LANDAU ASSOCIATES

January 15, 2019, revised February 1, 2019

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. 65, October through December 2018 Activity Period
Boeing Auburn Facility
WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345
Auburn, Washington
Project No. 0025164.160.501

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. 65, which covers the 3-month activity period of October through December 2018.

References

1. October 1, 2018. Draft Technical Memorandum: Algona Pilot Test – Second Year of Monitoring, Boeing Auburn Facility, Auburn, Washington. From Sarah Fees and Jennifer Wynkoop, Landau Associates, Inc. (LAI) to Robin Harrover, Washington State Department of Ecology (Ecology).
2. October 2, 2018. Ecology Listserv. Ecology to update Algona City Council about contamination cleanup – October 8, 2018.
3. October 5, 2018. Email: EIM Submission Email – Study ID FS2018 – The Boeing Company, Auburn Fabrication Division Plan. From Erica Fot, Ecology, to Kristi Schultz, LAI.
4. October 10, 2018. Ecology Listserv. Two things you can do to learn more about the groundwater cleanup.
5. October 15, 2018. Letter: Status Report No. 64, July Through September 2018 Activity Period, Boeing Auburn Facility, WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345, Auburn, Washington. From Jennifer Wynkoop, LAI, to Robin Harrover, Ecology.
6. October 16, 2018. Ecology Listserv. Wetland Walk – a fun time was had by all!

7. October 17, 2018. Email: Boeing Fabrication Auburn Site – Status Report 6, October – September Activity Period. From Robin Harrover, Ecology, to Representatives of City of Auburn, City of Algona, and City of Pacific.
8. October 18, 2018. Email: Update on Surface Water. From Jennifer Wynkoop, LAI, to Robin Harrover, Ecology.
9. October 19, 2018. Email: RE: Update on Surface Water. From Robin Harrover, Ecology, to Jennifer Wynkoop, LAI.
10. October 23, 2018. LAI Report: Feasibility Study Work Plan, Boeing Auburn Facility, Auburn, Washington.
11. October 23, 2018. Letter: Response to Ecology Comments on the Feasibility Study Work Plan, Boeing Auburn Facility, Auburn, Washington. From Jennifer Wynkoop, LAI, to Robin Harrover, Ecology.
12. October 26, 2018. Letter: June 2018 Groundwater Concentration Figure Updates, Boeing Auburn Facility, Auburn, Washington. From Sarah Fees and Jennifer Wynkoop, LAI, to Robin Harrover, Ecology.
13. November 1, 2018. Email: Response to Community Concern Soils from King Co. Kent Auburn Sewer Pipeline. From Carl Bach, Boeing, to Robin Harrover, Ecology. (Attachments: Memorandum discussing TCE concentrations in soil compared to groundwater, soil results associated with King County Excavation, and figure showing location of soil sample.)
14. November 5, 2018. Letter: Response to Ecology Comments on the Feasibility Study Data Submittal – Former Building 17-03 and Area of Concern (AOC) A-01, Boeing Auburn Facility, Auburn, Washington. From Sarah Fees and Jennifer Wynkoop, LAI to Robin Harrover, Ecology.
15. November 7, 2018. Email: Electronic and Hard Copy of Final, Signed Permit and Agreed Order. From Robin Harrover, Ecology, to Carl Bach, Boeing. (Attachments: Signed RCRA Permit and Agreed Order)
16. November 13, 2018. Letter: Surface Water Sampling and Pore Water Installation Data Submittal, Boeing Auburn Facility, Auburn, Washington. From Sarah Fees and Jennifer Wynkoop, LAI, to Robin Harrover, Ecology.
17. November 19, 2018. Letter: Ecology approval of the proposed work plan in the letter report: *Response to Ecology Comments on the Feasibility Study Data Submittal – Former Building 17-03 and Area of Concern (AOC) A-01, Boeing Auburn Facility*; prepared for the Boeing Company by Landau Associates; November 5, 2018; FS #2018; CS #5049; EPA WAC041337130. From Robin Harrover, Ecology, to Carl Bach, Boeing.
18. November 30, 2018: Email: December 2018 Groundwater Sampling. From Sarah Fees, LAI, to Robin Harrover, Ecology.
19. December 5, 2018. Email: Re: December 2018 Groundwater Sampling. From Robin Harrover, Ecology, to Sarah Fees, LAI.
20. December 13, 2018. Email: Postcard for your review by December 18. From Thea Levkovitz, Ecology, to Representatives of Futurewise, City of Algona, Boeing, City of Auburn, and LAI. (Attachment: postcard for February drop-in sessions.)
21. December 17, 2018. Ecology Listserv: Regularly scheduled groundwater monitoring in your neighborhood.

22. December 18, 2018. Email: RE: Postcard for your review by December 18. From Kamara Sams, Boeing, to Thea Levkovitz, Ecology.
23. December 20, 2018. Email: Use of Model Remedy at AOC A-01. From Sarah Fees, LAI, to Robin Harrover, Ecology. (Attachment: AOC A-01 investigation locations figure).

Work Conducted

General Site-wide Corrective Action Activities

On October 15, 2018, LAI submitted Status Report No. 64 regarding third quarter 2018 activities to Ecology and other stakeholders[1] for their records (Reference #5). Ecology project manager, Robin Harrover, continued to attend regularly scheduled monthly conference calls 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.

Boeing updated a number of figures with data from the June 2018 annual groundwater sampling event. These figures were provided to Ecology on October 26, 2018 (Reference #12). Updated figures included groundwater concentration contours, northern residential Algona vapor intrusion assessment, and wells that exceed groundwater cleanup risk thresholds.

Dangerous Waste Management Permit for Corrective Action

During the first quarter 2018, Ecology notified Boeing that the State of Washington's Dangerous Waste Management Permit for Corrective Action at the Boeing Auburn Facility expired on April 27, 2016. The US Environmental Protection Agency (EPA) requested that Ecology have a new permit in place. Boeing and Ecology agreed to resubmit the RCRA permit application and also make minor updates to the Agreed Order. Boeing submitted a revised RCRA Permit Application for public comment in the second quarter 2018. Ecology conducted a public comment period from July 19, 2018 to September 7, 2018. The final RCRA permit became effective on September 21, 2018. The revised Agreed Order became effective on November 1, 2018. Ecology provided the final RCRA permit and revised Agreed Order to Boeing on November 7, 2018 (Reference #15).

Groundwater Sampling

Phase 8 semiannual groundwater sampling took place from December 3 through 13, 2018. The semiannual groundwater sampling data are provided in Attachment 1. The current monitoring well network is shown on Figure 1-1. A sampling matrix for the December 2018 semiannual sampling event is presented in Table 1-1. A complete summary of groundwater analytical results is presented in Tables 1-2 and 1-3.

As part of the Phase 8 groundwater sampling program, Boeing has been conducting sampling and analysis for total cyanide at six on-site wells. Prior to the December sampling event, Boeing requested

[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 representatives of the cities of Algona, Auburn, and Pacific (Reference #7).

some modifications to the cyanide sampling (Reference #18). The modifications included discontinuing cyanide sampling at one of the monitoring wells where cyanide has never been detected, adjusting the sampling schedule at another monitoring well, and discontinuing analysis of unpreserved samples at all but one monitoring location. Ecology approved these changes on December 5, 2018 (Reference #19). Only preserved results are included in Attachment 1. A discussion of all cyanide results (both unpreserved and preserved results) will be provided in a separate data submittal.

Boeing transitioned laboratory services back to Analytical Resources Inc. (ARI) for the December sampling event. ARI historically provided laboratory services for the Site and reporting and quality assurance limits for ARI are still included in the project Quality Assurance Project Plan. Boeing discussed the lab transition with Ecology during a regularly scheduled conference call prior to the sampling event.

Surface Water and Pore Water Sampling

Surface water and pore water piezometer installation and sampling activities were completed in the third quarter 2018. KPG, Inc. surveyed the pore water piezometers on October 3, 2018. Due to laboratory errors associated with several of the initial samples, resampling of select locations was completed on October 15, 2018. Discussion of the erroneous data was completed during project conference calls and a series of emails (References #8 and #9). Surface water and pore water analytical data were submitted to Ecology in a separate data submittal on November 13, 2018 (Reference #16).

Algona Enhanced Natural Attenuation Pilot Test

An enhanced natural attenuation pilot test was conducted in August and September 2015. Approximately 80,000 gallons of electron donor solution was injected into the shallow water-bearing zone. Boeing is performing post-injection sampling to monitor the effectiveness of the pilot test injection. Post-injection sampling was conducted quarterly through December 2017. As part of the update in the Phase 8 Groundwater Monitoring Plan, quarterly sampling for pilot test wells was discontinued with the exception of four locations that continue to be sampled quarterly for volatile organic compounds (VOCs) only. Ongoing pilot test monitoring is completed semiannually during the June and December groundwater sampling events. A draft technical memorandum summarizing results from the second year of pilot test monitoring was submitted to Ecology on October 1, 2018 (Reference #1). Boeing expects to receive Ecology comments on this technical memorandum in the first quarter 2019.

The December 2018 groundwater sampling event was the 11th 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.

Following injection, indications of enhanced bioremediation were observed at nine wells consisting of three regularly monitored injection wells (IW34, IW36, and IW37) and five downgradient monitoring

wells (AGW240-5, AGW269, AGW270, AGW271, 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 products. In addition, secondary effects of enhanced bioremediation were observed at three downgradient monitoring wells post-injection (AGW240-1, AGW273, and AGW274). 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.

Monitoring data from December 2018 indicate 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 concentrations at the injection wells ranged from 8.24 mg/L to 46.99 mg/L. TOC concentrations at AGW270 and AGW271 were 10.96 mg/L to 10.39 mg/L, respectively. TOC concentrations at other downgradient monitoring wells (AGW240-5, AGW269, and AGW275) have returned to baseline concentrations following earlier post-injection increases; however, highly reducing methanogenic aquifer conditions persist at all three of these locations.

Feasibility Study Investigation

The feasibility study (FS) for the Site is ongoing. The FS work plan was submitted to Ecology in the second quarter 2017. Boeing received Ecology's conditional approval and comments on the FS work plan in August 2018. Boeing finalized the FS work plan and provided a response to Ecology comments on the work plan on October 23, 2018 (References #10 and #11).

Boeing conducted additional field investigation activities at AOC A-01 and Former Building 17-03 in 2017 and submitted a data report to Ecology in the fourth quarter of 2017. Boeing received Ecology comments on the data submittal in September 2018. Boeing provided a response to Ecology comments on November 5, 2018 (Reference #14). This response included a proposal for additional borings at Former Building 17-03 to address Ecology comments. Ecology approved the additional work on November 19, 2018 (Reference #17).

Boeing conducted additional field investigation activities at Former Building 17-03 from December 17, 2018 to December 20, 2018. The field investigation activities included completion of four borings with collection of soil and groundwater samples. A data submittal summarizing field investigation activities is anticipated to be submitted to Ecology in the first quarter 2019.

Boeing is continuing work on the FS report. Boeing is proposing to use a model remedy for the cleanup of AOC A-01. Boeing submitted this request to Ecology via email on December 20, 2018 (Reference #23). Boeing expects to receive a response from Ecology about model remedy use in the first quarter 2019. In addition, Boeing expects to discuss final cleanup levels with Ecology in first quarter 2019 for use in the FS report.

Data Management

Boeing and Ecology have agreed on annual submittals of data to Ecology's Environmental Information Management (EIM) database. In August 2018, Boeing submitted required EIM data for the past year of data (July 2017 through June 2018). Boeing received approval of the data submission from Ecology's EIM coordinator on October 5, 2018 (Reference #3).

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). Boeing and Ecology also continue to update the City of Auburn on activities, as needed. Ecology is planning some drop-in sessions in Auburn and Algona in February 2019. Ecology sent a draft of a postcard mailer for Boeing review on December 13, 2018 (Reference #20). Boeing provided comments on the postcard on December 18, 2018 (Reference #22). It is anticipated that this postcard will be mailed out in January 2019.

Ecology provided an update to the Algona City Council on October 8, 2018. During the meeting a resident requested information on how King County managed and disposed of soil that was excavated during the sewer improvement project conducted on and adjacent to the Boeing property in 2018. Ecology requested information from Boeing regarding soil disposition. Boeing provided information to Ecology demonstrating that soil near the sewer line is not impacted by VOCs and also provided analytical results for metals in soil (Reference #13).

Ecology posted several update notifications to their Listserv in the fourth quarter 2018. Updates included: notification about Ecology presentation to Algona City Council (Reference #2), how to learn more about the groundwater cleanup (Reference #4), a summary of the wetland walk (Reference #6), and an update about the groundwater monitoring (Reference #21).

Building 17-06 Ongoing Monitoring

Boeing is monitoring for petroleum hydrocarbons in wells AGW128, AGW277, and AGW281 located in Building 17-06. During the fourth quarter, free-phase product was detected in well AGW128 in October, November, and December. Free-phase product has not been detected in any of the other wells in Building 17-06.

Boeing maintains a sorbent sock in AGW128, which is changed out approximately monthly. In the fourth quarter 2018, the sorbent sock was removed from the well on October 1 to allow for the collection of petroleum hydrocarbon product. Petroleum hydrocarbon product was collected on October 11 and analyzed for viscosity. A sorbent sock was re-installed in AGW128 on November 9. Boeing will continue to change out the sorbent sock approximately monthly.

Occurrence of Problems

None to report.

Projected Work for Next Reporting Period January through March 2019

Activities projected for the next reporting period pertain to the FS reporting, Algona pilot test, other reporting, and ongoing monitoring of groundwater. Tasks during first quarter 2019 are expected to include:

- Providing Ecology with a final data submittal summarizing additional FS investigation results at Building 17-06.
- Providing Ecology with a data submittal summarizing cyanide analysis and results associated with AOC A-09.
- Providing Ecology with a data submittal summarizing the Former Building 17-03 FS Drilling Results.
- Finalizing the Algona Pilot Test TM (2nd year of monitoring update).
- Continuing preparation of the FS report.
- Preparing an update to the groundwater monitoring plan (Phase 9).
- Conducting the wet season surface water sampling in March 2019.
- Conducting the quarterly groundwater sampling event, if required, in March 2019.

Other Significant Findings, Changes, and Contacts

None noted.

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.

