and public outreach. Boeing and Ecology communication personnel also attend these calls.

Remedial Investigation Report

The draft remedial investigation (RI) report was submitted to Ecology in August 2016. Ecology provided comments on the RI report in November 2016. Boeing, LAI, and Ecology met several times in the fourth quarter 2016 to discuss the comments on the RI Report. In January 2017, LAI requested and Ecology provided additional documents related to the RI comments (References #2 and #3).

Boeing revised the RI report based on Ecology comments and submitted a revised draft RI Report on February 9, 2017 (Reference #11). Boeing also submitted a letter response to Ecology comments on the RI Report on February 9, 2017 (Reference #12). Ecology provided information about the final format needed for the RI Report for the public comment period on February 13, 2017 (Reference #13). Ecology approved the revised draft RI report with no changes for the public comment period on February 21, 2017 (Reference #16). Boeing, LAI, and Ecology met on February 23, 2017 to discuss RI Report submission needs for the public comment period (Reference #19). Boeing provided a web version of the RI Report to Ecology on February 27, 2017 (Reference #22). Boeing also mailed the hard copies of the RI Report to Ecology to be delivered on March 1, 2017. Ecology provided a copy of the cover letter that was included with the hard copies of the RI Report to Boeing on March 16, 2017

² The February conference call was cancelled.

(Reference #39). The RI public comment period began on March 8, 2017 and will run through May 8, 2017.

Other Reporting

Two outstanding supplemental RI reports were under Ecology's review at the end of the fourth quarter 2016: the 2015 surface water investigation report and the Tier II vapor intrusion assessment at Los Cabos. Boeing submitted a draft 2015 surface water investigation technical memorandum to Ecology in August 2016; Ecology provided comments on this report on March 13, 2017 (Reference #38). Boeing revised the report in accordance with Ecology comments and submitted a final version to Ecology on March 24, 2017 (Reference #42). Additionally, Ecology sent an email detailing the results of internal Ecology discussions and conclusions about water quality criteria applicable to the Auburn 400 Ponds, The Outlet Collection ponds, and conveyance ditches in Auburn and Algona (Reference #8). Boeing, LAI, and Ecology met to discuss surface water quality criteria on March 16, 2017 (Reference #40).

Boeing submitted a draft report summarizing the results of the Tier II vapor intrusion assessment at the Los Cabos Property in September 2016. Ecology provided approval of this report on January 30, 2017 (Reference #9). Boeing provided a finalized report to Ecology on January 31, 2017 (Reference #10).

Groundwater and Surface Water Sampling

Phase VII (i.e., seven) quarterly groundwater sampling took place from March 6 through March 10, 2017. The semiannual groundwater sampling data are provided in Attachment 1. The current monitoring well network is presented on Figure 1-1. A sampling matrix for the March 2017 semiannual sampling event is presented in Table 1-1. A complete summary of analytical results is presented in Table 1-2. Detected compounds are summarized in Table 1-3. In preparation for the quarterly groundwater sampling, Boeing requested a modification to sampling schedule for monitoring well AGW276 from quarterly to semiannual sampling (Reference #14). Ecology approved the modified sampling schedule at this well following the June 2017 annual groundwater sampling event (Reference #21).

Semiannual (wet season) surface water sampling took place on March 20, 2017. A complete summary of analytical results is presented in Table 1-4. In preparation for this sampling, Boeing recommended a one-time wet season sampling event at Mill Creek sampling location SW-18 (Reference #17). Ecology provided approval for the wet season surface water sampling locations on February 24, 2017 (Reference #20).

Algona Enhanced Natural Attenuation Pilot Test

The enhanced natural attenuation pilot test injection began on August 18, 2015 and was completed on September 4, 2015. Approximately 80,000 gallons of electron donor solution was injected into the

shallow water-bearing zone. Boeing is performing quarterly post-injection sampling to monitor the effectiveness of the pilot test injection. Boeing submitted a draft Algona Pilot Test report summarizing the first year of pilot test results to Ecology on March 1, 2017 (Reference #23). Boeing expects to receive comments from Ecology and finalize this report in the second quarter 2017.

The March 2017 quarterly sampling event was the sixth quarterly sampling event following injection activities. A summary of results from the pilot test monitoring wells is provided in Attachment 2. The pilot test injection and monitoring well locations are presented on Figure 2-1. Pilot test data are summarized in Table 2-1.

Post injection data indicates enhanced bioremediation is occurring at the three regularly monitored injection wells (IW34, IW36, and IW37) and at five downgradient monitoring wells (AGW269, AGW270, AGW271, AGW240-5, and AGW275). The primary indications of enhanced bioremediation consist of post-injection increases in total organic carbon (TOC) above baseline (<10 milligrams per liter [mg/L]), evidence of more reduced aquifer redox conditions, and changes in concentrations of trichloroethene (TCE), breakdown products, and/or end product. In March 2017, TOC concentrations continued to decrease from post-injection maximums but remained above baseline at the injection wells and at two downgradient, monitoring wells (AGW270 and AGW271). TOC at these wells ranged from 10.8 mg/L to 180 mg/L. TOC concentrations at the other monitoring wells (AGW240-5, AGW269, and AGW275) have declined back to baseline results following earlier post-injection increases.

Secondary effects of enhanced bioremediation have been observed at other wells post-injection. These secondary effects consist of increased methane concentrations and shifts in the concentrations of TCE, breakdown products, and/or end products without increases in TOC concentrations. These secondary indicators were observed at downgradient monitoring wells AGW240-1, AGW273, and AGW274.

Changes in vinyl chloride concentrations and detections of end products ethene and/or ethane have been observed at all of the wells with primary indications and secondary effects of enhanced bioremediation listed above. Ethene and ethane, which indicate complete reductive dechlorination, were not detected during baseline sampling at these wells, except at AGW240-1, AGW240-5, and AGW274.

Communications

Ecology and Boeing are working together to ensure that all stakeholders are aware of the progress of investigation and cleanup activities at the Boeing Auburn site. The City of Algona continues to be notified of all fieldwork occurring in Algona. The City of Algona's consultant, ICF, continues to participate in project conference calls with Boeing and Ecology and continues to review Algona-related deliverables (e.g., work plans and reports). Ecology also has communication conference calls with the City of Algona's Mayor, David Hill. Ecology shares information from these meetings with Boeing by distributing meeting notes and via discussions during project conference calls.

The majority of communications in the first quarter 2017 were related to the public comment period for the RI Report. Ecology posted several update notifications on their website about the public comment period (Reference #1, #37) and the open house (Reference #41). Ecology provided a number of documents related to the public comment period to Boeing for review on January 12, 2017 (Reference #4). Boeing provided comments on these documents on January 20, 2017 (Reference #6). Ecology also provided a draft of the RI report navigation tool for Boeing review and completion on February 22, 2017 (Reference #15). Boeing filled out the needed information for the navigation tool and provided comments to Ecology on February 22, 2017 (Reference #18).

Building 17-06 Ongoing Monitoring

Boeing is continuing to monitor petroleum hydrocarbons in well AGW128 in Building 17-06. Evidence of free-phase product was detected in the well in November 2016 and was not detected again until March 28, 2017 when 0.08 feet of product was measured. At that time, a sorbent sock was placed in the well to extract product. Boeing will continue to replace the sorbent socks and check for product in the well regularly. The pattern of free-phase product being absent from the well during the majority of the wet season, when groundwater is high, is consistent with monitoring in previous years.

Occurrence of Problems

None noted.

Projected Work for Next Reporting Period April through June 2017

Activities projected for the next reporting period pertain to the Algona pilot test, reporting, and ongoing monitoring of groundwater and surface water. Tasks during second quarter 2017 are expected to include:

- Finalizing the 2016 RI report after the public comment period ends and comments are compiled
- Finalizing the report on the first year of the Algona pilot test investigation
- Submitting a report on the natural attenuation assessment completed in 2016
- Submitting time series data related to passive diffusion bag sampling
- Preparation of the feasibility study work plan
- Conducting the annual groundwater sampling event in June 2017.

Other Significant Findings, Changes, and Contacts

Project contacts for Boeing will change in the second quarter. Steven Tochko retired from Boeing on March 31, 2017; Brian Anderson will be replacing Steve as the interim manager of Boeing's environmental health and safety remediation group. James Bet from Boeing will be transitioning project management responsibilities to Carl Bach on an interim basis starting in April 2017.

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If you have any questions regarding this status report, or need any other information, please do not hesitate to contact Boeing or LAI.

LANDAU ASSOCIATES, INC.



Jennifer Wynkoop
Senior Associate Scientist

SEF/JWW/jrc

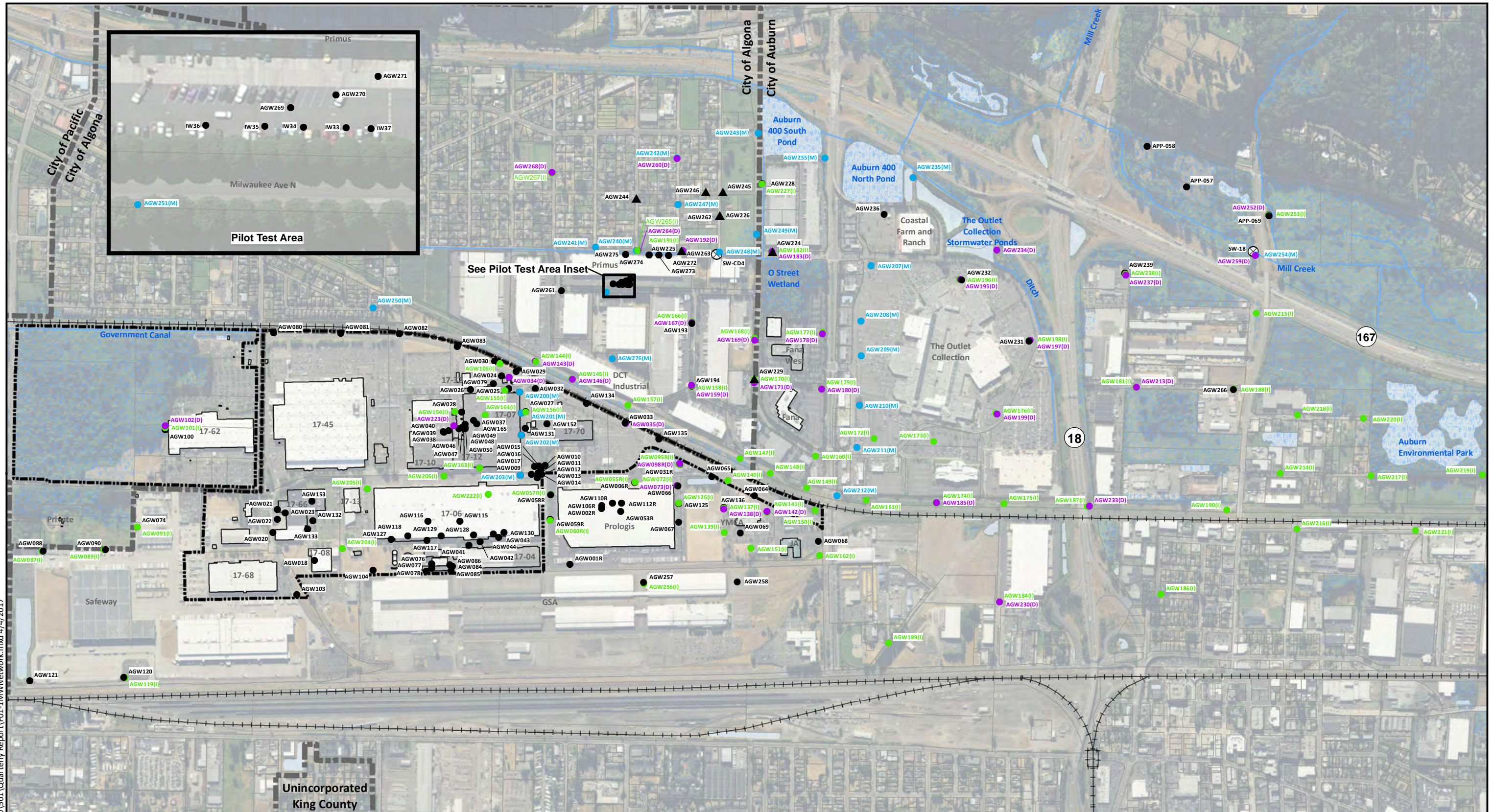
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cc: James Bet, Boeing (email only)
Carl Bach, Boeing (email only)
Megan Hilfer, Boeing (email only)
Nathan Jones, Boeing (email only)
James Swortz, Boeing
Brian Anderson, Boeing (email only)
Patrick McCabe, Boeing Realty (email only)
Christine Garrison, DCT Industrial (email only)
Steve Campbell, Prologis (email only)
Kim Lemon, Prologis (email only)
Neal Hines, Ecology (email only)
Jason Berry, YMCA Auburn (email only)

Attachments: Attachment 1: Groundwater and Surface Water Sampling Results
Attachment 2: Pilot Test Results

Groundwater and Surface Water Sampling Results

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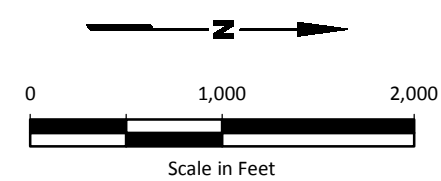


Notes

- 1. Well designations beginning with APP are installed and owned by WSDOT.
- 2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Semiannual Surface Water Sample
- Offsite Water Table Well
- Shallow Monitoring Well (2 to 30 ft BGS)
- Intermediate Monitoring Well (40 to 60 ft BGS)
- Deep Monitoring Well (80 to 100 ft BGS)
- Multi-Level Well
- Wetland Areas
- Water Bodies
- Waterways



Base Map Source: Geometrix 2003; Parcel Data Source: King County 2015; Aerial Photo Source: Esri World Imagery.

Boeing Auburn Auburn, Washington	Current Monitoring Well Network	Figure 1-1
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**Table 1-1
1Q2017 Groundwater Sample Matrix
Boeing Auburn Facility
Auburn, Washington**

Table 1-1
Page 1 of 2

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID	Sulfate by EPA 300.0	MEE by RSK-175	TOC by SM 5310C	VOCs by SW-846 8260C	VC by SW-846 8260C SIM
AGW191	AGW191-20170308	3/8/2017	PDN	1774956	8876050				X	X
AGW192	AGW192-20170308	3/8/2017	PDN	1774956	8876051				X	X
AGW225	AGW225-20170310	3/10/2017	N	1775776	8879721/8879722	X	X	X	X	X
AGW226	AGW226-20170307	3/7/2017	N	1774955	8876039/8876040	X	X	X	X	X
AGW240-1	AGW240-1-7-20170310	3/10/2017	N	1775776	8879713/8879714	X	X	X	X	X
AGW240-5	AGW240-5-28-20170310	3/10/2017	N	1775776	8879715/8879716	X	X	X	X	X
AGW240-5	AGW900-20170310	3/10/2017	FD	1775776	8879717/8879718	X	X	X	X	X
AGW244	AGW244-20170310	3/10/2017	N	1775776	8879719/8879720	X	X	X	X	X
AGW247-1	AGW247-1-6-20170307	3/7/2017	N	1774955	8876041/8876042	X	X	X	X	X
AGW247-5	AGW247-5-27-20170307	3/7/2017	N	1774955	8876043/8876044	X	X	X	X	X
AGW251-1	AGW251-1-8-20170307	3/7/2017	N	1774952	8876009/8876010	X	X	X	X	X
AGW251-2	AGW251-2-25-20170307	3/7/2017	N	1774952	8876011/8876012	X	X	X	X	X
AGW251-3	AGW251-3-40-20170307	3/7/2017	N	1774952	8876013/8876014	X	X	X	X	X
AGW262	AGW262-20170307	3/7/2017	PDN	1774952	8876015				X	X
AGW262	AGW901-20170307	3/7/2017	PDFD	1774952	8876016				X	X
AGW263	AGW263-20170308	3/8/2017	PDN	1774956	8876052				X	X
AGW269	AGW269-20170306	3/6/2017	N	1774105	8872436/8872437	X	X	X	X	X
AGW270	AGW270-20170306	3/6/2017	N	1774105	8872440/8872441	X	X	X	X	X
AGW271	AGW271-20170307	3/7/2017	N	1774952	8876005/8876006	X	X	X	X	X
AGW272	AGW272-20170306	3/6/2017	N	1774105	8872426/8872427	X	X	X	X	X
AGW273	AGW273-20170306	3/6/2017	N	1774105	8872428/8872429	X	X	X	X	X
AGW274	AGW274-20170306	3/6/2017	N	1774105	8872430/8872431	X	X	X	X	X
AGW275	AGW275-20170306	3/6/2017	N	1774105	8872432/8872433	X	X	X	X	X
AGW276-2	AGW276-2-25-20170308	3/8/2017	N	1774956	8876047				X	X
AGW276-5	AGW276-5-60-20170308	3/8/2017	N	1774956	8876048				X	X