Sarah Fees, LG
Senior Geologist

Jennifer Wynkoop
Principal Scientist

SEF/JWW/jrc
[Y:\025\164\R\QUARTERLY PROGRESS RPTS\2018\4Q2018\LAI_DRAFT 4Q2018 STATUS RPT NO. 65 LETTER RPT 01102019.DOCX

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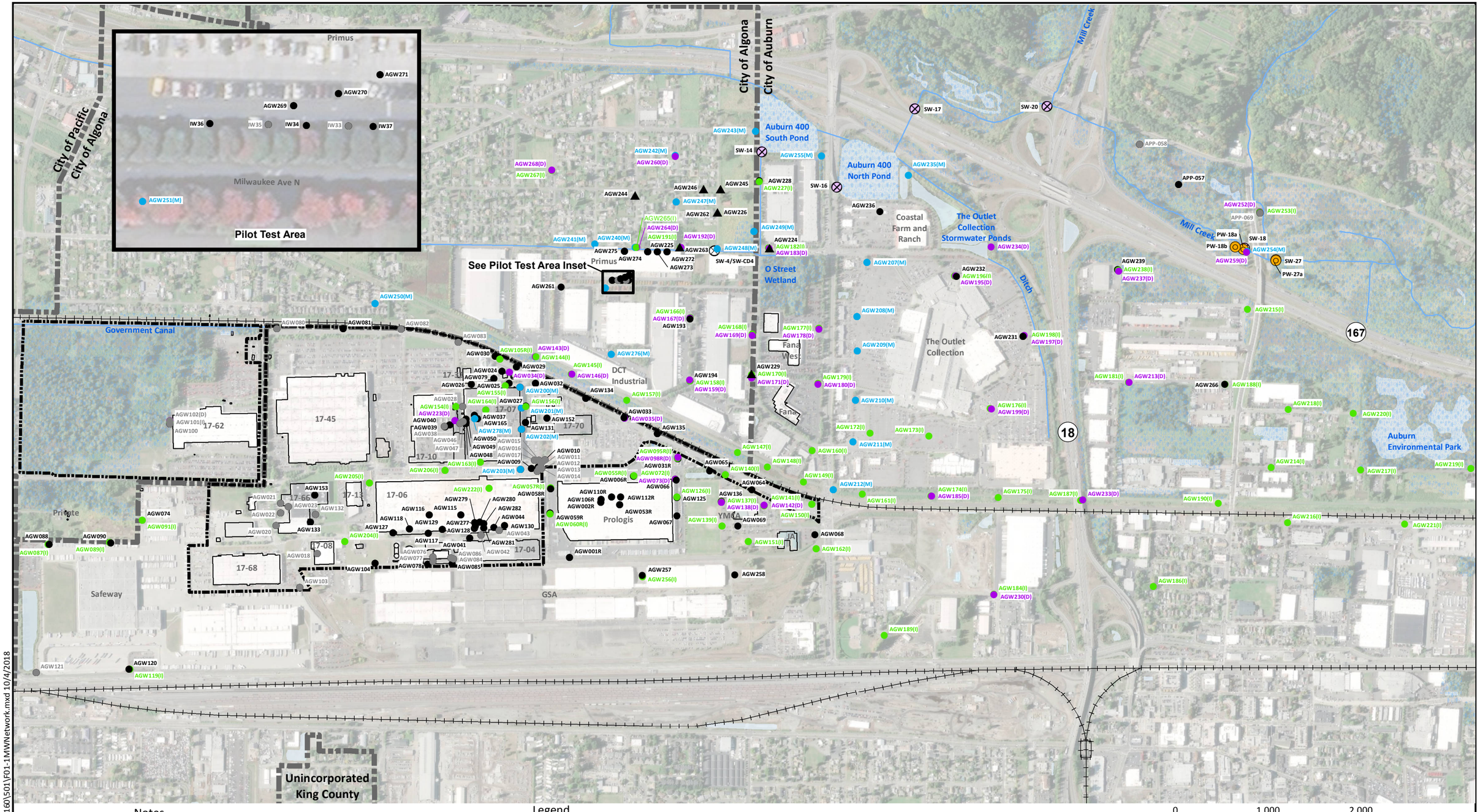
Attachments: Attachment 1: Groundwater Sampling Results
Attachment 2: Pilot Test Results
Laboratory Data Packages (only included in final hard copy on DVD)

Attachment 1

Groundwater Sampling Results



Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. If there is no designation, the well is screened in the shallow zone. (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Well designations beginning with APP are installed and owned by WSDOT.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Offsite Water Table Well
- Shallow Monitoring Well (2 to 30 ft bgs)
- (I) Intermediate Monitoring Well (40 to 60 ft bgs)
- (D) Deep Monitoring Well (80 to 100 ft bgs)
- (M) Multi-Level Well
- Wells Not Currently Sampled
- Annual Surface Water Sample Location
- Semiannual Surface Water Sampling Location
- Annual Pore Water Sample Location
- Wetland Areas
- Water Bodies
- Waterways

N

0 1,000 2,000

Scale in Feet

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

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Boeing Auburn Auburn, Washington	**Current Monitoring Well Network**	Figure 1-1

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Table 1-1
4Q2018 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	MEE by RSK-175	TOC by SM 5310C	Sulfate by EPA 300.0	Diss. Metals by SW-846 6020A	Total Cyanide by ASTM D7511 (b)
AGW001R	AGW001R-20181205	12/5/2018	PDN	18L0088	18L0088-04	X								
AGW002R	AGW002R-20181205	12/5/2018	N	18L0088	18L0088-13	X				X	X	X		
AGW006R	AGW006R-20181206	12/6/2018	PDN	18L0113	18L0113-06	X								
AGW010	AGW010-20181212	12/12/2018	N	18L0250	18L0250-02	X	X	X	X					
AGW010	AGW900-20181212	12/12/2018	FD	18L0250	18L0250-03	X	X	X	X					
AGW024	AGW024-20181210	12/10/2018	PDN	18L0189	18L0189-16	X								
AGW025	AGW025-20181210	12/10/2018	PDN	18L0189	18L0189-13	X								
AGW026	AGW026-20181210	12/10/2018	PDN	18L0189	18L0189-17	X								
AGW027	AGW027-20181207	12/7/2018	PDN	18L0124	18L0124-17	X								
AGW031R	AGW031R-20181206	12/6/2018	PDN	18L0113	18L0113-16	X								
AGW032	AGW032-20181210	12/10/2018	PDN	18L0189	18L0189-12	X								
AGW033	AGW033-20181206	12/6/2018	PDN	18L0113	18L0113-20	X								
AGW033	AGW901-20181206	12/6/2018	PDFD	18L0113	18L0113-21	X								
AGW037	AGW037-20181207	12/7/2018	PDN	18L0124	18L0124-05	X								
AGW047	AGW047-NAOH-20181204	12/4/2018	N	A8L0105	A8L0105-01									X
AGW048	AGW048-NAOH-20181204	12/4/2018	N	A8L0105	A8L0105-03									X
AGW049	AGW049-20181204	12/4/2018	N	18L0057	18L0057-05								X	
AGW049	AGW049-NAOH-20181204	12/4/2018	N	A8L0105	A8L0105-05									X
AGW049	AGW902-20181204	12/4/2018	FD	18L0057	18L0057-06								X	
AGW049	AGW902-NAOH-20181204	12/4/2018	FD	A8L0105	A8L0105-13									X
AGW050	AGW050-20181204	12/4/2018	N	18L0057	18L0057-08								X	
AGW050	AGW050-NAOH-20181204	12/4/2018	N	A8L0105	A8L0105-07									X
AGW053R	AGW053R-20181205	12/5/2018	PDN	18L0088	18L0088-09	X								
AGW055R	AGW055R-20181206	12/6/2018	PDN	18L0113	18L0113-05	X								
AGW057R	AGW057R-20181205	12/5/2018	PDN	18L0088	18L0088-03	X								
AGW060R	AGW060R-20181205	12/5/2018	PDN	18L0088	18L0088-02	X								
AGW064	AGW064-20181206	12/6/2018	PDN	18L0113	18L0113-09	X								
AGW066	AGW066-20181205	12/5/2018	PDN	18L0088	18L0088-07	X								
AGW067	AGW067-20181206	12/6/2018	PDN	18L0113	18L0113-04	X								
AGW069	AGW069-20181206	12/6/2018	PDN	18L0113	18L0113-11	X								
AGW072	AGW072-20181205	12/5/2018	PDN	18L0088	18L0088-05	X								
AGW073	AGW073-20181205	12/5/2018	PDN	18L0088	18L0088-06	X								
AGW074	AGW074-20181207	12/7/2018	PDN	18L0124	18L0124-08	X								
AGW079	AGW079-20181210	12/10/2018	PDN	18L0189	18L0189-15	X								
AGW085	AGW085-20181210	12/10/2018	PDN	18L0189	18L0189-02	X								
AGW087	AGW087-20181207	12/7/2018	PDN	18L0124	18L0124-12	X								
AGW088	AGW088-20181207	12/7/2018	PDN	18L0124	18L0124-11	X								
AGW089	AGW089-20181207	12/7/2018	PDN	18L0124	18L0124-15	X								
AGW090	AGW090-20181207	12/7/2018	PDN	18L0124	18L0124-10	X								
AGW091	AGW091-20181207	12/7/2018	PDN	18L0124	18L0124-09	X								
AGW095R	AGW095R-20181206	12/6/2018	PDN	18L0113	18L0113-17	X								
AGW098R	AGW098R-20181206	12/6/2018	PDN	18L0113	18L0113-18	X								
AGW105R	AGW105R-20181206	12/6/2018	PDN	18L0102	18L0102-12	X								
AGW106R	AGW106R-20181205	12/5/2018	N	18L0088	18L0088-11	X				X	X	X		
AGW106R	AGW903-20181205	12/5/2018	FD	18L0088	18L0088-12	X				X	X	X		

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4Q2018 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	MEE by RSK-175	TOC by SM 5310C	Sulfate by EPA 300.0	Diss. Metals by SW-846 6020A	Total Cyanide by ASTM D7511 (b)
AGW110R	AGW110R-20181205	12/5/2018	N	18L0088	18L0088-10	X				X	X	X		
AGW112R	AGW112R-20181205	12/5/2018	PDN	18L0088	18L0088-08	X								
AGW115	AGW115-20181210	12/10/2018	PDN	18L0189	18L0189-04	X								
AGW116	AGW116-20181210	12/10/2018	PDN	18L0189	18L0189-05	X								
AGW117	AGW117-20181210	12/10/2018	PDN	18L0189	18L0189-08	X								
AGW118	AGW118-20181210	12/10/2018	PDN	18L0189	18L0189-06	X								
AGW119	AGW119-20181207	12/7/2018	PDN	18L0124	18L0124-13	X								
AGW120	AGW120-20181207	12/7/2018	PDN	18L0124	18L0124-14	X								
AGW125	AGW125-20181206	12/6/2018	PDN	18L0113	18L0113-02	X								
AGW126	AGW126-20181206	12/6/2018	N	18L0113	18L0113-03	X								
AGW128	AGW128-20181211	12/11/2018	N	18L0215	18L0215-02	X			X					
AGW129	AGW129-20181210	12/10/2018	PDN	18L0189	18L0189-07	X								
AGW130	AGW130-20181212	12/12/2018	N	18L0253	18L0253-05	X			X					
AGW131	AGW131-20181212	12/12/2018	PDN	18L0253	18L0253-06	X								
AGW134	AGW134-20181206	12/6/2018	PDN	18L0113	18L0113-22	X								
AGW135	AGW135-20181206	12/6/2018	PDN	18L0113	18L0113-19	X								
AGW136	AGW136-20181206	12/6/2018	PDN	18L0113	18L0113-12	X								
AGW137	AGW137-20181206	12/6/2018	PDN	18L0113	18L0113-13	X								
AGW138	AGW138-20181206	12/6/2018	PDN	18L0113	18L0113-14	X								
AGW139	AGW139-20181213	12/13/2018	PDN	18L0274	18L0274-12	X								
AGW140	AGW140-20181206	12/6/2018	PDN	18L0113	18L0113-15	X								
AGW141	AGW141-20181206	12/6/2018	PDN	18L0113	18L0113-07	X								
AGW142	AGW142-20181206	12/6/2018	PDN	18L0113	18L0113-08	X								
AGW143	AGW143-20181207	12/7/2018	PDN	18L0125	18L0125-21	X								
AGW144	AGW144-20181207	12/7/2018	PDN	18L0125	18L0125-20	X								
AGW145	AGW145-20181207	12/7/2018	PDN	18L0125	18L0125-18	X								
AGW146	AGW146-20181207	12/7/2018	PDN	18L0125	18L0125-19	X								
AGW147	AGW147-20181207	12/7/2018	PDN	18L0125	18L0125-16	X								
AGW148	AGW148-20181207	12/7/2018	PDN	18L0125	18L0125-15	X								
AGW149	AGW149-20181207	12/7/2018	PDN	18L0125	18L0125-14	X								
AGW150	AGW150-20181211	12/11/2018	PDN	18L0214	18L0214-05	X								
AGW151	AGW151-20181206	12/6/2018	PDN	18L0113	18L0113-10	X								
AGW152	AGW152-20181210	12/10/2018	PDN	18L0189	18L0189-11	X								
AGW154	AGW154-20181207	12/7/2018	PDN	18L0124	18L0124-07	X								
AGW155	AGW155-20181210	12/10/2018	PDN	18L0189	18L0189-14	X								
AGW156	AGW156-20181207	12/7/2018	PDN	18L0124	18L0124-18	X								
AGW157	AGW157-20181207	12/7/2018	PDN	18L0125	18L0125-17	X								
AGW158	AGW158-20181213	12/13/2018	PDN	18L0272	18L0272-09	X								
AGW159	AGW159-20181213	12/13/2018	PDN	18L0272	18L0272-10	X								
AGW160	AGW160-20181204	12/4/2018	PDN	18L0059	18L0059-16	X								
AGW161	AGW161-20181203	12/3/2018	PDN	18L0041	18L0041-02	X								
AGW162	AGW162-20181211	12/11/2018	PDN	18L0214	18L0214-04	X								
AGW163	AGW163-20181210	12/10/2018	PDN	18L0189	18L0189-09	X								
AGW164	AGW164-20181207	12/7/2018	PDN	18L0124	18L0124-06	X								
AGW165	AGW165-20181207	12/7/2018	PDN	18L0124	18L0124-16	X								