Table 1-1
1Q2017 Groundwater Sample Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID	Sulfate by EPA 300.0	MEE by RSK-175	TOC by SM 5310C	VOCs by SW-846 8260C	VC by SW-846 8260C SIM
AGW276-6	AGW276-6-80-20170308	3/8/2017	N	1774956	8876049				X	X
IW34	IW34-20170306	3/6/2017	N	1774105	8872438/8872439	X	X	X	X	X
IW36	IW36-20170306	3/6/2017	N	1774105	8872434/8872435	X	X	X	X	X
IW37	IW37-20170307	3/7/2017	N	1774952	8876007/8876008	X	X	X	X	X

Abbreviations/Acronyms:

EPA = US Environmental Protection Agency
FD = field duplicate
ID = identification
MEE = methane, ethane, ethene
N = primary sample
PDN = passive diffusion primary sample
PDFD = passive diffusion field duplicate
SDG = sample delivery group
SIM = selected ion monitoring
TOC = total organic compound
VC = vinyl chloride
VOC = volatile organic compound

Table 1-2
1Q2017 Groundwater Analytical Results
Boeing Auburn Facility
Auburn, Washington

Sample Location: Zone: Laboratory SDG: Sample Date: Sample Type:	AGW191 Intermediate 1774956 3/8/2017 PDN	AGW192 Deep 1774956 3/8/2017 PDN	AGW225 Shallow 1775776 3/10/2017 N	AGW226 Shallow 1774955 3/7/2017 N	AGW240-1 Shallow-WT 1775776 3/10/2017 N	AGW240-5 Shallow 1775776 3/10/2017 N	AGW240-5 Shallow 1775776 3/10/2017 FD	AGW244 Shallow-WT 1775776 3/10/2017 N	AGW247-1 Shallow-WT 1774955 3/7/2017 N	AGW247-5 Shallow 1774955 3/7/2017 N	AGW251-1 Shallow-WT 1774952 3/7/2017 N	AGW251-2 Shallow 1774952 3/7/2017 N	AGW251-3 Intermediate 1774952 3/7/2017 N
Volatile Organic Compounds (µg/L; SW-846 8260C)													
Acetone	13 U	46 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2	0.2	0.2 U	0.2	0.2	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	0.2 U	0.2 U	4.3	3.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.7	0.2 U	0.2 U	0.7
trans-1,2-Dichloroethene	0.2 U	0.2 U	0.4	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.5	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Tetrachloroethene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	0.2 U	0.2 U	2.2	3.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Acetate	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.2 U	0.2 U	0.6	0.6	0.2 U	0.2 U	0.2 U	0.2 U	5.1	3.9	0.2 U	3.2	8.4
Vinyl Chloride (by 8260C SIM)	0.020 U	0.020 U	0.49	0.54	0.13	0.066	0.067	0.020 U	4.4	3.4	0.050	2.8	7.3
m,p-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Conventionals (mg/L; EPA 300.0, SM 5310C)													
Sulfate	--	--	3.4	6.7 J	1.0 U	1.0 U	1.0 U	15.2	1.0 U	1.0 U	203	1.0 U	1.0 U
Total Organic Carbon	--	--	4.9	2.5	8.9	5.8	6.3	5.4	10.2	5.5	23.3	7.3	7.2
Dissolved Gasses (µg/L; RSK-175)													
Ethane	--	--	1.0 U	1.0 U	6.2	9.2	8.8	1.0 U	1.0 U	1.5	1.0 U	1.4	1.0 U
Ethene	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.9	1.0 U
Methane	--	--	320	1,000	19,000	22,000	23,000	3.0 U	6,500	1,400	130	2,500	2,100

Table 1-2
1Q2017 Groundwater Analytical Results
Boeing Auburn Facility
Auburn, Washington

Sample Location: Zone: Laboratory SDG: Sample Date: Sample Type:	AGW262 Shallow-WT 1774952 3/7/2017 PDN	AGW262 Shallow-WT 1774952 3/7/2017 PDFD	AGW263 Shallow-WT 1774956 3/8/2017 PDN	AGW269 Shallow 1774105 3/6/2017 N	AGW270 Shallow 1774105 3/6/2017 N	AGW271 Shallow 1774952 3/7/2017 N	AGW272 Shallow 1774105 3/6/2017 N	AGW273 Shallow 1774105 3/6/2017 N	AGW274 Shallow 1774105 3/6/2017 N	AGW275 Shallow 1774105 3/6/2017 N	AGW276-2 Shallow 1774956 3/8/2017 N	AGW276-5 Intermediate 1774956 3/8/2017 N	AGW276-6 Deep 1774956 3/8/2017 N
Volatile Organic Compounds (µg/L; SW-846 8260C)													
Acetone	52 U	53 U	9.7 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	0.2 U	0.2 U	4.3	0.3	1.3	0.6	5.5	2.6	0.6	0.2 U	1.5	6.5	2.0
trans-1,2-Dichloroethene	0.2 U	0.2 U	0.4	0.2	0.3	0.2 U	0.6	0.4	0.2 U	0.2 U	0.2 U	0.4	0.2 U
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Tetrachloroethene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.5	0.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	0.2 U	0.2 U	1.5	0.2 U	0.2 U	0.2 U	0.4	0.2 U	0.2 U	0.2 U	0.3	0.2 U	3.5
Trichlorofluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Acetate	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.2 U	0.2 U	0.4	5.4	6.4	3.3	1.3	5.0	4.4	0.2 U	1.0	1.0	0.2 U
Vinyl Chloride (by 8260C SIM)	0.040	0.039	0.38	5.4	6.4	3.2	1.2	4.7	4.3	0.057	0.94	0.90	0.13
m,p-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Conventionals (mg/L; EPA 300.0, SM 5310C)													
Sulfate	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--
Total Organic Carbon	--	--	--	8.9	29.6	15.0	4.3	6.4	7.6	8.5	--	--	--
Dissolved Gasses (µg/L; RSK-175)													
Ethane	--	--	--	4.6	1.0 U	6.3	1.0 U	1.0 U	1.0	5.1	--	--	--
Ethene	--	--	--	1.0	1.1	1.0 U	1.0 U	1.0 U	1.1	1.0 U	--	--	--
Methane	--	--	--	23,000	29,000	34,000	500	1,200	1,500	14,000	--	--	--

Table 1-2
1Q2017 Groundwater Analytical Results
Boeing Auburn Facility
Auburn, Washington