Table 1-1
4Q2018 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	MEE by RSK-175	TOC by SM 5310C	Sulfate by EPA 300.0	Diss. Metals by SW-846 6020A	Total Cyanide by ASTM D7511 (b)
AGW166	AGW166-20181213	12/13/2018	PDN	18L0272	18L0272-05	X								
AGW167	AGW167-20181213	12/13/2018	PDN	18L0272	18L0272-06	X								
AGW168	AGW168-20181213	12/13/2018	PDN	18L0274	18L0274-14	X								
AGW169	AGW169-20181213	12/13/2018	PDN	18L0274	18L0274-13	X								
AGW170	AGW170-20181213	12/13/2018	PDN	18L0274	18L0274-16	X								
AGW171	AGW171-20181213	12/13/2018	PDN	18L0274	18L0274-17	X								
AGW172	AGW172-20181204	12/4/2018	PDN	18L0059	18L0059-02	X								
AGW173	AGW173-20181204	12/4/2018	PDN	18L0059	18L0059-03	X								
AGW174	AGW174-20181203	12/3/2018	PDN	18L0041	18L0041-03	X								
AGW175	AGW175-20181203	12/3/2018	N	18L0041	18L0041-05	X								
AGW176	AGW176-20181204	12/4/2018	PDN	18L0059	18L0059-04	X								
AGW177	AGW177-20181204	12/4/2018	PDN	18L0059	18L0059-12	X								
AGW178	AGW178-20181204	12/4/2018	PDN	18L0059	18L0059-13	X								
AGW179	AGW179-20181204	12/4/2018	PDN	18L0059	18L0059-14	X								
AGW180	AGW180-20181204	12/4/2018	PDN	18L0059	18L0059-15	X								
AGW181	AGW181-20181206	12/6/2018	PDN	18L0102	18L0102-06	X								
AGW182	AGW182-20181213	12/13/2018	PDN	18L0272	18L0272-11	X								
AGW183	AGW183-20181213	12/13/2018	PDN	18L0272	18L0272-12	X								
AGW184	AGW184-20181212	12/12/2018	PDN	18L0254	18L0254-02	X								
AGW185	AGW185-20181203	12/3/2018	PDN	18L0041	18L0041-04	X								
AGW186	AGW186-20181212	12/12/2018	PDN	18L0254	18L0254-04	X								
AGW187	AGW187-20181203	12/3/2018	PDN	18L0041	18L0041-06	X								
AGW188	AGW188-20181206	12/6/2018	N	18L0102	18L0102-04	X								
AGW189	AGW189-20181212	12/12/2018	PDN	18L0254	18L0254-01	X								
AGW190	AGW190-20181210	12/10/2018	PDN	18L0186	18L0186-03	X								
AGW191	AGW191-20181207	12/7/2018	PDN	18L0125	18L0125-09	X								
AGW191	AGW904-20181207	12/7/2018	PDFD	18L0125	18L0125-10	X								
AGW192	AGW192-20181207	12/7/2018	PDN	18L0125	18L0125-11	X								
AGW193	AGW193-20181213	12/13/2018	PDN	18L0272	18L0272-07	X								
AGW194	AGW194-20181213	12/13/2018	PDN	18L0272	18L0272-08	X								
AGW195	AGW195-20181204	12/4/2018	PDN	18L0059	18L0059-09	X								
AGW196	AGW196-20181204	12/4/2018	PDN	18L0059	18L0059-10	X								
AGW197	AGW197-20181204	12/4/2018	PDN	18L0059	18L0059-08	X								
AGW198	AGW198-20181204	12/4/2018	PDN	18L0059	18L0059-07	X								
AGW199	AGW199-20181204	12/4/2018	PDN	18L0059	18L0059-05	X								
AGW200-2	AGW200-2-30-20181212	12/12/2018	N	18L0254	18L0254-08	X								
AGW200-5	AGW200-5-60-20181212	12/12/2018	N	18L0254	18L0254-09	X								
AGW200-6	AGW200-6-80-20181212	12/12/2018	N	18L0254	18L0254-10	X								
AGW201-2	AGW201-2-30-20181213	12/13/2018	N	18L0274	18L0274-02	X								
AGW201-2	AGW905-20181213	12/13/2018	FD	18L0274	18L0274-03	X								
AGW201-5	AGW201-5-60-20181213	12/13/2018	N	18L0274	18L0274-04	X								
AGW201-6	AGW201-6-80-20181213	12/13/2018	N	18L0274	18L0274-05	X								
AGW202-2	AGW202-2-30-20181213	12/13/2018	N	18L0274	18L0274-06	X								
AGW202-4	AGW202-4-51-20181213	12/13/2018	N	18L0274	18L0274-07	X								
AGW202-6	AGW202-6-81-20181213	12/13/2018	N	18L0274	18L0274-08	X								

Table 1-1
4Q2018 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	MEE by RSK-175	TOC by SM 5310C	Sulfate by EPA 300.0	Diss. Metals by SW-846 6020A	Total Cyanide by ASTM D7511 (b)
AGW203-2	AGW203-2-30-20181213	12/13/2018	N	18L0274	18L0274-09	X								
AGW203-4	AGW203-4-49-20181213	12/13/2018	N	18L0274	18L0274-10	X								
AGW203-6	AGW203-6-80-20181213	12/13/2018	N	18L0274	18L0274-11	X								
AGW206	AGW206-20181210	12/10/2018	PDN	18L0189	18L0189-10	X								
AGW207-2	AGW207-2-30-20181212	12/12/2018	N	18L0254	18L0254-05	X								
AGW207-4	AGW207-4-49-20181212	12/12/2018	N	18L0254	18L0254-06	X								
AGW207-7	AGW207-7-80-20181212	12/12/2018	N	18L0254	18L0254-07	X								
AGW208-2	AGW208-2-29-20181205	12/5/2018	N	18L0090	18L0090-11	X								
AGW208-4	AGW208-4-49-20181205	12/5/2018	N	18L0090	18L0090-10	X								
AGW208-6	AGW208-6-80-20181205	12/5/2018	N	18L0090	18L0090-09	X								
AGW209-2	AGW209-2-30-20181205	12/5/2018	N	18L0090	18L0090-05	X								
AGW209-5	AGW209-5-60-20181205	12/5/2018	N	18L0090	18L0090-07	X								
AGW209-5	AGW906-20181205	12/5/2018	FD	18L0090	18L0090-06	X								
AGW209-6	AGW209-6-80-20181205	12/5/2018	N	18L0090	18L0090-08	X								
AGW210-5	AGW210-5-60-20181205	12/5/2018	N	18L0090	18L0090-03	X								
AGW210-6	AGW210-6-80-20181205	12/5/2018	N	18L0090	18L0090-04	X								
AGW211-5	AGW211-5-60-20181205	12/5/2018	N	18L0090	18L0090-01	X								
AGW211-6	AGW211-6-80-20181205	12/5/2018	N	18L0090	18L0090-02	X								
AGW212-5	AGW212-5-60-20181210	12/10/2018	N	18L0186	18L0186-01	X								
AGW212-7	AGW212-7-100-20181210	12/10/2018	N	18L0186	18L0186-02	X								
AGW213	AGW213-20181206	12/6/2018	PDN	18L0102	18L0102-07	X								
AGW214	AGW214-20181203	12/3/2018	N	18L0041	18L0041-11	X								
AGW215	AGW215-20181206	12/6/2018	N	18L0102	18L0102-11	X								
AGW216	AGW216-20181203	12/3/2018	N	18L0041	18L0041-12	X								
AGW217	AGW217-20181203	12/3/2018	N	18L0041	18L0041-10	X								
AGW218	AGW218-20181206	12/6/2018	N	18L0102	18L0102-03	X								
AGW219	AGW219-20181203	12/3/2018	PDN	18L0041	18L0041-09	X								
AGW220	AGW220-20181210	12/10/2018	N	18L0186	18L0186-04	X								
AGW221	AGW221-20181203	12/3/2018	N	18L0041	18L0041-13	X								
AGW222	AGW222-20181210	12/10/2018	PDN	18L0189	18L0189-03	X								
AGW225	AGW225-20181207	12/7/2018	N	18L0125	18L0125-12	X				X	X	X		
AGW225	AGW907-20181207	12/7/2018	FD	18L0125	18L0125-13	X				X	X	X		
AGW226	AGW226-20181203	12/3/2018	N	18L0040	18L0040-03	X				X	X	X		
AGW227	AGW227-20181206	12/6/2018	PDN	18L0108	18L0108-12	X								
AGW228	AGW228-20181206	12/6/2018	N	18L0108	18L0108-10	X								
AGW228	AGW908-20181206	12/6/2018	FD	18L0108	18L0108-11	X								
AGW229	AGW229-20181213	12/13/2018	PDN	18L0274	18L0274-15	X								
AGW230	AGW230-20181212	12/12/2018	PDN	18L0254	18L0254-03	X								
AGW231	AGW231-20181204	12/4/2018	PDN	18L0059	18L0059-06	X								
AGW232	AGW232-20181204	12/4/2018	PDN	18L0059	18L0059-11	X								
AGW233	AGW233-20181203	12/3/2018	PDN	18L0041	18L0041-07	X								
AGW233	AGW909-20181203	12/3/2018	PDFD	18L0041	18L0041-08	X								
AGW234	AGW234-20181210	12/10/2018	PDN	18L0186	18L0186-12	X								
AGW235-2	AGW235-2-19-20181211	12/11/2018	N	18L0214	18L0214-02	X								
AGW235-4	AGW235-4-39-20181211	12/11/2018	N	18L0214	18L0214-01	X								

Table 1-1
4Q2018 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	MEE by RSK-175	TOC by SM 5310C	Sulfate by EPA 300.0	Diss. Metals by SW-846 6020A	Total Cyanide by ASTM D7511 (b)
AGW235-7	AGW235-7-71-20181211	12/11/2018	N	18L0214	18L0214-03	X								
AGW236	AGW236-20181206	12/6/2018	N	18L0102	18L0102-02	X								
AGW237	AGW237-20181206	12/6/2018	PDN	18L0102	18L0102-10	X								
AGW238	AGW238-20181206	12/6/2018	PDN	18L0102	18L0102-09	X								
AGW239	AGW239-20181206	12/6/2018	N	18L0102	18L0102-08	X								
AGW240-1	AGW240-1-7-20181207	12/7/2018	N	18L0125	18L0125-04	X				X	X	X		
AGW240-5	AGW240-5-28-20181207	12/7/2018	N	18L0125	18L0125-05	X				X	X	X		
AGW241-1	AGW241-1-6-20181212	12/12/2018	N	18L0252	18L0252-07	X								
AGW241-5	AGW241-5-27-20181212	12/12/2018	N	18L0252	18L0252-08	X								
AGW242-1	AGW242-1-6-20181212	12/12/2018	N	18L0252	18L0252-09	X								
AGW242-2	AGW242-2-16-20181212	12/12/2018	N	18L0252	18L0252-10	X								
AGW242-5	AGW242-5-60-20181212	12/12/2018	N	18L0252	18L0252-11	X								
AGW243-1	AGW243-1-6-20181205	12/5/2018	N	18L0085	18L0085-05	X								
AGW243-3	AGW243-3-25-20181205	12/5/2018	N	18L0085	18L0085-06	X								
AGW243-5	AGW243-5-50-20181206	12/6/2018	N	18L0108	18L0108-09	X								
AGW244	AGW244-20181203	12/3/2018	N	18L0040	18L0040-05	X				X	X	X		
AGW245	AGW245-20181203	12/3/2018	PDN	18L0040	18L0040-07	X								
AGW246	AGW246-20181203	12/3/2018	PDN	18L0040	18L0040-06	X								
AGW247-1	AGW247-1-6-20181203	12/3/2018	N	18L0040	18L0040-01	X				X	X	X		
AGW247-5	AGW247-5-27-20181203	12/3/2018	N	18L0040	18L0040-04	X				X	X	X		
AGW248-1	AGW248-1-5-20181207	12/7/2018	N	18L0125	18L0125-02	X								
AGW248-5	AGW248-5-26-20181207	12/7/2018	N	18L0125	18L0125-03	X								
AGW249-1	AGW249-1-8-20181212	12/12/2018	N	18L0252	18L0252-05	X								
AGW249-5	AGW249-5-29-20181212	12/12/2018	N	18L0252	18L0252-06	X								
AGW250-1	AGW250-1-9-20181206	12/6/2018	N	18L0108	18L0108-04	X								
AGW250-1	AGW910-20181206	12/6/2018	FD	18L0108	18L0108-08	X								
AGW250-2	AGW250-2-26-20181206	12/6/2018	N	18L0108	18L0108-05	X								
AGW250-3	AGW250-3-41-20181206	12/6/2018	N	18L0108	18L0108-06	X								
AGW250-6	AGW250-6-81-20181206	12/6/2018	N	18L0108	18L0108-07	X								
AGW251-1	AGW251-1-8-20181213	12/13/2018	N	18L0272	18L0272-01	X				X	X	X		
AGW251-2	AGW251-2-25-20181213	12/13/2018	N	18L0272	18L0272-02	X				X	X	X		
AGW251-3	AGW251-3-40-20181213	12/13/2018	N	18L0272	18L0272-03	X				X	X	X		
AGW251-6	AGW251-6-76-20181213	12/13/2018	N	18L0272	18L0272-04	X								
AGW252	AGW252-20181210	12/10/2018	PDN	18L0186	18L0186-06	X								
AGW252	AGW911-20181210	12/10/2018	PDFD	18L0186	18L0186-07	X								
AGW254-1	AGW254-1-6-20181210	12/10/2018	N	18L0186	18L0186-09	X								
AGW254-2	AGW254-2-20-20181210	12/10/2018	N	18L0186	18L0186-10	X								
AGW254-5	AGW254-5-50-20181210	12/10/2018	N	18L0186	18L0186-11	X								
AGW255-1	AGW255-1-13-20181212	12/12/2018	N	18L0252	18L0252-02	X								
AGW255-3	AGW255-3-30-20181212	12/12/2018	N	18L0252	18L0252-03	X								
AGW255-5	AGW255-5-55-20181212	12/12/2018	N	18L0252	18L0252-04	X								
AGW256	AGW256-20181204	12/4/2018	PDN	18L0057	18L0057-04	X								
AGW257	AGW257-20181204	12/4/2018	PDN	18L0057	18L0057-03	X								
AGW258	AGW258-20181204	12/4/2018	PDN	18L0057	18L0057-02	X								
AGW259	AGW259-20181210	12/10/2018	PDN	18L0186	18L0186-08	X								

Table 1-1
4Q2018 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID	Sample Date	Sample Type	Laboratory SDG	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	MEE by RSK-175	TOC by SM 5310C	Sulfate by EPA 300.0	Diss. Metals by SW-846 6020A	Total Cyanide by ASTM D7511 (b)
AGW260	AGW260-20181212	12/12/2018	PDN	18L0252	18L0252-12	X								
AGW261	AGW261-20181212	12/12/2018	PDN	18L0252	18L0252-14	X								
AGW262	AGW262-20181212	12/12/2018	PDN	18L0252	18L0252-13	X								
AGW263	AGW263-20181207	12/7/2018	PDN	18L0125	18L0125-08	X								
AGW264	AGW264-20181207	12/7/2018	PDN	18L0125	18L0125-06	X								
AGW265	AGW265-20181207	12/7/2018	PDN	18L0125	18L0125-07	X								
AGW266	AGW266-20181206	12/6/2018	PDN	18L0102	18L0102-05	X								
AGW267	AGW267-20181205	12/5/2018	PDN	18L0085	18L0085-08	X								
AGW268	AGW268-20181205	12/5/2018	PDN	18L0085	18L0085-07	X								
AGW269	AGW269-20181204	12/4/2018	N	18L0056	18L0056-03	X				X	X	X		
AGW269	AGW912-20181204	12/4/2018	FD	18L0056	18L0056-04	X				X	X	X		
AGW270	AGW270-20181204	12/4/2018	N	18L0056	18L0056-02	X				X	X	X		
AGW271	AGW271-20181204	12/4/2018	N	18L0056	18L0056-05	X				X	X	X		
AGW272	AGW272-20181204	12/4/2018	N	18L0056	18L0056-08	X				X	X	X		
AGW273	AGW273-20181205	12/5/2018	N	18L0085	18L0085-03	X				X	X	X		
AGW274	AGW274-20181205	12/5/2018	N	18L0085	18L0085-01	X				X	X	X		
AGW275	AGW275-20181205	12/5/2018	N	18L0085	18L0085-04	X				X	X	X		
AGW276-2	AGW276-2-25-20181206	12/6/2018	N	18L0108	18L0108-01	X								
AGW276-5	AGW276-5-60-20181206	12/6/2018	N	18L0108	18L0108-02	X								
AGW276-6	AGW276-6-80-20181206	12/6/2018	N	18L0108	18L0108-03	X								
AGW277	AGW277-20181211	12/11/2018	N	18L0215	18L0215-03				X					
AGW278-1	AGW278-1-17-20181204	12/4/2018	N	18L0057	18L0057-07	X								
AGW278-1	AGW278-1-17-NAOH-20181204	12/4/2018	N	A8L0105	A8L0105-09									X
AGW278-2	AGW278-2-25-20181207	12/7/2018	N	18L0124	18L0124-02	X								
AGW278-4	AGW278-4-45-20181207	12/7/2018	N	18L0124	18L0124-03	X								
AGW278-6	AGW278-6-80-20181207	12/7/2018	N	18L0124	18L0124-04	X								
AGW279	AGW279-20181211	12/11/2018	N	18L0215	18L0215-04				X					
AGW280	AGW280-20181212	12/12/2018	N	18L0253	18L0253-02				X					
AGW281	AGW281-20181212	12/12/2018	N	18L0253	18L0253-04				X					
AGW282	AGW282-20181212	12/12/2018	N	18L0253	18L0253-03				X					
APP-057	APP-057-20181210	12/10/2018	N	18L0186	18L0186-05	X								
IW34	IW34-20181204	12/4/2018	N	18L0056	18L0056-07	X				X	X	X		
IW36	IW36-20181204	12/4/2018	N	18L0056	18L0056-06	X				X	X	X		
IW37	IW37-20181205	12/5/2018	N	18L0085	18L0085-02	X				X	X	X		

Notes:

(a) Select VOCs consist of 1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride.

(b) Samples were analyzed for cyanide by Apex Laboratories; all other analytical methods were performed by TestAmerica laboratories.

Abbreviations/Acronyms:

EPA = US Environmental Protection Agency
FD = field duplicate
N = primary sample
SDG = sample delivery group
NWTPH = Northwest Total Petroleum Hydrocarbon
VOC = volatile organic compound

Table 1-2
4Q2018 Groundwater Analytical Results
Volatile Organic Compounds, General Chemistry, and Dissolved Gases
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW001R	On-Shallow	18L0088	12/5/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.51**	0.0200 U	--	--	--	--	--
AGW002R	On-Shallow	18L0088	12/5/2018	N	0.200 U	**0.215**	0.200 U	0.200 U	0.200 U	**0.0416**	**0.190**	**2.26**	0.39 U	0.24 U	**5420**
AGW006R	Shallow	18L0113	12/6/2018	PDN	0.200 U	**0.934**	0.200 U	0.200 U	**0.560**	**0.0335**	--	--	--	--	--
AGW010	Shallow-WT	18L0250	12/12/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW010	Shallow-WT	18L0250	12/12/2018	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW024	Shallow	18L0189	12/10/2018	PDN	0.200 U	**1.46**	0.200 U	0.200 U	0.200 U	**1.09 J**	--	--	--	--	--
AGW025	Shallow	18L0189	12/10/2018	PDN	0.200 U	**2.20**	0.200 U	**0.286**	0.200 U	**1.98 J**	--	--	--	--	--
AGW026	Shallow	18L0189	12/10/2018	PDN	0.200 U	0.804	0.200 U	0.200 U	**0.737**	**0.0328 J**	--	--	--	--	--
AGW027	Shallow-WT	18L0124	12/7/2018	PDN	0.200 U	**1.02**	0.200 U	0.200 U	0.200 U	**0.447**	--	--	--	--	--
AGW031R	Shallow	18L0113	12/6/2018	PDN	0.200 U	**2.35**	0.200 U	0.200 U	**0.839**	**0.0252**	--	--	--	--	--
AGW032	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0796 J**	--	--	--	--	--
AGW033	Shallow-WT	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0229**	--	--	--	--	--
AGW033	Shallow-WT	18L0113	12/6/2018	PDFD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0224**	--	--	--	--	--
AGW037	Shallow-WT	18L0124	12/7/2018	PDN	0.200 U	**1.23**	0.200 U	0.200 U	**2.12**	**0.134**	--	--	--	--	--
AGW053R	Shallow-WT	18L0088	12/5/2018	PDN	0.200 U	**0.659**	**0.212**	0.200 U	**1.11**	**0.118**	--	--	--	--	--
AGW055R	Intermediate	18L0113	12/6/2018	PDN	0.200 U	**0.442**	0.200 U	0.200 U	**0.516**	**0.0284**	--	--	--	--	--
AGW057R	Intermediate	18L0088	12/5/2018	PDN	0.200 U	0.200 U	**0.497**	0.200 U	**0.838**	0.0200 U	--	--	--	--	--
AGW060R	Intermediate	18L0088	12/5/2018	PDN	0.200 U	**1.85**	0.200 U	0.200 U	**0.827**	**0.0544**	--	--	--	--	--
AGW064	Shallow-WT	18L0113	12/6/2018	PDN	0.200 U	**0.310**	0.200 U	0.200 U	**0.790**	0.0200 U	--	--	--	--	--
AGW066	Shallow-WT	18L0088	12/5/2018	PDN	0.200 U	**1.53**	0.200 U	0.200 U	**3.56**	0.0200 U	--	--	--	--	--
AGW067	Shallow-WT	18L0113	12/6/2018	PDN	0.200 U	**2.60**	0.200 U	0.200 U	**3.91**	0.0200 U	--	--	--	--	--
AGW069	Shallow-WT	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW072	Intermediate	18L0088	12/5/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.11**	0.0200 U	--	--	--	--	--
AGW073	Deep	18L0088	12/5/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.206**	0.0200 U	--	--	--	--	--
AGW074	Shallow-WT	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW079	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	**0.451**	0.200 U	0.200 U	0.200 U	**0.321 J**	--	--	--	--	--
AGW085	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	0.200 U	**0.343**	0.200 U	**0.503**	0.0200 UJ	--	--	--	--	--
AGW087	Intermediate	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW088	Shallow	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW089	Intermediate	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW090	Shallow	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW091	Intermediate	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW095R	Intermediate	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.746**	0.0200 U	--	--	--	--	--
AGW098R	Deep	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.385**	0.0200 U	--	--	--	--	--
AGW105R	Intermediate	18L0102	12/6/2018	PDN	0.200 U	**0.588**	0.200 U	0.200 U	**0.761**	**0.532**	--	--	--	--	--
AGW106R	Shallow	18L0088	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**17.0**	**0.58**	0.39 U	0.24 U	**58.8 J**
AGW106R	Shallow	18L0088	12/5/2018	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**16.8**	**0.52**	0.39 U	0.24 U	**20.0 J**
AGW110R	Shallow	18L0088	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.102**	0.100 U	**2.06**	0.39 U	0.24 U	**3010**
AGW112R	Shallow	18L0088	12/5/2018	PDN	0.200 U	**1.48**	0.200 U	0.200 U	**1.81**	**0.353**	--	--	--	--	--
AGW115	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	**2.85**	0.200 U	0.200 U	0.200 U	**0.268 J**	--	--	--	--	--

Table 1-2
4Q2018 Groundwater Analytical Results
Volatile Organic Compounds, General Chemistry, and Dissolved Gases
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW116	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	0.200 U	**0.463**	0.200 U	0.200 U	0.0200 UJ	--	--	--	--	--
AGW117	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	0.200 U	**0.505**	0.200 U	0.200 U	0.0200 UJ	--	--	--	--	--
AGW118	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	0.200 U	**0.593**	0.200 U	**0.292**	0.0200 UJ	--	--	--	--	--
AGW119	Intermediate	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW120	Shallow	18L0124	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW125	Shallow	18L0113	12/6/2018	PDN	0.200 U	**1.87**	0.200 U	0.200 U	**7.08**	**0.0337**	--	--	--	--	--
AGW126	Intermediate	18L0113	12/6/2018	N	**0.261**	**5.98**	0.200 U	0.200 U	**6.75**	**0.0938**	--	--	--	--	--
AGW128	Shallow-WT	18L0215	12/11/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW129	Shallow-WT	18L0189	12/10/2018	PDN	0.200 U	**0.204**	**0.452**	0.200 U	**0.458**	0.0200 UJ	--	--	--	--	--
AGW130	Shallow-WT	18L0253	12/12/2018	N	0.200 U	**0.269 J**	0.200 U	0.200 U	**0.244**	**0.0270**	--	--	--	--	--
AGW131	Shallow	18L0253	12/12/2018	PDN	0.200 U	**1.03 J**	0.200 U	0.200 U	0.200 U	**2.89**	--	--	--	--	--
AGW134	Shallow	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW135	Shallow	18L0113	12/6/2018	PDN	0.200 U	**0.384**	0.200 U	0.200 U	**1.15**	**0.0289**	--	--	--	--	--
AGW136	Shallow	18L0113	12/6/2018	PDN	0.200 U	**0.894**	0.200 U	0.200 U	**2.25**	0.0200 U	--	--	--	--	--
AGW137	Intermediate	18L0113	12/6/2018	PDN	0.200 U	**1.08**	0.200 U	0.200 U	**3.07**	0.0200 U	--	--	--	--	--
AGW138	Deep	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.465**	0.0200 U	--	--	--	--	--
AGW139	Intermediate	18L0274	12/13/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.78**	0.0200 U	--	--	--	--	--
AGW140	Intermediate	18L0113	12/6/2018	PDN	0.200 U	**1.71**	0.200 U	0.200 U	**3.10**	**0.146**	--	--	--	--	--
AGW141	Intermediate	18L0113	12/6/2018	PDN	0.200 U	**0.289**	0.200 U	0.200 U	**1.68**	0.0200 U	--	--	--	--	--
AGW142	Deep	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW143	Deep	18L0125	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW144	Intermediate	18L0125	12/7/2018	PDN	0.200 U	**2.12**	0.200 U	**0.368**	**0.408**	**0.400**	--	--	--	--	--
AGW145	Intermediate	18L0125	12/7/2018	PDN	0.200 U	**7.63**	0.200 U	**0.997**	**11.1**	**0.832**	--	--	--	--	--
AGW146	Deep	18L0125	12/7/2018	PDN	0.200 U	**1.73**	0.200 U	0.200 U	**3.76**	**0.0938**	--	--	--	--	--
AGW147	Intermediate	18L0125	12/7/2018	PDN	0.200 U	**0.307**	0.200 U	0.200 U	0.200 U	0.0200 UJ	--	--	--	--	--
AGW148	Intermediate	18L0125	12/7/2018	PDN	0.200 U	**1.05**	0.200 UJ	0.200 U	**3.08**	**0.0307**	--	--	--	--	--
AGW149	Intermediate	18L0125	12/7/2018	PDN	0.200 U	**0.364**	0.200 U	0.200 U	**3.33**	0.0200 U	--	--	--	--	--
AGW150	Intermediate	18L0214	12/11/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.14**	0.0200 U	--	--	--	--	--
AGW151	Intermediate	18L0113	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.449**	0.0200 U	--	--	--	--	--
AGW152	Shallow	18L0189	12/10/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**2.07 J**	--	--	--	--	--
AGW154	Intermediate	18L0124	12/7/2018	PDN	0.200 U	**0.358**	0.200 U	0.200 U	**0.270**	0.0200 U	--	--	--	--	--
AGW155	Intermediate	18L0189	12/10/2018	PDN	0.200 U	**2.97**	0.200 U	**0.390**	0.200 U	**4.23 J**	--	--	--	--	--
AGW156	Intermediate	18L0124	12/7/2018	PDN	0.200 U	**4.77**	0.200 U	**0.420**	**0.261**	**1.17**	--	--	--	--	--
AGW157	Intermediate	18L0125	12/7/2018	PDN	0.200 U	**2.48**	0.200 U	0.200 U	**0.383**	**0.430**	--	--	--	--	--
AGW158	Intermediate	18L0272	12/13/2018	PDN	0.200 U	**0.441**	**0.203**	0.200 U	**1.74**	**0.0263**	--	--	--	--	--
AGW159	Deep	18L0272	12/13/2018	PDN	0.200 U	**0.743**	0.200 U	0.200 U	**3.50**	**0.0540**	--	--	--	--	--
AGW160	Intermediate	18L0059	12/4/2018	PDN	0.200 U	**0.565**	0.200 U	0.200 U	**6.72**	**0.0266**	--	--	--	--	--
AGW161	Intermediate	18L0041	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.27**	0.0200 U	--	--	--	--	--
AGW162	Intermediate	18L0214	12/11/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.572**	0.0200 U	--	--	--	--	--
AGW163	Intermediate	18L0189	12/10/2018	PDN	0.200 U	**1.41**	0.200 U	**0.215**	**3.76**	**0.0407 J**	--	--	--	--	--

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Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW164	Intermediate	18L0124	12/7/2018	PDN	0.200 U	**0.389**	0.200 U	0.200 U	**1.42**	**0.0551**	--	--	--	--	--
AGW165	Shallow	18L0124	12/7/2018	PDN	0.200 U	**1.26**	0.200 U	0.200 U	**2.07**	**0.169**	--	--	--	--	--
AGW166	Intermediate	18L0272	12/13/2018	PDN	0.200 U	**1.02 J**	0.200 U	0.200 U	0.200 U	**0.286**	--	--	--	--	--
AGW167	Deep	18L0272	12/13/2018	PDN	0.200 U	**2.21 J**	0.200 U	**0.254**	**5.16**	**0.130**	--	--	--	--	--
AGW168	Intermediate	18L0274	12/13/2018	PDN	0.200 U	**1.29**	0.200 U	0.200 U	**3.87**	**0.0348**	--	--	--	--	--
AGW169	Deep	18L0274	12/13/2018	PDN	0.200 U	**1.20**	0.200 U	0.200 U	**4.58**	**0.0373**	--	--	--	--	--
AGW170	Intermediate	18L0274	12/13/2018	PDN	0.200 U	**0.444**	0.200 U	0.200 U	**2.01**	**0.0276**	--	--	--	--	--
AGW171	Deep	18L0274	12/13/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.79**	0.0200 U	--	--	--	--	--
AGW172	Intermediate	18L0059	12/4/2018	PDN	0.200 U	**0.306**	0.200 U	0.200 U	**3.79**	0.0200 U	--	--	--	--	--
AGW173	Intermediate	18L0059	12/4/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW174	Intermediate	18L0041	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.51**	0.0200 U	--	--	--	--	--
AGW175	Intermediate	18L0041	12/3/2018	N	0.200 U	**0.474**	0.200 U	0.200 U	**1.78**	0.0200 U	--	--	--	--	--
AGW176	Intermediate	18L0059	12/4/2018	PDN	0.200 U	**0.289**	0.200 U	0.200 U	**3.52**	0.0200 U	--	--	--	--	--
AGW177	Intermediate	18L0059	12/4/2018	PDN	0.200 U	**0.691**	0.200 U	0.200 U	**3.97**	0.0200 U	--	--	--	--	--
AGW178	Deep	18L0059	12/4/2018	PDN	0.200 U	**0.392**	0.200 U	0.200 U	**4.06**	0.0200 U	--	--	--	--	--
AGW179	Intermediate	18L0059	12/4/2018	PDN	**0.201**	**6.41**	0.200 U	0.200 U	**0.255**	**0.104**	--	--	--	--	--
AGW180	Deep	18L0059	12/4/2018	PDN	0.200 U	**0.592**	0.200 U	0.200 U	**3.05**	0.0200 U	--	--	--	--	--
AGW181	Intermediate	18L0102	12/6/2018	PDN	0.200 U	**1.39**	0.200 U	0.200 U	**4.01**	**0.0399**	--	--	--	--	--
AGW182	Intermediate	18L0272	12/13/2018	PDN	0.200 U	**2.23**	0.200 U	**0.249**	**1.46**	**0.161**	--	--	--	--	--
AGW183	Deep	18L0272	12/13/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW184	Intermediate	18L0254	12/12/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.386**	0.0200 U	--	--	--	--	--
AGW185	Deep	18L0041	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**2.36**	0.0200 U	--	--	--	--	--
AGW186	Intermediate	18L0254	12/12/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.539**	0.0200 U	--	--	--	--	--
AGW187	Intermediate	18L0041	12/3/2018	PDN	0.200 U	**0.231**	0.200 U	0.200 U	**1.70**	0.0200 U	--	--	--	--	--
AGW188	Intermediate	18L0102	12/6/2018	N	0.200 U	**0.514**	0.200 U	0.200 U	**4.56**	**0.0315**	--	--	--	--	--
AGW189	Intermediate	18L0254	12/12/2018	PDN	0.200 U	0.200 U	0.200 UJ	0.200 U	**0.513**	0.0200 U	--	--	--	--	--
AGW190	Intermediate	18L0186	12/10/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.18**	0.0200 U	--	--	--	--	--
AGW191	Off-Intermediate	18L0125	12/7/2018	PDN	0.200 U	**0.292**	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW191	Off-Intermediate	18L0125	12/7/2018	PDFD	0.200 U	**0.293**	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW192	Off-Deep	18L0125	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW193	Shallow	18L0272	12/13/2018	PDN	0.200 U	**1.69 J**	0.200 U	0.200 U	**2.98**	**0.157**	--	--	--	--	--
AGW194	Shallow	18L0272	12/13/2018	PDN	0.200 U	**0.530**	0.200 U	0.200 U	**1.58**	0.0200 U	--	--	--	--	--
AGW195	Deep	18L0059	12/4/2018	PDN	0.200 U	**0.593**	0.200 U	0.200 U	**7.19**	0.0200 U	--	--	--	--	--
AGW196	Intermediate	18L0059	12/4/2018	PDN	**0.217**	**3.67**	0.200 U	0.200 U	0.200 U	**2.63**	--	--	--	--	--
AGW197	Deep	18L0059	12/4/2018	PDN	0.200 U	**1.10**	0.200 U	0.200 U	**8.66**	0.0200 U	--	--	--	--	--
AGW198	Intermediate	18L0059	12/4/2018	PDN	0.200 U	**0.525**	0.200 U	0.200 U	**5.80**	0.0200 U	--	--	--	--	--
AGW199	Deep	18L0059	12/4/2018	PDN	0.200 U	**1.76**	0.200 U	0.200 U	**6.34**	**0.0263**	--	--	--	--	--
AGW200-2	Shallow	18L0254	12/12/2018	N	0.200 U	**1.93**	0.200 U	**0.274**	**0.314**	**1.47**	--	--	--	--	--