Sample Location:	IW34	IW36	IW37
Zone:	Shallow	Shallow	Shallow
Laboratory SDG:	1774105	1774105	1774952
Sample Date:	3/6/2017	3/6/2017	3/7/2017
Sample Type:	N	N	N
Volatile Organic Compounds (µg/L; SW-846 8260C)			
Acetone	50 U	5.0 U	54
Benzene	2.0 U	0.2 U	0.2 U
Bromodichloromethane	5.0 U	0.5 U	0.5 U
Bromoform	5.0 U	0.5 U	0.5 U
Bromomethane	5.0 U	0.5 U	0.5 U
2-Butanone	50 U	5.0 U	100
Carbon Disulfide	5.0 U	0.5 U	0.5 U
Carbon Tetrachloride	2.0 U	0.2 U	0.2 U
Chlorobenzene	5.0 U	0.5 U	0.5 U
Chloroethane	5.0 U	0.5 U	0.5 U
Chloroform	2.0 U	0.2 U	0.2 U
Chloromethane	5.0 U	0.5 U	0.5 U
Dibromochloromethane	5.0 U	0.5 U	0.5 U
1,1-Dichloroethane	5.0 U	0.5 U	0.5 U
1,2-Dichloroethane	2.0 U	0.2 U	0.2 U
1,1-Dichloroethene	0.040 (a) U	0.2 U	0.2 U
cis-1,2-Dichloroethene	3.6	1.3	2.5
trans-1,2-Dichloroethene	2.0 U	0.4	0.2 U
1,2-Dichloropropane	5.0 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	2.0 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	2.0 U	0.2 U	0.2 U
Ethylbenzene	5.0 U	0.5 U	0.5 U
2-Hexanone	50 U	5.0 U	5.0 U
4-Methyl-2-Pentanone (MIBK)	50 U	5.0 U	5.0 U
Methylene Chloride	5.0 U	0.5 U	0.5 U
Styrene	5.0 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	2.0 U	0.2 U	0.2 U
Tetrachloroethene	0.040 (a) U	0.2 U	0.2 U
Toluene	330	0.2 U	0.5
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0 U	0.5 U	0.5 U
1,1,1-Trichloroethane	5.0 U	0.5 U	0.5 U
1,1,2-Trichloroethane	2.0 U	0.2 U	0.2 U
Trichloroethene	0.16 (a)	0.2 U	0.2 U
Trichlorofluoromethane	5.0 U	0.5 U	0.5 U
Vinyl Acetate	5.0 U	0.5 U	0.5 U
Vinyl Chloride	2.0 U	6.1	0.2 U
Vinyl Chloride (by 8260C SIM)	1.2	5.8	0.17
m,p-Xylene	5.0 U	0.5 U	0.5 U
o-Xylene	5.0 U	0.5 U	0.5 U
Conventionals (mg/L; EPA 300.0, SM 5310C)			
Sulfate	1.0 U	1.0 U	1.0 U
Total Organic Carbon	88.0	10.8	180
Dissolved Gasses (µg/L; RSK-175)			
Ethane	1.0 U	1.0 U	1.0 U
Ethene	1.1	1.0 U	1.0 U
Methane	24,000	2,500	27,000

Notes:

(a) Results presented are from analysis by Method 8260C SIM. Samples were reanalyzed by Method 8260C SIM in order to meet data quality objectives due to elevated reporting limits (2.0 µg/L) in the Method 8260C run.

Bold text indicates detected analyte.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The compound was not detected at the reported concentration.

Abbreviations/Acronyms:

EPA = US Environmental Protection Agency

FD = field duplicate

µg/L = micrograms per liter

mg/L = milligrams per liter

N = primary sample

PDFD = passive diffusion field duplicate

PDN = passive diffusion primary sample

SDG = sample delivery group

SIM = selected ion monitoring

WT = water table

Table 1-3
1Q2017 Groundwater Detects
Boeing Auburn Facility
Auburn, Washington

Sample Location:	AGW191	AGW192	AGW225	AGW226	AGW240-1	AGW240-5	AGW240-5	AGW244	AGW247-1	AGW247-5	AGW251-1	AGW251-2	AGW251-3
Zone:	Intermediate	Deep	Shallow	Shallow	Shallow-WT	Shallow	Shallow	Shallow-WT	Shallow-WT	Shallow	Shallow-WT	Shallow	Intermediate
Laboratory SDG:	1774956	1774956	1775776	1774955	1775776	1775776	1775776	1775776	1774955	1774955	1774952	1774952	1774952
Sample Date:	3/8/2017	3/8/2017	3/10/2017	3/7/2017	3/10/2017	3/10/2017	3/10/2017	3/10/2017	3/7/2017	3/7/2017	3/7/2017	3/7/2017	3/7/2017
Sample Type:	PDN	PDN	N	N	N	N	FD	N	N	N	N	N	N
Volatile Organic Compounds (µg/L; SW-846 8260C)													
Acetone	13 U	46 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	0.2 U	0.2 U	4.3	3.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.7	0.2 U	0.2 U	0.7
trans-1,2-Dichloroethene	0.2 U	0.2 U	0.4	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.5	0.2 U	0.2 U	0.2 U
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	0.2 U	0.2 U	2.2	3.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	0.2 U	0.2 U	0.6	0.6	0.2 U	0.2 U	0.2 U	0.2 U	5.1	3.9	0.2 U	3.2	8.4
Vinyl Chloride (by 8260C SIM)	0.020 U	0.020 U	0.49	0.54	0.13	0.066	0.067	0.020 U	4.4	3.4	0.050	2.8	7.3
Conventionals (mg/L; EPA 300.0, SM 5310C)													
Sulfate	--	--	3.4	6.7 J	1.0 U	1.0 U	1.0 U	15.2	1.0 U	1.0 U	203	1.0 U	1.0 U
Total Organic Carbon	--	--	4.9	2.5	8.9	5.8	6.3	5.4	10.2	5.5	23.3	7.3	7.2
Dissolved Gasses (µg/L; RSK-175)													
Ethane	--	--	1.0 U	1.0 U	6.2	9.2	8.8	1.0 U	1.0 U	1.5	1.0 U	1.4	1.0 U
Ethene	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.9	1.0 U
Methane	--	--	320	1,000	19,000	22,000	23,000	3.0 U	6,500	1,400	130	2,500	2,100

Table 1-3
1Q2017 Groundwater Detects
Boeing Auburn Facility
Auburn, Washington

Sample Location:	AGW262	AGW262	AGW263	AGW269	AGW270	AGW271	AGW272	AGW273	AGW274	AGW275	AGW276-2	AGW276-5	AGW276-6
Zone:	Shallow-WT	Shallow-WT	Shallow-WT	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Intermediate	Deep
Laboratory SDG:	1774952	1774952	1774956	1774105	1774105	1774952	1774105	1774105	1774105	1774105	1774956	1774956	1774956
Sample Date:	3/7/2017	3/7/2017	3/8/2017	3/6/2017	3/6/2017	3/7/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/8/2017	3/8/2017	3/8/2017
Sample Type:	PDN	PDFD	PDN	N	N	N	N	N	N	N	N	N	N
Volatile Organic Compounds (µg/L; SW-846 8260C)													
Acetone	52 U	53 U	9.7 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	0.2 U	0.2 U	4.3	0.3	1.3	0.6	5.5	2.6	0.6	0.2 U	1.5	6.5	2.0
trans-1,2-Dichloroethene	0.2 U	0.2 U	0.4	0.2	0.3	0.2 U	0.6	0.4	0.2 U	0.2 U	0.2 U	0.4	0.2 U
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.5	0.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	0.2 U	0.2 U	1.5	0.2 U	0.2 U	0.2 U	0.4	0.2 U	0.2 U	0.2 U	0.3	0.2 U	3.5
Vinyl Chloride	0.2 U	0.2 U	0.4	5.4	6.4	3.3	1.3	5.0	4.4	0.2 U	1.0	1.0	0.2 U
Vinyl Chloride (by 8260C SIM)	0.040	0.039	0.38	5.4	6.4	3.2	1.2	4.7	4.3	0.057	0.94	0.90	0.13
Conventionals (mg/L; EPA 300.0, SM 5310C)													
Sulfate	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--
Total Organic Carbon	--	--	--	8.9	29.6	15.0	4.3	6.4	7.6	8.5	--	--	--
Dissolved Gasses (µg/L; RSK-175)													
Ethane	--	--	--	4.6	1.0 U	6.3	1.0 U	1.0 U	1.0	5.1	--	--	--
Ethene	--	--	--	1.0	1.1	1.0 U	1.0 U	1.0 U	1.1	1.0 U	--	--	--
Methane	--	--	--	23,000	29,000	34,000	500	1,200	1,500	14,000	--	--	--

**Table 1-3
1Q2017 Groundwater Detects
Boeing Auburn Facility
Auburn, Washington**

Sample Location:	IW34	IW36	IW37
Zone:	Shallow	Shallow	Shallow
Laboratory SDG:	1774105	1774105	1774952
Sample Date:	3/6/2017	3/6/2017	3/7/2017
Sample Type:	N	N	N
Volatile Organic Compounds (µg/L; SW-846 8260C)			
Acetone	50 U	5.0 U	54
2-Butanone	50 U	5.0 U	100
1,2-Dichloroethane	2.0 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	3.6	1.3	2.5
trans-1,2-Dichloroethene	2.0 U	0.4	0.2 U
Toluene	330	0.2 U	0.5
Trichloroethene	0.16 (a)	0.2 U	0.2 U
Vinyl Chloride	2.0 U	6.1	0.2 U
Vinyl Chloride (by 8260C SIM)	1.2	5.8	0.17
Conventionals (mg/L; EPA 300.0, SM 5310C)			
Sulfate	1.0 U	1.0 U	1.0 U
Total Organic Carbon	88.0	10.8	180
Dissolved Gasses (µg/L; RSK-175)			
Ethane	1.0 U	1.0 U	1.0 U
Ethene	1.1	1.0 U	1.0 U
Methane	24,000	2,500	27,000

Notes:

Bold text indicates detected analyte.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The compound was not detected at the reported concentration.

(a) Results presented are from analysis by Method 8260C SIM. Samples were reanalyzed by Method 8260C SIM in order to meet data quality objectives due to elevated reporting limits (2.0 µg/L) in the Method 8260C run.

Abbreviations/Acronyms:

EPA = US Environmental Protection Agency

FD = field duplicate

µg/L = micrograms per liter

mg/L = milligrams per liter

N = primary sample

PDFD = passive diffusion field duplicate

PDN = passive diffusion primary sample

SDG = sample delivery group

SIM = selected ion monitoring

WT = water table

Table 1-4
1Q2017 Surface Water Analytical Results
Boeing Auburn Facility
Auburn, Washington

Sample Location:	SW-18	SW-18	SW-CD4
Laboratory SDG:	1779337	1779337	1779337
Sample Date:	3/20/2017	3/20/2017	3/20/2017
Sample Type:	N	FD	N
Volatile Organic Compounds (µg/L; SW-846 8260C)			
Acetone	5.0 U	5.0 U	5.0 U
Benzene	0.2 U	0.2 U	0.2 U
Bromodichloromethane	0.5 U	0.5 U	0.5 U
Bromoform	0.5 U	0.5 U	0.5 U
Bromomethane	0.5 U	0.5 U	0.5 U
2-Butanone	5.0 U	5.0 U	5.0 U
Carbon Disulfide	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	0.2 U	0.2 U	0.2 U
Chlorobenzene	0.5 U	0.5 U	0.5 U
Chloroethane	0.5 U	0.5 U	0.5 U
Chloroform	0.2 U	0.2 U	0.2 U
Chloromethane	0.5 U	0.5 U	0.5 U
Dibromochloromethane	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	0.2 U	0.2 U	0.6
trans-1,2-Dichloroethene	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	0.2 U	0.2 U	0.2 U
Ethylbenzene	0.5 U	0.5 U	0.5 U
2-Hexanone	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone (MIBK)	5.0 U	5.0 U	5.0 U
Methylene Chloride	0.5 U	0.5 U	0.5 U
Styrene	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.2 U	0.2 U	0.2 U
Tetrachloroethene	0.2 U	0.2 U	0.2 U
Toluene	0.2 U	0.2 U	0.2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.2 U	0.2 U	0.2 U
Trichloroethene	0.2 U	0.2 U	0.5
Trichlorofluoromethane	0.5 U	0.5 U	0.5 U
Vinyl Acetate	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.2 U	0.2 U	0.2 J
Vinyl Chloride (by 8260C SIM)	0.020 U	0.020 U	0.19
m,p-Xylene	0.5 U	0.5 U	0.5 U
o-Xylene	0.5 U	0.5 U	0.5 U

Notes:

Bold text indicates detected analyte.
U = The compound was not detected at the reported concentration.

Abbreviations/Acronyms:

µg/L = micrograms per liter
FD = field duplicate
N = primary sample

SDG = sample delivery group
SIM = selected ion monitoring

Pilot Test Results

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Legend

- ▲ Offsite Water Table Well
- Shallow Monitoring Well
- Shallow Observation Well (not part of ongoing monitoring)
- ⓪ Shallow Injection Well
- ⓪ Shallow Injection Well (not part of ongoing monitoring)
- Waterways

Notes

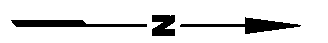
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 120 240



Scale in Feet

Base map source: Geometrix 2003; Aerial Photo Source: Esri World Imagery; Parcel Data Source: King County GIS 2016