Table 1-2
4Q2018 Groundwater Analytical Results
Volatile Organic Compounds, General Chemistry, and Dissolved Gases
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW200-5	Intermediate	18L0254	12/12/2018	N	0.200 U	**5.35 J**	0.200 U	**0.406**	**0.933**	**1.40**	--	--	--	--	--
AGW200-6	Deep	18L0254	12/12/2018	N	0.200 U	**5.28 J**	0.200 U	**0.529**	**0.904**	**0.738**	--	--	--	--	--
AGW201-2	Shallow	18L0274	12/13/2018	N	0.200 U	**2.18**	0.200 U	0.200 U	**0.344**	**1.81**	--	--	--	--	--
AGW201-2	Shallow	18L0274	12/13/2018	FD	0.200 U	**2.15**	0.200 U	0.200 U	**0.340**	**1.75**	--	--	--	--	--
AGW201-5	Intermediate	18L0274	12/13/2018	N	0.200 U	**2.70**	0.200 U	**0.226**	**2.90**	**0.549**	--	--	--	--	--
AGW201-6	Deep	18L0274	12/13/2018	N	0.200 U	**3.27**	0.200 U	**0.295**	**5.26**	**0.278**	--	--	--	--	--
AGW202-2	Shallow	18L0274	12/13/2018	N	0.200 U	**2.39**	0.200 U	0.200 U	**0.871**	**1.14**	--	--	--	--	--
AGW202-4	Intermediate	18L0274	12/13/2018	N	0.200 U	**0.884**	0.200 U	0.200 U	**1.46**	**0.210**	--	--	--	--	--
AGW202-6	Deep	18L0274	12/13/2018	N	0.200 U	**0.249**	0.200 U	0.200 U	**0.773**	**0.0293**	--	--	--	--	--
AGW203-2	Shallow	18L0274	12/13/2018	N	0.200 U	0.200 U	**0.294**	0.200 U	**0.625**	0.0200 U	--	--	--	--	--
AGW203-4	Intermediate	18L0274	12/13/2018	N	0.200 U	0.200 U	**0.301**	0.200 U	**2.27**	0.0200 U	--	--	--	--	--
AGW203-6	Deep	18L0274	12/13/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW206	Intermediate	18L0189	12/10/2018	PDN	0.200 U	0.200 U	**0.426**	0.200 U	**0.976**	0.0200 UJ	--	--	--	--	--
AGW207-2	Shallow	18L0254	12/12/2018	N	0.200 U	**3.54**	0.200 U	0.200 U	**4.28**	**0.131**	--	--	--	--	--
AGW207-4	Intermediate	18L0254	12/12/2018	N	0.200 U	**1.60**	0.200 UJ	0.200 U	**4.79**	**0.0869**	--	--	--	--	--
AGW207-7	Deep	18L0254	12/12/2018	N	0.200 U	**0.538**	0.200 UJ	0.200 U	**4.72**	**0.0213**	--	--	--	--	--
AGW208-2	Shallow	18L0090	12/5/2018	N	0.200 U	**5.78**	0.200 U	0.200 U	**1.26**	**0.634**	--	--	--	--	--
AGW208-4	Intermediate	18L0090	12/5/2018	N	0.200 U	**6.78**	0.200 U	0.200 U	**0.342**	**0.345**	--	--	--	--	--
AGW208-6	Deep	18L0090	12/5/2018	N	0.200 U	**0.531**	0.200 U	0.200 U	**4.74**	0.0200 U	--	--	--	--	--
AGW209-2	Shallow	18L0090	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**1.60**	--	--	--	--	--
AGW209-5	Intermediate	18L0090	12/5/2018	N	**0.215**	**1.38**	0.200 U	0.200 U	**1.79**	**1.39**	--	--	--	--	--
AGW209-5	Intermediate	18L0090	12/5/2018	FD	**0.214**	**1.35**	0.200 U	0.200 U	**1.79**	**1.45**	--	--	--	--	--
AGW209-6	Deep	18L0090	12/5/2018	N	0.200 U	**0.684**	0.200 U	0.200 U	**4.48**	**0.0314**	--	--	--	--	--
AGW210-5	Intermediate	18L0090	12/5/2018	N	0.200 U	**1.39**	0.200 U	0.200 U	**0.666**	**0.0490**	--	--	--	--	--
AGW210-6	Deep	18L0090	12/5/2018	N	0.200 U	**0.598**	0.200 U	0.200 U	**3.77**	**0.0298**	--	--	--	--	--
AGW211-5	Intermediate	18L0090	12/5/2018	N	0.200 U	**1.55**	0.200 U	0.200 U	**2.33**	0.0200 U	--	--	--	--	--
AGW211-6	Deep	18L0090	12/5/2018	N	0.200 U	**0.851**	0.200 U	0.200 U	**1.42**	0.0200 U	--	--	--	--	--
AGW212-5	Intermediate	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	**1.54**	0.0200 U	--	--	--	--	--
AGW212-7	Deep	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	**3.82**	0.0200 U	--	--	--	--	--
AGW213	Deep	18L0102	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0225**	--	--	--	--	--
AGW214	Intermediate	18L0041	12/3/2018	N	0.200 U	**0.322**	0.200 U	0.200 U	**2.40**	**0.0228 J**	--	--	--	--	--
AGW215	Intermediate	18L0102	12/6/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW216	Intermediate	18L0041	12/3/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	**0.630**	0.0200 U	--	--	--	--	--
AGW217	Intermediate	18L0041	12/3/2018	N	0.200 U	**0.224**	0.200 U	0.200 U	**1.63**	**0.0244 J**	--	--	--	--	--
AGW218	Intermediate	18L0102	12/6/2018	N	0.200 U	**0.377**	0.200 U	0.200 U	**2.98**	**0.0269**	--	--	--	--	--
AGW219	Intermediate	18L0041	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW220	Intermediate	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	**0.213**	0.0200 U	--	--	--	--	--
AGW221	Intermediate	18L0041	12/3/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--

Table 1-2
4Q2018 Groundwater Analytical Results
Volatile Organic Compounds, General Chemistry, and Dissolved Gases
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW222	Intermediate	18L0189	12/10/2018	PDN	0.200 U	0.200 U	**0.569**	0.200 U	**0.458**	0.0200 UJ	--	--	--	--	--
AGW225	Off-Shallow	18L0125	12/7/2018	N	0.200 U	**3.44**	0.200 U	**0.337**	**2.17**	**0.316**	**5.16**	**3.46**	0.39 U	0.24 U	**390**
AGW225	Off-Shallow	18L0125	12/7/2018	FD	0.200 U	**3.51**	0.200 U	**0.354**	**2.25**	**0.330**	**5.41**	**3.49**	0.39 U	0.24 U	**362**
AGW226	Off-Shallow	18L0040	12/3/2018	N	0.200 U	**0.284**	0.200 U	0.200 U	0.200 U	**0.295**	**70.2**	**13.89**	0.39 U	0.24 U	**613**
AGW227	Intermediate	18L0108	12/6/2018	PDN	0.200 U	**2.50**	0.200 U	**0.242**	**1.52**	**0.237**	--	--	--	--	--
AGW228	Shallow	18L0108	12/6/2018	N	0.200 U	**2.68**	0.200 U	**0.296**	**3.34**	**0.214**	--	--	--	--	--
AGW228	Shallow	18L0108	12/6/2018	FD	0.200 U	**2.55**	0.200 U	**0.281**	**3.15**	**0.215**	--	--	--	--	--
AGW229	Shallow-WT	18L0274	12/13/2018	PDN	0.200 U	**2.28**	0.200 U	0.200 U	**1.63**	**0.0391**	--	--	--	--	--
AGW230	Deep	18L0254	12/12/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.924**	0.0200 U	--	--	--	--	--
AGW231	Shallow	18L0059	12/4/2018	PDN	0.200 U	**0.978**	0.200 U	0.200 U	0.200 U	**2.51**	--	--	--	--	--
AGW232	Shallow	18L0059	12/4/2018	PDN	0.200 U	**1.68**	0.200 U	0.200 U	0.200 U	**5.43**	--	--	--	--	--
AGW233	Deep	18L0041	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW233	Deep	18L0041	12/3/2018	PDFD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW234	Deep	18L0186	12/10/2018	PDN	**0.306**	**1.69**	0.200 U	0.200 U	**8.00**	**0.0704**	--	--	--	--	--
AGW235-2	Shallow	18L0214	12/11/2018	N	0.200 U	**2.11**	0.200 U	**0.302**	0.200 U	**3.64**	--	--	--	--	--
AGW235-4	Intermediate	18L0214	12/11/2018	N	**0.234**	**9.76**	0.200 U	0.200 U	**1.44**	**0.168**	--	--	--	--	--
AGW235-7	Deep	18L0214	12/11/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW236	Shallow	18L0102	12/6/2018	N	0.200 U	**4.09**	0.200 U	0.200 U	**2.27**	**0.451**	--	--	--	--	--
AGW237	Deep	18L0102	12/6/2018	PDN	**0.914**	**1.00**	0.200 U	0.200 U	**2.25**	**0.0394**	--	--	--	--	--
AGW238	Intermediate	18L0102	12/6/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW239	Shallow	18L0102	12/6/2018	N	0.200 U	**4.89 J**	0.200 UJ	**0.236**	0.200 UJ	**1.16**	--	--	--	--	--
AGW240-1	Off-Shallow-WT	18L0125	12/7/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0531**	**0.211**	**7.36**	0.39 U	0.24 U	**11700**
AGW240-5	Off-Shallow	18L0125	12/7/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0237**	0.100 U	**6.89**	0.39 U	0.24 U	**12300**
AGW241-1	Shallow-WT	18L0252	12/12/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW241-5	Shallow	18L0252	12/12/2018	N	0.200 U	**0.432**	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW242-1	Shallow-WT	18L0252	12/12/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.217**	--	--	--	--	--
AGW242-2	Shallow	18L0252	12/12/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW242-5	Intermediate	18L0252	12/12/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW243-1	Shallow-WT	18L0085	12/5/2018	N	0.200 U	**2.07 J**	0.200 U	0.200 U	0.200 U	**0.382 J**	--	--	--	--	--
AGW243-3	Shallow	18L0085	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW243-5	Intermediate	18L0108	12/6/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW244	Shallow-WT	18L0040	12/3/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**10.8**	**4.54**	0.39 U	0.24 U	0.34 U
AGW245	Shallow-WT	18L0040	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW246	Shallow-WT	18L0040	12/3/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW247-1	Off-Shallow-WT	18L0040	12/3/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.369**	**8.69**	**16.85**	0.39 U	0.24 U	**2360**
AGW247-5	Off-Shallow	18L0040	12/3/2018	N	0.200 U	**0.999**	0.200 U	**0.422**	0.200 U	**1.72**	0.100 U	**5.42**	0.39 U	0.24 U	**3120**
AGW248-1	Shallow-WT	18L0125	12/7/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW248-5	Shallow	18L0125	12/7/2018	N	0.200 U	**1.60**	0.200 U	0.200 U	**3.93**	**0.103**	--	--	--	--	--

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Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW249-1	Shallow-WT	18L0252	12/12/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.461**	--	--	--	--	--
AGW249-5	Shallow	18L0252	12/12/2018	N	0.200 U	**1.87**	0.200 U	0.200 U	**5.69**	**0.0722**	--	--	--	--	--
AGW250-1	Shallow-WT	18L0108	12/6/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW250-1	Shallow-WT	18L0108	12/6/2018	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW250-2	Shallow	18L0108	12/6/2018	N	0.200 U	**0.244**	0.200 U	0.200 U	0.200 U	**0.0317**	--	--	--	--	--
AGW250-3	Intermediate	18L0108	12/6/2018	N	0.200 U	**0.613**	0.200 U	0.200 U	**0.466**	**0.0510**	--	--	--	--	--
AGW250-6	Deep	18L0108	12/6/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW251-1	Off-Shallow-WT	18L0272	12/13/2018	N	0.200 U	0.200 UJ	0.200 U	0.200 U	0.200 U	**0.105**	**128**	**8.31**	0.39 U	0.24 U	**201**
AGW251-2	Off-Shallow	18L0272	12/13/2018	N	0.200 U	0.200 UJ	0.200 U	0.200 U	0.200 U	**0.714**	**0.127**	**6.46**	**1.53**	**0.78**	**2120**
AGW251-3	Off-Intermediate	18L0272	12/13/2018	N	0.200 U	0.200 UJ	0.200 U	0.200 U	0.200 U	**4.99**	**0.332**	**6.33**	0.70 U	**0.84 J**	**2260**
AGW251-6	Deep	18L0272	12/13/2018	N	0.200 U	**0.210 J**	0.200 U	0.200 U	0.200 U	**0.250**	--	--	--	--	--
AGW252	Deep	18L0186	12/10/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW252	Deep	18L0186	12/10/2018	PDFD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW254-1	Shallow-WT	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW254-2	Shallow	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0442**	--	--	--	--	--
AGW254-5	Intermediate	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW255-1	Shallow-WT	18L0252	12/12/2018	N	0.200 U	**2.42**	0.200 U	0.200 U	**0.510**	**0.189**	--	--	--	--	--
AGW255-3	Shallow	18L0252	12/12/2018	N	0.200 U	**1.26**	0.200 U	0.200 U	0.200 U	**0.142**	--	--	--	--	--
AGW255-5	Intermediate	18L0252	12/12/2018	N	0.200 U	**0.819**	0.200 U	0.200 U	0.200 U	**0.161**	--	--	--	--	--
AGW256	Intermediate	18L0057	12/4/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.818**	0.0200 U	--	--	--	--	--
AGW257	Shallow	18L0057	12/4/2018	PDN	0.200 U	0.200 U	**0.422**	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW258	Shallow	18L0057	12/4/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW259	Deep	18L0186	12/10/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW260	Deep	18L0252	12/12/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW261	Shallow	18L0252	12/12/2018	PDN	0.200 U	**1.68**	0.200 U	**0.249**	**2.59**	**0.145**	--	--	--	--	--
AGW262	Off-Shallow-WT	18L0252	12/12/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0940**	--	--	--	--	--
AGW263	Off-Shallow-WT	18L0125	12/7/2018	PDN	0.200 U	**2.53**	0.200 U	0.200 U	**0.561**	**0.0256**	--	--	--	--	--
AGW264	Deep	18L0125	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW265	Intermediate	18L0125	12/7/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW266	Shallow	18L0102	12/6/2018	PDN	0.200 U	**0.462**	0.200 U	0.200 U	0.200 U	**0.0217**	--	--	--	--	--
AGW267	Intermediate	18L0085	12/5/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW268	Deep	18L0085	12/5/2018	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW269	Off-Shallow	18L0056	12/4/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.159**	0.100 U	**7.53**	0.39 U	0.24 U	**22000**
AGW269	Off-Shallow	18L0056	12/4/2018	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.158**	0.100 U	**7.45**	0.39 U	0.24 U	**21000**
AGW270	Off-Shallow	18L0056	12/4/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**1.26 J**	0.100 U	**10.96**	0.39 U	0.24 U	**18200**
AGW271	Off-Shallow	18L0056	12/4/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.214**	0.100 U	**10.39**	0.39 U	0.24 U	**17600**
AGW272	Off-Shallow	18L0056	12/4/2018	N	0.200 U	**4.66**	0.200 U	**0.500**	**0.261**	**1.76**	0.100 U	**3.51**	0.39 U	0.24 U	**1080**
AGW273	Off-Shallow	18L0085	12/5/2018	N	0.200 U	**0.501**	0.200 U	**0.219**	0.200 U	**3.09**	0.100 U	**5.56**	0.39 U	0.24 U	**3130**

Table 1-2
4Q2018 Groundwater Analytical Results
Volatile Organic Compounds, General Chemistry, and Dissolved Gases
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C-SIM (µg/L)						General Chemistry (a) (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Sulfate	Total Organic Carbon	Ethane	Ethene	Methane
AGW274	Off-Shallow	18L0085	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.116**	0.100 U	**7.11**	0.39 U	0.24 U	**7640**
AGW275	Off-Shallow	18L0085	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0295**	0.100 U	**6.06**	0.39 U	0.24 U	**2830**
AGW276-2	Off-Shallow	18L0108	12/6/2018	N	0.200 U	**1.52**	0.200 U	0.200 U	**0.320**	**1.27**	--	--	--	--	--
AGW276-5	Off-Intermediate	18L0108	12/6/2018	N	0.200 U	**5.73**	0.200 U	**0.548**	0.200 U	**2.40**	--	--	--	--	--
AGW276-6	Off-Deep	18L0108	12/6/2018	N	0.200 U	**2.11**	0.200 U	0.200 U	**2.82**	**0.0992**	--	--	--	--	--
AGW278-1	Shallow-WT	18L0057	12/4/2018	N	0.200 U	**1.36**	0.200 U	0.200 U	**0.571**	**0.831 J**	--	--	--	--	--
AGW278-2	Shallow	18L0124	12/7/2018	N	0.200 U	**1.92**	0.200 U	0.200 U	**0.852**	**0.278**	--	--	--	--	--
AGW278-4	Intermediate	18L0124	12/7/2018	N	0.200 U	**0.901**	0.200 U	0.200 U	0.200 U	**2.47**	--	--	--	--	--
AGW278-6	Deep	18L0124	12/7/2018	N	0.200 U	**0.257**	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
APP-057	Shallow	18L0186	12/10/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
IW34	On-Shallow	18L0056	12/4/2018	N	0.200 U	**0.272**	0.200 U	0.200 U	0.200 U	**0.670**	0.100 U	**46.99**	0.39 U	0.24 U	**23300 J**
IW36	On-Shallow	18L0056	12/4/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**2.65**	0.100 U	**8.24**	0.39 U	0.24 U	**2410**
IW37	Shallow	18L0085	12/5/2018	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.309**	0.100 U	**18.89**	0.39 U	0.24 U	**23900**

Abbreviations/Acronyms:
ASTM = ASTM International
FD = field duplicate
µg/L = micrograms per liter
mg/L = milligrams per liter
N = primary sample
SDG = sample delivery group
WT = water table

Notes:
(a) The following methods were used to analyze for general chemistry parameters: EPA 300 for sulfate; and SM5310C for total organic carbon.
Bold text indicates detected analyte.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
UJ = The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Table 1-3
4Q2018 Groundwater Analytical Results
BTEX, Petroleum Hydrocarbons, Dissolved Metals, and Cyanide
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	BTEX by SW-846 8260C (µg/L)					Dissolved Metals by SW-846 6020A (mg/L)			Petroleum Hydrocarbons by NWTPH-Gx/Dx (mg/L)			Cyanide by ASTM D7511-12 (b) (mg/L)
					Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Cadmium	Copper	Nickel	Gasoline Range Organics (C7-C12)	Diesel Range Organics (C12-C24)	Oil Range Organics (C24-C40)	Total Cyanide
AGW010	Shallow-WT	18L0250	12/12/2018	N	**1.35**	**11.4 J**	**1150**	**2150**	**453**	--	--	--	**41.5**	**0.733**	0.200 U	--
AGW010	Shallow-WT	18L0250	12/12/2018	FD	**1.56**	**14.1 J**	**1290**	**2490**	**510**	--	--	--	**43**	**0.588**	0.200 U	--
AGW047	Shallow	A8L0105	12/4/2018	N	--	--	--	--	--	--	--	--	--	--	--	**0.0184**
AGW048	Shallow	A8L0105	12/4/2018	N	--	--	--	--	--	--	--	--	--	--	--	**0.147**
AGW049	Shallow	18L0057,A8L0105	12/4/2018	N	--	--	--	--	--	**0.0115**	**0.73**	**0.0573**	--	--	--	0.00500 U
AGW049	Shallow	18L0057,A8L0105	12/4/2018	FD	--	--	--	--	--	**0.0121**	**0.75**	**0.0601**	--	--	--	0.00500 U
AGW050	Shallow	18L0057,A8L0105	12/4/2018	N	--	--	--	--	--	**0.0107**	--	**0.0137**	--	--	--	**0.351**
AGW128	Shallow-WT	18L0215	12/11/2018	N	--	--	--	--	--	--	--	--	--	**0.455**	**2.43**	--
AGW130	Shallow-WT	18L0253	12/12/2018	N	--	--	--	--	--	--	--	--	--	0.100 U	0.200 U	--
AGW277	Shallow-WT	18L0215	12/11/2018	N	--	--	--	--	--	--	--	--	--	0.100 U	0.200 U	--
AGW278-1	Shallow-WT	A8L0105	12/4/2018	N	--	--	--	--	--	--	--	--	--	--	--	0.00500 U
AGW279	Shallow-WT	18L0215	12/11/2018	N	--	--	--	--	--	--	--	--	--	0.100 U	0.200 U	--
AGW280	Shallow-WT	18L0253	12/12/2018	N	--	--	--	--	--	--	--	--	--	0.100 U	0.200 U	--
AGW281	Shallow-WT	18L0253	12/12/2018	N	--	--	--	--	--	--	--	--	--	0.100 U	**0.250**	--
AGW282	Shallow-WT	18L0253	12/12/2018	N	--	--	--	--	--	--	--	--	--	0.100 U	0.200 U	--

Abbreviations/Acronyms:
FD = field duplicate
µg/L = micrograms per liter
mg/L = milligrams per liter
µm = micrometer (micron)
N = primary sample
SDG = sample delivery group
WT = water table

Notes:
(a) Samples analyzed for cyanide were collected, filtered with a 0.1 µm filter and preserved with sodium hydroxide (NaOH).
Bold text indicates detected analyte.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

Attachment 2

Pilot Test Results

Legend

- One-Time Surface Water Sampling Location
- Offsite Water Table Well
- Shallow Monitoring Well
- Shallow Observation Well (not part of ongoing monitoring)
- Shallow Injection Well
- Shallow Injection Well (not part of ongoing monitoring)
- Waterways

Notes

1. SW-CD13 was sampled in September 2017 for total organic carbon analysis.
2. 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

N

LANDAU ASSOCIATES

Boeing Auburn Auburn, Washington	**Pilot Test Well Locations**	Figure 2-1

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

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)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)		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	1.20	-76.8	2.6	4.8	290	Fe/S	3.7	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	1.39	213.3	6.4	4.1	360	Fe/S	4.2	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	2.0	-54.7	4.0	4.2	170	Fe/S	3.8	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	0.73	-14	2.5	3.3	420	Fe/S	4.3	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	3.40	271	2.0	4.9	330	Fe/S	3.6	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	0.48	-6.0	2.5	5.7	340	Fe/S	4.3	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	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	75	0.00	0.22	0.65	0.13	0.00
		6/7/2017	642	<0.2	2.5	4.5	0.5	<0.2	0.40	<1.0	<1.0	0.53	62.6	2.0	4.9	280	Fe/S	3.8	77	0.00	0.25	0.67	0.08	0.00
		9/7/2017	734	<0.20	2.1	4.3	0.49	<0.20	0.33	<0.40	<0.57	0.46	-31.3	3.5	5.0	430	Fe/S	4.2	71	0.00	0.23	0.70	0.07	0.00
		11/28/2017	816	<0.20	1.9	3.7	0.36	<0.20	0.39	<0.40	<0.57	2.85	-85.1	4.0	5.4	390	Fe/S	4.1	63	0.00	0.23	0.67	0.10	0.00
		6/5/2018	1006	<0.20	1.8	3.2	0.32	<0.20	0.34	<0.40	<0.57	0.74	108.8	3	5.1	330	Fe/S	4.4	55	0.00	0.25	0.65	0.10	0.00
		12/7/2018	1190	<0.200	2.17	3.44	0.337	<0.200	0.316	<0.24	<0.39	0.5	-38.6	5.00	5.16	390	Fe/S	3.46	61	0.00	0.27	0.64	0.08	0.00
AGW226	WT	8/14/2015	-21	<0.2	4.1	3.1	0.3	<0.2	0.56	<1.0	<1.0	0.55	-12.2	2.0	8	970	S/M	2.6	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	7.29	-26.1	2.0	7.8	1000	S/M	5.5	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	0.54	-28.45	2.5	6.5	1300	S/M	2.4	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	0.44	177	2.0	7.4	1200	S/M	2.7	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	0.70	82.5	0.0	17.6	1100	S/M	4.2	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	76	0.00	0.26	0.58	0.15	0.00
		3/7/2017	550	<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	76	0.00	0.36	0.51	0.13	0.00
		6/6/2017	641	<0.2	3.9	3.4	0.3	<0.2	0.5	<1.0	<1.0	0.46	75.9	3.0	7.5	970	S/M	2.3	76	0.00	0.39	0.50	0.11	0.00
		9/5/2017	732	<0.20	3.6	3.6	0.31	<0.20	0.36	<0.40	<0.57	0.68	-37.7	3.0	7.4	1400	S/M	2.6	73	0.00	0.37	0.55	0.08	0.00
		11/29/2017	817	<0.20	1.8	1.4	<0.20	<0.20	0.35	<0.40	<0.57	2.33	-65.7	4.5	19	870	S/M	4.4	34	0.00	0.41	0.43	0.17	0.00
		6/11/2018	1012	<0.20	1.5	3.5	0.23	<0.20	0.49	<0.40	<0.57	0.61	105.2	3.0	7.6	960	S/M	2.5	58	0.00	0.20	0.67	0.14	0.00
		12/3/2018	1186	<0.200	<0.200	0.284	<0.200	<0.200	0.295	<0.24	<0.39	0.96	175.0	1.00	70.2	613	S/M	13.89	8	0.00	0.00	0.38	0.62	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	1.32	-169.5	2.7	<1.0	3200	M	8.6	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	0.54	-67.3	1.8	<1.0	2900	M	8.1	3	0.00	0.00	0.02	0.01	0.97
		12/7/2015	94	<0.020	<0.2	<0.2	<0.2	<0.2	0.3	<1.0	3.1	1.89	-83.3	2.5	<1.0	2800	M	7.5	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	0.73	-13.23	5.0	<1.0	2900	M	7.9	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	1.9	-42.5	1.5	<1.0	5700	M	7.5	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	0.60	-45.4	4.5	<1.0	8900	M	7.7	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	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	2	0.00	0.00	0.00	0.01	0.99
		6/6/2017	641	<0.2	<0.2	<0.2	<0.2	<0.2	0.049	<1.0	1.1	12.31	15.9	2.0	<1.0	1200	M	7.1	1	0.00	0.00	0.00	0.02	0.98
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	0.068	<0.40	5.6	0.58	-77.6	3.4	<1.2	11000	M	7.9	1	0.00	0.00	0.00	0.01	0.99
		11/27/2017	815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	<0.57	6.57	-63.4	1.5 (c)	<1.2	1000	M	7.8	0	0.00	0.00	0.00	0.00	0.00
		6/5/2018	1005	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	3.6	0.77	108.1	4	<1.2	11000	M	8.1	0	0.00	0.00	0.00	0.00	1.00
		12/7/2018	1190	<0.200	<0.200	<0.200	<0.200	<0.200	0.0531	<0.24	<0.39	0.59	-61.6	6.50	0.211	11700	M	7.36	1	0.00	0.00	0.00	1.00	0.00
AGW240-5	SZ	12/1/2014	-277	<0.020	<0.2	4.9	0.7	<0.2	6.6	<1.0	1	0.51	-116.1	2.8	<1.0	2200	M	6.6	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	0.77	-41.7	2.8	<1.0	2000	M	5.4	128	0.00	0.00	0.22	0.53	0.25
		12/7/2015	94	<0.020	<0.2	1.8	0.3	<0.2	4.3	1.3	1.3	0.81	-86.8	6.0	<1.0	2200	M	6.5	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	0.55	-19.15	6.0	<1.0	1700	M	6.9	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	0.33	-40.8	3.0	<1.0	8100	M	20.2	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	0.36	-48.8	4.0	<1.0	31000	M	5.7	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	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	1	0.00	0.00	0.00	0.00	1.00
		6/6/2017	641	<0.2	<0.2	<0.2	<0.2	<0.2	0.074	<1.0	7.6	0.73	63.8	3.0	<1.0	9500	M	4.8	1	0.00	0.00	0.00	0.00	1.00
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	0.062	<0.80	4.5	0.71	-54.7	2.4	<1.2	20000	M	5.9	1	0.00	0.00	0.00	0.01	0.99
		11/27/2017	815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	4.6	1.60	-67.3	2.5 (c)	<1.2	19000	M	7.0	0	0.00	0.00	0.00	0.00	1.00
		6/5/2018	1005	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	5.1	0.42	104.1	4.5	<1.2	9200	M	5.3	0	0.00	0.00	0.00	0.00	1.00
		12/7/2018	1190	<0.200	<0.200	<0.200	<0.200	<0.200	0.0237	<0.24	<0.39	0.38	-60.8	6.50	<0.100	12300	M	6.89	0.4	0.00	0.00	0.00	1.00	0.00