**Table 2-1
Data Summary
Algona Bioremediation Pilot Test
Boeing Auburn Facility**

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds									Aquifer Redox Conditions							Donor Indicators		Total cVOC (nmol/L)	Molar Fraction					
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)	pH		PCE	TCE	Total DCE	VC	Ethene+ Ethane	
AGW225	WT	12/1/2014	-277	<0.2	2.3	5.7	0.6	<0.2	0.5	<1.0	<1.0	<1.0	1.20	-76.8	2.6	4.8	<0.16	290	Fe/S	3.7	6.55	90	0.00	0.19	0.72	0.09	0.00	
		8/14/2015	-21	<0.2	1.9	5.1	0.5	<0.2	0.49	<1.0	<1.0	<1.0	1.39	213.3	6.4	4.1	<0.16	360	Fe/S	4.2	6.48	80	0.00	0.18	0.72	0.10	0.00	
		12/8/2015	95	<0.2	2.1	4.8	0.5	<0.2	0.5	<1.0	<1.0	<1.0	2.0	-54.7	4.0	4.2	<0.16	170	Fe/S	3.8	6.93	79	0.00	0.20	0.70	0.10	0.00	
		3/2/2016	180	<0.2	1.9	4.6	0.4	<0.2	0.54	<1.0	<1.0	<1.0	0.73	-14	2.5	3.3	<0.16	420	Fe/S	4.3	6.34	75	0.00	0.19	0.69	0.12	0.00	
		6/23/2016	293	<0.2	2.3	4.4	0.5	<0.2	0.5	<1.0	<1.0	<1.0	3.40	271	2.0	4.9	<0.10	330	Fe/S	3.6	6.00	76	0.00	0.23	0.66	0.11	0.00	
		9/8/2016	370	<0.2	2.0	4.4	0.5	<0.2	0.46	<1.0	<1.0	<1.0	0.48	-6.0	2.5	5.7	<0.10	340	Fe/S	4.3	6.32	73	0.00	0.21	0.69	0.10	0.00	
		12/2/2016	455	<0.2	2.4	4.8	0.5	<0.2	0.44	<1.0	<1.0	--	0.96	4.5	5.0	4.7	--	280	Fe/S	3.4	6.78	80	0.00	0.23	0.68	0.09	0.00	
3/10/2017	553	<0.2	2.2	4.3	0.4	<0.2	0.6	<1.0	<1.0	--	0.26	71.5	2.0	3.4	--	320	Fe/S	4.9	6.72	75	0.00	0.22	0.65	0.13	0.00			
AGW226	WT	8/14/2015	-21	<0.2	4.1	3.1	0.3	<0.2	0.56	<1.0	<1.0	<1.0	0.55	-12.2	2.0	8.0	<0.16	970	S/M	2.6	6.17	75	0.00	0.41	0.47	0.12	0.00	
		12/2/2015	89	<0.2	0.5	1.8	<0.2	<0.2	0.4	<1.0	<1.0	<1.0	7.29	-26.1	2.0	7.8	<0.16	1000	S/M	5.5	5.07	29	0.00	0.13	0.65	0.22	0.00	
		3/3/2016	181	<0.2	3.6	3.1	0.3	<0.2	0.54	<1.0	<1.0	<1.0	0.54	-28.45	2.5	6.5	<0.16	1300	S/M	2.4	6.36	71	0.00	0.39	0.49	0.12	0.00	
		6/21/2016	291	<0.2	1	4.8	0.3	<0.2	0.7	<1.0	<1.0	<1.0	0.44	177	2.0	7.4	<0.10	1200	S/M	2.7	5.91	71	0.00	0.11	0.74	0.16	0.00	
		9/8/2016	370	<0.2	1.1	3.8	0.3	<0.2	0.90	<1.0	<1.0	<1.0	0.70	82.5	0.0	17.6	<0.10	1100	S/M	4.2	6.22	65	0.00	0.13	0.65	0.22	0.00	
		12/7/2016	460	<0.2	2.6	4.0	0.3	<0.2	0.73	<1.0	<1.0	--	1.67	45.1	3.0	7.6	--	920	S/M	2.4	6.63	76	0.00	0.26	0.58	0.15	0.00	
		3/7/2016	185	<0.2	3.6	3.5	0.3	<0.2	0.60	<0.1	<0.1	--	0.48	-31.2	4.0	6.7	--	1000	S/M	2.5	6.63	76	0.00	0.36	0.51	0.13	0.00	
AGW240-1	WT	12/1/2014	-277	<0.020	<0.2	<0.2	0.3	<0.2	0.3	<1.0	3.5	<1.0	1.32	-169.5	2.7	<1.0	<0.16	3200	M	8.6	6.62	8	0.00	0.00	0.02	0.04	0.94	
		8/14/2015	-21	<0.020	<0.2	<0.2	0.2	<0.2	0.049	<1.0	2.5	<1.0	0.54	-67.3	1.8	<1.0	<0.16	2900	M	8.1	6.45	3	0.00	0.00	0.02	0.01	0.97	
		12/7/2015	94	<0.02	<0.2	<0.2	<0.2	<0.2	0.3	<1.0	3.1	<1.0	1.89	-83.3	2.5	<1.0	<0.16	2800	M	7.5	4.51	5	0.00	0.00	0.00	0.04	0.96	
		3/3/2016	181	<0.2	<0.2	<0.2	<0.2	<0.2	1	<1.0	3.2	<1.0	0.73	-13.23	5.0	<1.0	<0.16	2900	M	7.9	6.60	16	0.00	0.00	0.00	0.13	0.87	
		6/15/2016	285	<0.2	<0.2	<0.2	<0.2	<0.2	0.11	<1.0	3.4	<1.0	1.9	-42.5	1.5	<1.0	<0.10	5700	M	7.5	6.44	2	0.00	0.00	0.00	0.02	0.98	
		9/8/2016	370	<0.2	<0.2	<0.2	<0.2	<0.2	0.091	<1.0	4.2	<1.0	0.60	-45.4	4.5	<1.0	<0.10	8900	M	7.7	6.44	1	0.00	0.00	0.00	0.01	0.99	
		11/30/2016	453	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<1.0	2.5	--	0.64	-22.4	7.0	<1.0	--	14000	M	7.3	6.84	2	0.00	0.00	0.00	0.02	0.98	
3/10/2017	553	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<1.0	6.2	--	0.50	83.4	1.5	<1.0	--	19000	M	8.9	6.45	2	0.00	0.00	0.00	0.01	0.99			
AGW240-5	SZ	12/1/2014	-277	<0.020	<0.2	4.9	0.7	<0.2	6.6	<1.0	1.0	<1.0	0.51	-116.1	2.8	<1.0	<0.16	2200	M	6.6	6.67	163	0.00	0.00	0.29	0.54	0.17	
		8/14/2015	-21	<0.020	<0.2	3.3	0.4	<0.2	5.6	1.2	<1.0	<1.0	0.77	-41.7	2.8	<1.0	<0.16	2000	M	5.4	6.19	128	0.00	0.00	0.22	0.53	0.25	
		12/7/2015	94	<0.02	<0.2	1.8	0.3	<0.2	4.3	1.3	<1.0	1.3	<1.0	0.81	-86.8	6.0	<1.0	<0.16	2200	M	6.5	4.01	90	0.00	0.00	0.12	0.38	0.50
		3/3/2016	181	<0.2	<0.2	1.7	0.3	<0.2	3.1	<1.0	<1.0	<1.0	0.55	-19.15	6.0	<1.0	<0.16	1700	M	6.9	6.67	70	0.00	0.00	0.29	0.71	0.00	
		6/15/2016	285	<0.2	<0.2	0.3	0.3	<0.2	2.5	2	2.3	<1.0	0.33	-40.8	3.0	<1.0	<0.10	8100	M	20.2	6.4	46	0.00	0.00	0.03	0.21	0.76	
		9/8/2016	370	<0.2	<0.2	<0.2	0.2	<0.2	0.20	<1.0	3.7	<1.0	0.36	-48.8	4.0	<1.0	<0.10	31000	M	5.7	6.46	5	0.00	0.00	0.02	0.02	0.96	
		11/30/2016	453	<0.2	<0.2	<0.2	0.2	<0.2	0.10	<1.0	3.7	--	0.51	-34.4	8.0	<1.0	--	28000	M	6.2	6.92	4	0.00	0.00	0.02	0.01	0.97	
3/10/2017	553	<0.2	<0.2	<0.2	<0.2	<0.2	0.066	<1.0	9.2	--	0.24	58.7	4.0	<1.0	--	22000	M	5.8	6.65	1	0.00	0.00	0.00	0.00	1.00			
AGW244	WT	12/1/2016	454	<0.2	<0.2	<0.2	<0.2	<0.2	<0.02	<1.0	<1.0	--	0.96	20.1	0.0	13.2	--	54	N	3.8	6.97	0	0.00	0.00	0.00	0.00	0.00	
		3/10/2017	553	<0.2	<0.2	<0.2	<0.2	<0.2	<0.02	<1.0	<1.0	--	6.3	88	0.5	15.2	--	<3.0	Fe	5.4	6.57	0	0.00	0.00	0.00	0.00	0.00	
AGW247-1	WT	12/2/2014	-276	<0.020	<0.2	0.8	<0.2	<0.2	0.17	<1.0	1.0	<1.0	0.64	-76.1	2.5	6.3	<0.16	3600	S/M	57.4	6.19	11	0.00	0.00	0.19	0.06	0.75	
		8/14/2015	-21	<0.020	<0.2	3.4	0.4	<0.2	2.5	<1.0	<1.0	<1.0	0.49	-61.4	3.4	<1.0	<0.16	5200	M	9.6	6.36	79	0.00	0.00	0.49	0.51	0.00	
		12/2/2015	89	<0.020	<0.2	1.5	0.3	<0.2	2.1	<1.0	<1.0	<1.0	4.32	-101.2	5.5	1.1	<0.16	6900	M	13.2	5.41	52	0.00	0.00	0.36	0.64	0.00	
		3/2/2016	180	<0.2	<0.2	0.9	0.4	<0.2	4	<1.0	<1.0	<1.0	0.44	-32.23	6.0	<1.0	<0.16	7100	M	9.4	6.54	77	0.00	0.00	0.17	0.83	0.00	
		6/15/2016	285	<0.2	<0.2	<0.2	0.5	<0.2	4.9	<1.0	<1.0	<1.0	0.43	-49.5	2.5	<1.0	<0.10	6100	M	9.7	6.38	84	0.00	0.00	0.06	0.94	0.00	
		9/8/2016	370	<0.2	<0.2	<0.2	0.4	<0.2	4.7	<1.0	<1.0	<1.0	0.62	-48.6	2.5	1.3	<0.10	4200	M	11.1	6.32	79	0.00	0.00	0.05	0.95	0.00	
		12/1/2016	454	<0.2	<0.2	<0.2	0.3	<0.2	4.0	<1.0	<1.0	--	0.74	-8.5	5.0	<1.0	--	4200	M	13.2	6.65	67	0.00	0.00	0.05	0.95	0.00	
3/7/2017	550	<0.2	<0.2	<0.2	0.4	<0.2	5.1	<1.0	<1.0	--	0.61	-47.3	4.5	<1.0	--	6500	M	10.2	6.53	86	0.00	0.00	0.05	0.95	0.00			
AGW247-5	SZ	12/2/2014	-276	<0.020	<0.2	6.6	0.7	<0.2	1.7	<1.0	1.7	<1.0	0.22	-136	5.0	<1.0	<0.16	4000	M	21.3	6.89	103	0.00	0.00	0.47	0.17	0.36	
		8/14/2015	-21	<0.020	<0.2	4.7	0.8	<0.2	3.0	<1.0	<1.0	<1.0	0.54	-90.3	2.4	1.1	<0.16	3400	M	6.2	6.45	105	0.00	0.00	0.54	0.46	0.00	
		12/2/2015	89	<0.020	<0.2	2.9	0.7	<0.2	4.0	<1.0	<1.0	<1.0	4.76	-97.4	4.5	<1.0	<0.16	2100	M	6.7	5.29	101	0.00	0.00	0.37			