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

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)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)		PCE	TCE	Total DCE	VC	Ethene+ Ethane
AGW244	WT	12/1/2016	454	<0.2	<0.2	<0.2	<0.2	<0.2	<0.020	<1.0	<1.0	0.96	20.1	0.0	13.2	54	N	3.8	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	<0.020	<1.0	<1.0	6.3	88	0.5	15.2	<3.0	Fe	5.4	0	0.00	0.00	0.00	0.00	0.00
		6/5/2017	640	<0.2	<0.2	<0.2	<0.2	<0.2	<0.020	<1.0	<1.0	0.62	41.2	2.0	3.8	4600	S/M	53.1	0	0.00	0.00	0.00	0.00	0.00
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	<0.57	0.59	-28.8	3.8	5.4	360	Fe/S	9.3	0	0.00	0.00	0.00	0.00	0.00
		11/27/2017	815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	<0.57	5.15	36.2	1.0	14	0.30	Fe	4.7	0	0.00	0.00	0.00	0.00	0.00
		6/7/2018	1008	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	<0.57	0.58	113.4	1.5	6.6	1000	S/M	26	0	0.00	0.00	0.00	0.00	0.00
		12/3/2018	1186	<0.200	<0.200	<0.200	<0.200	<0.200	<0.0200	<0.24	<0.39	2.85	146.7	1.00	10.8	<0.65	N/Fe	4.54	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	0.64	-76.1	2.5	6.3	3600	S/M	57.4	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	0.49	-61.4	3.4	<1.0	5200	M	9.6	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	4.32	-101.2	5.5	1.1	6900	M	13.2	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	0.44	-32.23	6.0	<1.0	7100	M	9.4	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	0.43	-49.5	2.5	<1.0	6100	M	9.7	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	0.62	-48.6	2.5	1.3	4200	M	11.1	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	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	86	0.00	0.00	0.05	0.95	0.00
		6/5/2017	640	<0.2	<0.2	<0.2	0.5	<0.2	4.8	<1.0	<1.0	0.79	0.9	2.0	<1.0	6700	M	9.2	82	0.00	0.00	0.06	0.94	0.00
		9/6/2017	733	<0.20	<0.20	<0.20	0.52	<0.20	6.5	<0.40	<0.57	0.52	-113.8	2.8	<1.2	6200	M	9.8	109	0.00	0.00	0.05	0.95	0.00
		11/28/2017	816	<0.20	<0.20	<0.20	0.23	<0.20	2.6	<0.40	<0.57	2.66	-74.2	3.5	2.7	4500	S/M	14	44	0.00	0.00	0.05	0.95	0.00
		3/13/2018	921	<0.20	<0.20	<0.20	0.41	<0.20	5.8	--	--	1.53	156.7	--	--	--	--	--	97	0.00	0.00	0.04	0.96	0.00
		6/11/2018	1012	<0.20	<0.20	<0.20	0.39	<0.20	3.1	1.0	1.1	0.66	108.7	4.50	<1.2	4500	M	8.6	54	0.00	0.00	0.03	0.39	0.57
		9/4/2018	1096	<0.20	<0.20	<0.20	0.44	<0.20	3.4	--	--	1.04	103.6	--	--	--	--	--	59	0.00	0.00	0.08	0.92	0.00
		12/3/2018	1186	<0.200	<0.200	<0.200	<0.200	<0.200	0.369	<0.24	<0.39	1.25	-11.8	4.00	8.69	2360	S/M	16.85	6	0.00	0.00	0.00	1.00	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	0.22	-136	5.0	<1.0	4000	M	21.3	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	0.54	-90.3	2.4	1.1	3400	M	6.2	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	4.76	-97.4	4.5	<1.0	2100	M	6.7	101	0.00	0.00	0.37	0.63	0.00
		3/3/2016	181	<0.2	<0.2	2.2	0.7	<0.2	4.5	<1.0	<1.0	0.51	-63.1	6.5	<1.0	2000	M	5.7	102	0.00	0.00	0.29	0.71	0.00
		6/15/2016	285	<0.2	<0.2	1.8	0.8	<0.2	4.4	<1.0	<1.0	0.34	-72.1	2.0	<1.0	2300	M	5.4	97	0.00	0.00	0.28	0.72	0.00
		9/8/2016	370	<0.2	<0.2	1.3	0.6	<0.2	3.9	<1.0	<1.0	0.34	-77.9	3.5	1.6	1300	M	6.7	82	0.00	0.00	0.24	0.76	0.00
		12/1/2016	454	<0.2	<0.2	1.6	0.7	<0.2	4.0	<1.0	<1.0	0.65	-69.2	4.0	<1.0	1400	M	5.7	88	0.00	0.00	0.27	0.73	0.00
		3/7/2017	550	<0.2	<0.2	0.7	0.5	<0.2	3.9	<1.0	1.5	0.59	-89.3	3.0	<1.0	1400	M	5.5	75	0.00	0.00	0.10	0.50	0.40
		6/5/2017	640	<0.2	<0.2	1.2	0.5	<0.2	2.6	<1.0	2.1	0.45	-13.1	2.0	<1.0	1600	M	5.4	59	0.00	0.00	0.14	0.32	0.54
		9/6/2017	733	<0.20	<0.20	1.1	0.43	<0.20	2.7	<0.40	1.7	0.51	-118.1	1.6	<1.2	2200	M	5.9	59	0.00	0.00	0.14	0.37	0.49
		11/29/2017	817	<0.20	<0.20	1.2	0.44	<0.20	2.0	<0.40	1.7	2.15	-103.9	4.2 (b)	<1.2	1600	M	6.5	49	0.00	0.00	0.16	0.30	0.54
		6/11/2018	1012	<0.20	<0.20	0.48	0.3	<0.20	1.1	0.87	2.9	0.99	113.9	3.50	<1.2	2400	M	5.9	26	0.00	0.00	0.05	0.11	0.83
		12/3/2018	1186	<0.200	<0.200	0.999	0.422	<0.200	1.72	<0.24	<0.39	0.60	-44.9	6.00	<0.100	3120	M	5.42	42	0.00	0.00	0.35	0.65	0.00
AGW251-1	WT	12/2/2014	-276	<0.020	<0.2	<0.2	<0.2	<0.2	1.8	2.2	5.8	0.83	-73.1	3.4	37.2	16000	S/M	27.3	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	4.51	208.8	6.8	1.3	140	Fe/S	16.9	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	12.0	-60.5	1.0	280	440	Fe	8.9	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	0.85	41.55	1.0	117	560	Fe/S	33.8	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	0.83	124.4	2.0	20.7	1800	S/M	11	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	2.19	-78.2	4.5	4.3	1100	S/M	13.1	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	11.5	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	1	0.00	0.00	0.00	1.00	0.00
		6/7/2017	642	<0.2	<0.2	<0.2	<0.2	<0.2	1.0	<1.0	<1.0	5.88	61.6	2.0	69.7	410	Fe	11.5	16	0.00	0.00	0.00	1.00	0.00
		9/6/2017	733	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	<0.57	5.13	-48.2	1.6	28	120	Fe	11	0	0.00	0.00	0.00	0.00	0.00
		12/1/2017	819	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	<0.57	4.20	-59.2	5.5	210	54	Fe	13	0	0.00	0.00	0.00	0.00	0.00
		6/8/2018	1009	<0.20	<0.20	<0.20	<0.20	<0.20	0.34	<0.40	0.97	1.44	115.8	5	110	220	Fe	15	5	0.00	0.00	0.00	0.14	0.86
		12/13/2018	1196	<0.200	<0.200	<0.200	<0.200	<0.200	0.105	<0.24	<0.39	5.19	109.0	0.5	128	201	Fe	8.31	2	0.00	0.00	0.00	1.00	0.00

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

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)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)		PCE	TCE	Total DCE	VC	Ethene+ Ethane
AGW251-2	SZ	12/2/2014	-276	<0.020	<0.2	2	0.2	<0.2	4.7	3.2	5.9	0.49	-141.9	4.0	1.1	8500	M	11.2	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	0.94	210.6	5.2	2.1	4800	M	7.1	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	13.38	-109.1	6.0	1.2	3900	M	6.8	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	0.56	-99.13	1.5	1.9	2900	M	7.2	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	0.56	48.8	2.0	<1.0	3700	M	8.1	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	0.73	-81.8	2.0	<1.0	3300	M	8.1	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	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	51	0.00	0.00	0.00	0.31	0.69
		6/7/2017	642	<0.2	<0.2	<0.2	<0.2	<0.2	2.3	2.3	2.6	0.54	17.0	2.0	<1.0	3200	M	8.6	37	0.00	0.00	0.00	0.18	0.82
		9/6/2017	733	<0.20	<0.20	<0.20	<0.20	<0.20	1.6	2.4	1.7	0.55	-116.5	2.2	<1.2	3500	M	9.0	26	0.00	0.00	0.00	0.15	0.85
		12/1/2017	819	<0.20	<0.20	<0.20	<0.20	<0.20	1.4	2.0	1.8	2.66	-95.4	4.5	<1.2	2900	M	8.1	22	0.00	0.00	0.00	0.15	0.85
		6/8/2018	1009	<0.20	<0.20	<0.20	<0.20	<0.20	1.1	2.5	2.3	0.99	102.4	4.5	<1.2	2200	M	9.1	18	0.00	0.00	0.00	0.10	0.90
		12/13/2018	1196	<0.200	<0.200	<0.200	<0.200	<0.200	0.714	0.78	1.53	0.57	-29.7	3.4	0.127	2120	M	6.46	11	0.00	0.00	0.00	0.13	0.87
AGW251-3	IZ	12/2/2014	-276	<0.020	<0.2	5.9	0.5	<0.2	4.3	<1.0	1.2	1.09	-112.2	3.1	<1.0	2500	M	7.6	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	1.51	209.7	5.8	<1.0	2200	M	6.3	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	10.63	-93.7	6.0	<1.0	2100	M	6.1	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	0.59	-50.43	2.0	<1.0	2600	M	7.3	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	0.45	78.3	2.0	<1.0	2600	M	8.1	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	0.68	-38.6	3.5	<1.0	2100	M	6.7	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	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	142	0.00	0.00	0.05	0.95	0.00
		6/7/2017	642	<0.2	<0.2	0.6	<0.2	<0.2	6.6	<1.0	1.9	0.45	32.7	1.5	<1.0	2900	M	8.8	112	0.00	0.00	0.04	0.60	0.36
		9/6/2017	733	<0.20	<0.20	1.0	<0.20	<0.20	6.6	0.80	<0.57	0.47	-85.8	2.0	<1.2	2900	M	7.6	116	0.00	0.00	0.07	0.73	0.20
		12/5/2017	823	<0.20	<0.20	1.1	<0.20	<0.20	6.5	0.70	<0.57	2.93	-81.7	4.0	<1.2	3100	M	7.2	115	0.00	0.00	0.08	0.74	0.18
		3/13/2018	921	<0.20	<0.20	0.26	<0.20	<0.20	7.8	--	--	1.18	153.8	--	--	--	--	--	127	0.00	0.00	0.02	0.98	0.00
		6/8/2018	1009	<0.20	<0.20	0.26	<0.20	<0.20	4.3	1.8	1.1	0.99	106.7	4.5	<1.2	2500	M	8.7	71	0.00	0.00	0.02	0.40	0.58
		9/4/2018	1096	<0.20	<0.20	0.21	<0.20	<0.20	4.5	--	--	1.30	103.0	--	--	--	--	--	74	0.00	0.00	0.03	0.97	0.00
		12/13/2018	1196	<0.200	<0.200	<0.200	<0.200	<0.200	4.99	0.84	0.70	0.36	-41.8	1.8	0.332	2260	M	6.33	80	0.00	0.00	0.00	0.60	0.40
AGW269	SZ	8/14/2015	-21	<0.020	<0.2	6.7	0.7	<0.2	3.2	<1.0	<1.0	0.52	-95.9	1.0	1.9	1300	M	9.1	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	0.36	-49.0	4.0	<1.0	26000	M	122	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	0.27	-43.8	2.0	<1.0	15000	M	8.5	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	0.36	-28.1	2.0	<1.0	24000	M	8.2	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	0.49	-21.7	4.0	<1.0	29000	M	9.9	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	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	92	0.00	0.00	0.02	0.35	0.63
		6/1/2017	636	<0.2	<0.2	< 0.2	0.2	<0.2	2.3	1.5	11	0.50	2.7	3.5	<1.0	18000	M	8.8	39	0.00	0.00	0.00	0.08	0.92
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	1.0	<0.80	2.3	1.16	-44.9	3.0	<1.2	28000	M	8.5	16	0.00	0.00	0.00	0.17	0.83
		11/29/2017	817	<0.20	<0.20	<0.20	<0.20	<0.20	0.97	<1.2	2.4	0.26	-31.8	2.6	<1.2	34000	M	8.5	16	0.00	0.00	0.00	0.16	0.84
		5/31/2018	1000	<0.20	<0.20	<0.20	<0.20	<0.20	0.89	<0.40	3.7	1.14	103.5	4	<1.2	12000	M	8.5	14	0.00	0.00	0.00	0.10	0.90
		12/4/2018	1187	<0.200	<0.200	<0.200	<0.200	<0.200	0.159	<0.24	<0.39	0.67	-11.3	5.00	<0.100	22000	M	7.53	3	0.00	0.00	0.00	1.00	0.00