Table 2-1
Data Summary
Algona Bioremediation Pilot Test
Boeing Auburn Facility

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds									Aquifer Redox Conditions							Donor Indicators		Total cVOC (nmol/L)	Molar Fraction					
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)	pH		PCE	TCE	Total DCE	VC	Ethene+ Ethane	
AGW251-1	WT	12/2/2014	-276	<0.020	<0.2	<0.2	<0.2	<0.2	<0.2	1.8	2.2	5.8	<1.0	0.83	-73.1	3.4	37.2	<0.16	16000	S/M	27.3	6.65	29	0.00	0.00	0.00	0.10	0.90
		8/14/2015	-21	<0.020	<0.2	<0.2	<0.2	<0.2	0.62	<1.0	<1.0	<1.0	<1.0	4.51	208.8	6.8	1.3	<0.16	140	Fe/S	16.9	6.63	10	0.00	0.00	0.00	1.00	0.00
		12/3/2015	90	<0.020	<0.2	<0.2	<0.2	<0.2	0.23	<1.0	<1.0	<1.0	<1.0	12.0	-60.5	1.0	280	<0.16	440	Fe/S	8.9	6.08	4	0.00	0.00	0.00	1.00	0.00
		3/3/2016	181	<0.2	<0.2	<0.2	<0.2	<0.2	0.15	<1.0	<1.0	<1.0	<1.0	0.85	41.55	1.0	117	<0.16	560	Fe/S	33.8	6.18	2	0.00	0.00	0.00	1.00	0.00
		6/20/2016	290	<0.2	<0.2	<0.2	<0.2	<0.2	1.1	<1.0	<1.0	<1.0	<1.0	0.83	124.4	2.0	20.7	<2.0	1800	S/M	11	6.33	18	0.00	0.00	0.00	1.00	0.00
		9/6/2016	368	<0.2	<0.2	<0.2	<0.2	<0.2	1.6	1.3	<1.0	<1.0	<1.0	2.19	-78.2	4.5	4.3	<0.10	1100	S/M	13.1	6.58	26	0.00	0.00	0.00	0.36	0.64
		12/2/2016	455	<0.2	<0.2	<0.2	<0.2	<0.2	0.037	<1.0	<1.0	--	--	1.71	27.9	1.0	281	--	59	Fe/S	11.5	6.74	1	0.00	0.00	0.00	1.00	0.00
3/7/2017	550	<0.2	<0.2	<0.2	<0.2	<0.2	0.050	<1.0	<1.0	--	--	0.78	-27.7	2.0	203	--	130	Fe	23.3	6.56	1	0.00	0.00	0.00	1.00	0.00		
AGW251-2	SZ	12/2/2014	-276	<0.020	<0.2	2.0	0.2	<0.2	4.7	3.2	5.9	<1.0	0.49	-141.9	4.0	1.1	<0.16	8500	M	11.2	6.92	98	0.00	0.00	0.06	0.18	0.76	
		8/14/2015	-21	<0.020	<0.2	<0.2	<0.2	<0.2	5.7	2.2	1.6	<1.0	0.94	210.6	5.2	2.1	<0.16	4800	M	7.1	6.71	91	0.00	0.00	0.00	0.41	0.59	
		12/3/2015	90	<0.020	<0.2	<0.2	<0.2	<0.2	3.9	1.8	1.1	<1.0	13.38	-109.1	6.0	1.2	<0.16	3900	M	6.8	6.06	62	0.00	0.00	0.00	0.38	0.62	
		3/3/2016	181	<0.2	<0.2	<0.2	<0.2	<0.2	4.9	1.9	1.1	<1.0	0.56	-99.13	1.5	1.9	<0.16	2900	M	7.2	6.75	78	0.00	0.00	0.00	0.43	0.57	
		6/20/2016	290	<0.2	<0.2	<0.2	<0.2	<0.2	2.7	2.7	1.1	<1.0	0.56	48.8	2.0	<1.0	<2.0	3700	M	8.1	6.46	43	0.00	0.00	0.00	0.25	0.75	
		9/8/2016	370	<0.2	<0.2	<0.2	<0.2	<0.2	1.8	2.6	1.3	<1.0	0.73	-81.8	2.0	<1.0	<0.10	3300	M	8.1	6.67	29	0.00	0.00	0.00	0.17	0.83	
		12/2/2016	455	<0.2	<0.2	<0.2	<0.2	<0.2	2.3	2.1	<1.0	--	--	1.09	-56.9	5.0	<1.0	--	2800	M	6.8	7.08	37	0.00	0.00	0.00	0.33	0.67
3/7/2017	550	<0.2	<0.2	<0.2	<0.2	<0.2	3.2	1.9	1.4	--	--	0.69	-80	5.5	<1.0	--	2500	M	7.3	6.81	51	0.00	0.00	0.00	0.31	0.69		
AGW251-3	IZ	12/2/2014	-276	<0.020	<0.2	5.9	0.5	<0.2	4.3	<1.0	1.2	<1.0	1.09	-112.2	3.1	<1.0	<0.16	2500	M	7.6	6.67	135	0.00	0.00	0.38	0.39	0.23	
		8/14/2015	-21	<0.020	<0.2	3.0	0.2	<0.2	5.0	<1.0	<1.0	<1.0	1.51	209.7	5.8	<1.0	<0.16	2200	M	6.3	6.39	113	0.00	0.00	0.29	0.71	0.00	
		12/3/2015	90	<0.020	<0.2	3.0	<0.2	<0.2	5.0	<1.0	<1.0	<1.0	10.63	-93.7	6.0	<1.0	<0.16	2100	M	6.1	5.73	111	0.00	0.00	0.28	0.72	0.00	
		3/3/2016	181	<0.2	<0.2	1.2	<0.2	<0.2	7.8	<1.0	<1.0	<1.0	0.59	-50.43	2.0	<1.0	<0.16	2600	M	7.3	6.42	137	0.00	0.00	0.09	0.91	0.00	
		6/20/2016	290	<0.2	<0.2	1.2	<0.2	<0.2	6.1	<1.0	<1.0	<1.0	0.45	78.3	2.0	<1.0	<2.0	2600	M	8.1	6.26	110	0.00	0.00	0.11	0.89	0.00	
		9/8/2016	370	<0.2	<0.2	0.9	<0.2	<0.2	5.1	<1.0	<1.0	<1.0	0.68	-38.6	3.5	<1.0	<0.10	2100	M	6.7	6.43	91	0.00	0.00	0.10	0.90	0.00	
		12/2/2016	455	<0.2	<0.2	1.2	<0.2	<0.2	6.8	<1.0	<1.0	--	--	1.05	-21.2	5.0	<1.0	--	2000	M	6.1	6.85	121	0.00	0.00	0.10	0.90	0.00
3/7/2017	550	<0.2	<0.2	0.7	<0.2	<0.2	8.4	<1.0	<1.0	--	--	0.75	-50.8	5.0	<1.0	--	2100	M	7.2	6.64	142	0.00	0.00	0.05	0.95	0.00		
AGW269	SZ	8/14/2015	-21	<0.020	<0.2	6.7	0.7	<0.2	3.2	<1.0	<1.0	<1.0	0.52	-95.9	1.0	1.9	<0.16	1300	M	9.1	6.66	128	0.00	0.00	0.60	0.40	0.00	
		12/7/2015	94	<0.020	0.2	7.4	1.2	<0.2	5.1	<1.0	1.7	<1.0	0.36	-49.0	4.0	<1.0	<0.16	26000	M	122	6.37	172	0.00	0.01	0.39	0.36	0.25	
		3/2/2016	180	<0.2	<0.2	6.5	1	<0.2	5.2	<1.0	2	<1.0	0.27	-43.8	2.0	<1.0	<0.16	15000	M	8.5	6.35	161	0.00	0.00	0.34	0.37	0.29	
		6/16/2016	286	<0.2	<0.2	1.9	0.6	<0.2	8.7	<1.0	<2.3	<1.0	0.36	-28.1	2.0	<1.0	<0.10	24000	M	8.2	6.20	165	0.00	0.00	0.16	0.84	0.00	
		9/7/2016	369	<0.2	<0.2	0.6	0.3	<0.2	6.4	1.3	<1.0	<1.0	0.49	-21.7	4.0	<1.0	<0.10	29000	M	9.9	6.09	112	0.00	0.00	0.06	0.65	0.29	
		11/29/2016	452	<0.2	<0.2	0.3	0.3	<0.2	4.9	1.1	5.9	--	--	0.67	-7.5	7.0	<1.0	--	35000	M	9.6	6.59	85	0.00	0.00	0.02	0.24	0.74
		3/6/2017	549	<0.2	<0.2	0.3	0.2	<0.2	5.4	<1.0	4.6	--	--	0.59	-39.9	2.0	<1.0	--	23000	M	8.9	6.44	92	0.00	0.00	0.02	0.35	0.63
AGW270	SZ	8/13/2015	-22	<0.020	<0.2	7.3	1.0	<0.2	2.2	<1.0	<1.0	<1.0	1.58	199.4	5.8	<1.0	<0.16	750	M	7.2	6.57	121	0.00	0.00	0.71	0.29	0.00	
		12/7/2015	94	<0.020	1.7	10	1.7	<0.2	1.3	1.5	2.0	<1.0	0.30	-11.0	2.5	<1.0	<0.16	23000	M	682	5.62	154	0.00	0.05	0.44	0.08	0.44	
		3/2/2016	180	<0.2	0.7	8.8	1	<0.2	1.7	<1.0	2.8	<1.0	0.30	-38.6	6.5	<1.0	<0.16	22000	M	75.2	6.25	134	0.00	0.02	0.45	0.12	0.41	
		6/16/2016	286	<0.2	0.3	6	0.8	<0.2	2	<1.0	<2.0	<1.0	0.60	-52.4	2.0	<1.0	<0.10	25000	M	46.7	6.05	104	0.00	0.02	0.67	0.31	0.00	
		9/7/2016	369	<0.2	<0.2	3.3	0.5	<0.2	2.9	1.0	<1.0	<1.0	0.49	-47.9	3.0	1.1	<0.10	22000	M	39.1	5.96	86	0.00	0.00	0.32	0.38	0.29	
		11/28/2016	451	<0.2	<0.2	2.2	0.4	<0.2	3.2	1.4	<1.0	--	--	0.47	-26.2	5.0	<1.0	--	30000	M	38.7	6.68	78	0.00	0.00	0.21	0.40	0.39
		3/6/2017	549	<0.2	<0.2	1.3	0.3	<0.2	6.4	1.1	<1.0	--	--	0.46	-49.1	2.5	<1.0	--	29000	M	29.6	6.19	119	0.00	0.00	0.10	0.65	0.25
AGW271	SZ	8/13/2015	-22	<0.020	<0.2	6.5	0.7	<0.2	4.6	<1.0	<1.0	<1.0	1.32	204.0	6.2	<1.0	<0.16	2300	M	6.8	6.67	148	0.00	0.00	0.50	0.50	0.00	
		12/7/2015	94	<0.020	1.2	15	1.8	<0.2	5.9	1.2	1.9	<1.0	0.33	22.2	7.0	<1.0	<0.16	19000	M	971	5.55	277	0.00	0.02	0.45	0.25	0.28	
		3/2/2016	180	<0.2	1.8	15	2.4	<0.2	2.8	1.5	3	<1.0	0.37	25.8	6.0	<10.0	<0.16	28000	M	1080	5.41	238	0.00	0.04	0.46	0.11	0.39	
		6/16/2016	286	<0.2	0.3	6.9	0.7	<0.2	2	<1.0	<2.6	<1.0	0.58	-35.8	3.0	<1.0	<0.10	29000	M	48.6	6.02	113	0.00	0.02	0.70	0.28	0.00	
		9/7/2016	369	<0.2	<0.2	4.4	0.5	<0.2	1.1	<1.0	<1.0	<1.0	0.43	-39.5	2.5	<1.0	<0.10	28000	M	16.9	5.97	68	0.00	0.00	0.74	0.26	0.00	
		11/29/2016	452	<0.2	<0.2	2.5	0.5	<0.2	3.9																			

**Table 2-1
Data Summary
Algona Bioremediation Pilot Test
Boeing Auburn Facility**

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds									Aquifer Redox Conditions							Donor Indicators		Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)	pH		PCE	TCE	Total DCE	VC	Ethene+ Ethane
IW37	SZ	8/13/2015	-22	<0.020	<0.2	5.3	0.5	<0.2	4.9	<1.0	<1.0	<1.0	0.56	-45.0	2.0	<1.0	<0.16	1800	M	6.6	6.29	138	0.00	0.00	0.43	0.57	0.00
		12/7/2015	94	0.16	1.3	13	2.0	<0.2	1.5	5.8	3.1	<1.0	1.40	-24.2	9.0	6.6	<0.16	3800	M	4780	2.45	190	0.00	0.02	0.31	0.05	0.62
		3/2/2016	180	<0.2	0.8	7.7	1.0	<0.2	1.2	1.8	2.2	<1.0	0.47	35.1	5.0	<10.0	<0.16	23000	M	2480	5.00	115	0.00	0.02	0.36	0.08	0.54
		6/17/2016	287	<0.2	0.3	6	0.3	<0.2	0.4	<1.0	1.6	<1.0	0.91	-81.5	2.5	<1.0	<0.10	20000	M	1130	5.99	74	0.00	0.02	0.51	0.05	0.42
		9/7/2016	369	<0.2	<0.2	2.7	<0.2	<0.2	0.14	<1.0	<1.0	<1.0	0.91	-123.4	5.0	1.3	<0.10	17000	M	337	6.08	30	0.00	0.00	0.93	0.07	0.00
		11/28/2016	451	<0.2	<0.2	2.7	<0.2	<0.2	0.062	<1.0	<1.0	--	0.67	-106.8	7.0	<1.0	--	25000	M	356	6.99	29	0.00	0.00	0.97	0.03	0.00
		3/7/2017	550	<0.2	<0.2	2.5	<0.2	<0.2	0.17	<1.0	<1.0	--	0.74	-104.3	2.0	<1.0	--	27000	M	180	6.28	29	0.00	0.00	0.90	0.10	0.00

Notes:
 Blue shading indicates the compound with highest molar fraction per event
 Total DCE is the sum of cDCE, tDCE, and 11DCE
 Electron donor injection performed August 18 through September 4, 2015
 (a) Results presented are from analysis by Method 8260C SIM. Samples were reanalyzed by Method 8260C SIM in order to meet data quality objectives due to elevated reporting limits (2.0 µg/L) in the Method 8260C run.

Abbreviations/Acronyms:
 -- = not applicable/not analyzed
 11DCE = 1,1-dichloroethene
 cDCE = cis-1,2-dichloroethene
 Conc = concentration
 cVOC = chlorinated volatile organic compounds
 DO = dissolved oxygen
 Fe = Iron-reducing
 IZ = Intermediate Zone
 M = Methanogenic
 µg/L = micrograms per liter
 µmol/L = micromoles per liter
 mg/L = micrograms per liter
 mV = millivolt
 ORP = oxygen-reduction potential
 PCE = tetrachloroethene
 S = Sulfate-reducing
 SZ = Shallow Zone
 tDCE = trans-1,2-dichloroethene
 TCE = trichloroethene
 VC = vinyl chloride
 WT = Water Table Zone