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

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)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)		PCE	TCE	Total DCE	VC	Ethene+ Ethane
AGW270	SZ	8/13/2015	-22	<0.020	<0.2	7.3	1	<0.2	2.2	<1.0	<1.0	1.58	199.4	5.8	<1.0	750	M	7.2	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	0.30	-11.0	2.5	<1.0	23000	M	682	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	0.30	-38.6	6.5	<1.0	22000	M	75.2	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	0.60	-52.4	2.0	<1.0	25000	M	46.7	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	0.49	-47.9	3.0	1.1	22000	M	39.1	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	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	119	0.00	0.00	0.10	0.65	0.25
		6/2/2017	637	<0.2	<0.2	0.6	0.3	<0.2	6.1	2.1	<1.0	0.68	1.6	4.0	<1.0	23000	M	20.3	107	0.00	0.00	0.05	0.54	0.41
		9/7/2017	734	<0.20	<0.20	0.34	0.22	<0.20	6.3	<1.2	<1.7	0.66	-55.8	3.5	<1.2	30000	M	18	107	0.00	0.00	0.05	0.95	0.00
		11/28/2017	816	<0.20	<0.20	0.23	<0.20	<0.20	3.0	<1.2	<1.7	0.28	-10.6	3.6	<1.2	23000	M	17	50	0.00	0.00	0.05	0.95	0.00
		5/31/2018	1000	<0.20	<0.20	<0.20	<0.20	<0.20	4.1	<1.2	3.7	6.84	113.8	3.5	<1.2	19000	M	12	66	0.00	0.00	0.00	0.35	0.65
		12/4/2018	1187	<0.200	<0.200	<0.200	<0.200	<0.200	1.26	<0.24	<0.39	0.85	-5.3	2.00	<0.100	18200	M	10.96	20	0.00	0.00	0.00	1.00	0.00
AGW271	SZ	8/13/2015	-22	<0.020	<0.2	6.5	0.7	<0.2	4.6	<1.0	<1.0	1.32	204	6.2	<1.0	2300	M	6.8	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	0.33	22.2	7.0	<1.0	19000	M	971	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	0.37	25.8	6.0	<10.0	28000	M	1080	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	0.58	-35.8	3.0	<1.0	29000	M	48.6	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	0.43	-39.5	2.5	<1.0	28000	M	16.9	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	<1.0	<1.0	0.72	-25.5	8.0	<1.0	36000	M	14.0	93	0.00	0.00	0.33	0.67	0.00
		3/7/2017	550	<0.2	<0.2	0.6	<0.2	<0.2	3.3	<1.0	6.3	0.76	-54.6	3.0	<1.0	34000	M	15.0	59	0.00	0.00	0.02	0.20	0.78
		6/2/2017	637	<0.2	<0.2	0.3	<0.2	<0.2	1.7	<1.0	<1.0	0.56	1.6	2.5	<1.0	30000	M	14.1	30	0.00	0.00	0.10	0.90	0.00
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	0.63	<1.2	<1.7	1.96	-60.1	3.0	<1.2	33000	M	13	10	0.00	0.00	0.00	1.00	0.00
		11/28/2017	816	<0.20	<0.20	<0.20	<0.20	<0.20	0.29	<1.2	<1.7	0.22	-43.6	3.8	<1.2	27000	M	14	5	0.00	0.00	0.00	1.00	0.00
		6/1/2018	1001	<0.20	<0.20	<0.20	<0.20	<0.20	0.57	<0.40	3.4	0.89	125.6	3.5	<1.2	14000	M	13	9	0.00	0.00	0.00	0.07	0.93
		12/4/2018	1187	<0.200	<0.200	<0.200	<0.200	<0.200	0.214	<0.24	<0.39	0.76	-8.0	4.00	<0.100	17600	M	10.39	3	0.00	0.00	0.00	1.00	0.00
AGW272	SZ	8/13/2015	-22	<0.020	0.2	7.3	0.6	<0.2	0.66	<1.0	<1.0	0.49	-55.2	1.8	1.5	400	Fe/S	5.4	94	0.00	0.02	0.87	0.11	0.00
		12/7/2015	94	<0.020	0.2	6.4	0.7	<0.2	1.8	<1.0	<1.0	1.36	-85.3	4.0	<1.0	940	M	3.5	104	0.00	0.01	0.71	0.28	0.00
		3/2/2016	180	<0.2	0.3	5.4	0.5	<0.2	1.2	<1.0	<1.0	0.91	-71.43	1.0	1.1	460	Fe/S	4.1	82	0.00	0.03	0.74	0.23	0.00
		6/17/2016	287	<0.2	0.3	4.9	0.6	<0.2	2	<1.0	<1.0	0.76	-29.8	2.5	1.4	450	Fe/S	4.1	91	0.00	0.03	0.62	0.35	0.00
		9/7/2016	369	<0.2	0.3	3.9	0.6	<0.2	2.3	<1.0	<1.0	0.42	-37.5	3.0	1.6	360	Fe/S	4.9	86	0.00	0.03	0.54	0.43	0.00
		11/28/2016	451	<0.2	0.4	6.0	0.7	<0.2	1.3	<1.0	<1.0	1.22	-19.0	5.0	<1.0	700	M	4.0	93	0.00	0.03	0.74	0.22	0.00
		3/6/2017	549	<0.2	0.4	5.5	0.6	<0.2	1.3	<1.0	<1.0	0.33	23.9	2.5	<1.0	500	M	4.3	87	0.00	0.04	0.73	0.24	0.00
		6/1/2017	636	<0.2	0.4	4.9	0.7	<0.2	1.4	<1.0	<1.0	0.89	0.2	2.0	1.7	440	Fe/S	4.3	83	0.00	0.04	0.69	0.27	0.00
		9/5/2017	732	<0.20	<0.20	3.5	0.65	<0.20	1.6	0.60	<0.57	3.19	-72.3	3.5	1.3	680	S/M	4.6	68	0.00	0.00	0.48	0.29	0.24
		11/28/2017	816	<0.20	0.29	4.6	0.52	<0.20	1.4	<0.40	<0.57	0.26	-43.6	1.8	<1.2	930	M	4.3	77	0.00	0.03	0.68	0.29	0.00
		6/1/2018	1002	<0.20	0.32	3.7	0.51	<0.20	1.3	0.88	<0.57	0.99	123.6	5	2.7	410	Fe/S	4.8	67	0.00	0.02	0.44	0.21	0.32
		12/4/2018	1187	<0.200	0.261	4.66	0.5	<0.200	1.76	<0.24	<0.39	0.47	-25.7	6.00	<0.100	1080	M	3.51	83	0.00	0.02	0.64	0.34	0.00
AGW273	SZ	8/13/2015	-22	<0.020	<0.2	6.3	0.7	<0.2	4.2	<1.0	<1.0	1.61	193	4.6	<1.0	880	M	6.1	139	0.00	0.00	0.52	0.48	0.00
		12/7/2015	94	<0.020	<0.2	3.4	0.6	<0.2	6.0	<1.0	<1.0	1.52	-99.3	6.0	<1.0	1500	M	6.0	137	0.00	0.00	0.30	0.70	0.00
		3/2/2016	180	<0.2	<0.2	3.5	0.5	<0.2	3.9	<1.0	<1.0	0.51	-54.3	1.2	<1.0	1300	M	6.1	104	0.00	0.00	0.40	0.60	0.00
		6/17/2016	287	<0.2	<0.2	2.9	5	<0.2	3.9	<1.0	<1.0	0.71	24.1	2.0	<1.0	1300	M	5.5	144	0.00	0.00	0.57	0.43	0.00
		9/7/2016	369	<0.2	<0.2	2.6	0.5	<0.2	4.2	<1.0	<1.0	0.77	-30.9	4.0	<1.0	900	M	6.7	99	0.00	0.00	0.32	0.68	0.00
		11/29/2016	452	<0.2	<0.2	2.4	0.5	<0.2	4.8	1.3	1.2	1.33	-26.6	6.0	<1.0	3600	M	6.4	107	0.00	0.00	0.16	0.40	0.45
		3/6/2017	549	<0.2	<0.2	2.6	0.4	<0.2	5	<1.0	<1.0	0.21	-10.9	4.5	<1.0	1200	M	6.4	111	0.00	0.00	0.28	0.72	0.00
		6/1/2017	636	<0.2	<0.2	2.5	0.5	<0.2	3.9	<1.0	<1.0	0.61	2.2	3.0	<1.0	1200	M	6.0	93	0.00	0.00	0.33	0.67	0.00
		9/5/2017	732	<0.20	<0.20	1.6	0.33	<0.20	4.0	0.95	<0.57	0.72	-64.9	2.2	<1.2	1300	M	6.0	84	0.00	0.00	0.17	0.54	0.29
		11/28/2017	816	<0.20	<0.20	0.84	0.29	<0.20	4.1	1.3	1.5	0.23	-39.2	2.8	<1.2	3300	M	6.3	77	0.00	0.00	0.07	0.38	0.55
		3/13/2018	921	<0.20	<0.20	1.7	0.37	<0.20	4.1	--	--	1.37	148.0	--	--	--	--	--	87	0.00	0.00	0.25	0.75	0.00
		6/1/2018	1002	<0.20	<0.20	1.4	0.3	<0.20	3.3	1.5	1.2	0.53	120.5	4	<1.2	1100	M	6.3	70	0.00	0.00	0.11	0.32	0.57
		9/4/2018	1096	<0.20	<0.20	1.1	0.32	<0.20	3.3	--	--	1.29	101.8	--	--	--	--	--	67	0.00	0.00	0.22	0.78	0.00
		12/5/2018	1188	<0.200	<0.200	0.501	0.219	<0.200	3.09	<0.24	<0.39	0.47	-62.1	6.00	<0.100	3130	M	5.56	57	0.00	0.00	0.13	0.87	0.00

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

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)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)		PCE	TCE	Total DCE	VC	Ethene+ Ethane
AGW274	SZ	8/13/2015	-22	<0.020	<0.2	<0.2	<0.2	<0.2	4	2.3	<1.0	0.54	-36.6	3.6	<1.0	1900	M	7.5	64	0.00	0.00	0.00	0.44	0.56
		12/7/2015	94	<0.020	<0.2	<0.2	<0.2	<0.2	1.9	1.3	2.2	2.07	-95.0	4.0	<1.0	2700	M	8.1	30	0.00	0.00	0.00	0.20	0.80
		3/2/2016	180	<0.2	<0.2	2	0.4	<0.2	5.5	<1.0	<1.0	0.43	-48.9	2.0	<1.0	920	M	7	113	0.00	0.00	0.22	0.78	0.00
		6/17/2016	287	<0.2	<0.2	0.6	0.3	<0.2	4.6	1.5	<1.0	0.47	-5.1	2.0	<1.0	920	M	5.8	83	0.00	0.00	0.07	0.54	0.39
		9/8/2016	370	<0.2	<0.2	<0.2	<0.2	<0.2	1.1	1.6	3.6	1.05	-33.1	2.8	<1.0	9600	M	7	18	0.00	0.00	0.00	0.09	0.91
		11/29/2016	452	<0.2	<0.2	<0.2	<0.2	<0.2	0.7	1.6	4.6	0.83	-23.7	5.5	<1.0	13000	M	8.2	11	0.00	0.00	0.00	0.05	0.95
		3/6/2017	549	<0.2	<0.2	0.6	<0.2	<0.2	4.4	1.1	1.0	0.25	-27.3	1.5	<1.0	1500	M	7.6	77	0.00	0.00	0.04	0.47	0.49
		6/1/2017	636	<0.2	<0.2	1.9	0.4	<0.2	4.5	<1.0	<1.0	0.58	6.1	2.0	<1.0	700	M	6.7	96	0.00	0.00	0.25	0.75	0.00
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	0.43	0.79	4.4	2.22	-55.9	4.3	<1.2	5300	M	6.9	7	0.00	0.00	0.00	0.04	0.96
		11/28/2017	816	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	<0.40	4.6	0.46	-41.3	3.8	<1.2	12000	M	7.8	3	0.00	0.00	0.00	0.02	0.98
		6/1/2018	1002	<0.20	<0.20	0.82	0.2	<0.20	3.2	1.5	1.5	0.55	117.5	4	<1.2	870	M	7.1	62	0.00	0.00	0.06	0.31	0.63
		12/5/2018	1188	<0.200	<0.200	<0.200	<0.200	<0.200	0.116	<0.24	<0.39	0.55	-63.3	6.50	<0.100	7640	M	7.11	2	0.00	0.00	0.00	1.00	0.00
AGW275	SZ	8/13/2015	-22	<0.020	<0.2	2.3	0.3	<0.2	7.7	<1.0	<1.0	0.64	-47.6	3.0	1	2000	M	7.6	150	0.00	0.00	0.18	0.82	0.00
		12/7/2015	94	<0.020	<0.2	2.5	0.3	<0.2	7.7	<1.0	<1.0	1.02	-100.3	4.5	<1.0	2100	M	6.9	152	0.00	0.00	0.19	0.81	0.00
		3/2/2016	180	<0.2	<0.2	0.6	<0.2	<0.2	7.7	2.2	1.6	0.35	-48.5	2.2	<1.0	14000	M	79.7	129	0.00	0.00	0.02	0.47	0.50
		6/17/2016	287	<0.2	<0.2	<0.2	<0.2	<0.2	0.16	2.8	4.5	0.44	0.07	3.5	<1.0	26000	M	7.9	3	0.00	0.00	0.00	0.01	0.99
		9/8/2016	370	<0.2	<0.2	<0.2	<0.2	<0.2	0.061	<1.0	5.8	0.46	-45.3	2.0	<1.0	16000	M	8.3	1	0.00	0.00	0.00	0.01	0.99
		11/29/2016	452	<0.2	<0.2	<0.2	0.2	<0.2	0.055	<1.0	6.5	0.60	-30.4	7.0	<1.0	16000	M	4.1	3	0.00	0.00	0.01	0.00	0.99
		3/6/2017	549	<0.2	<0.2	<0.2	<0.2	<0.2	0.057	<1.0	5.1	0.20	-44.9	2.0	<1.0	14000	M	8.5	1	0.00	0.00	0.00	0.01	0.99
		6/1/2017	636	<0.2	<0.2	<0.2	<0.2	<0.2	0.053	<1.0	9.6	0.52	0.3	1.0	<1.0	17000	M	8.1	1	0.00	0.00	0.00	0.00	1.00
		9/5/2017	732	<0.20	<0.20	<0.20	<0.20	<0.20	0.047	<0.40	4.1	0.67	-58.5	1.8	<1.2	9500	M	7.8	1	0.00	0.00	0.00	0.01	0.99
		11/29/2017	817	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	4.7	0.27	-47.5	3.8	<1.2	7300	M	8.0	0	0.00	0.00	0.00	0.00	1.00
		6/1/2018	1001	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020	<0.40	4.1	0.7	120	3	<1.2	8100	M	8.7	0	0.00	0.00	0.00	0.00	1.00
		12/5/2018	1188	<0.200	<0.200	<0.200	<0.200	<0.200	0.0295	<0.24	<0.39	0.45	-65.4	6.00	<0.100	2830	M	6.06	0	0.00	0.00	0.00	1.00	0.00
IW33	SZ	8/13/2015	-22	<0.020	<0.2	6.6	0.8	<0.2	3	<1.0	<1.0	1.86	-17.1	2.6	<1.0	940	M	7.4	124	0.00	0.00	0.61	0.39	0.00
		11/28/2016	451	--	--	--	--	--	--	--	--	9.27	38.3	--	--	--	--	205	--	--	--	--	--	--
IW34	SZ	8/17/2015	-18	<0.020	0.2	7.6	0.8	<0.2	4.9	<1.0	<1.0	0.57	-60.2	4.0	<1.0	1900	M	6.9	167	0.00	0.01	0.52	0.47	0.00
		12/7/2015	94	<0.10	1.6	8.5	1.2	<0.2	1.1	2.9	1.7	1.79	-24.7	9.5	22.5	7900	S/M	6010	130	0.00	0.04	0.35	0.06	0.55
		3/2/2016	180	<0.2	5.3	16	2.5	<0.2	1.1	3	2.7	0.39	44.1	7.0	<10.0	15000	M	6450	249	0.00	0.09	0.43	0.04	0.44
		6/16/2016	286	<0.2	5.4	16	2.2	<0.2	0.9	3.8	2.2	1.07	116	3.0	1.9	23000	M	3840	243	0.00	0.09	0.42	0.03	0.46
		9/7/2016	369	<0.2	1.9	7.4	0.8	<0.2	0.34	1.5	<1.0	0.46	-85.3	6.0	1.1	17000	M	377	104	0.00	0.09	0.54	0.03	0.34
		11/28/2016	451	<2.0	<2.0	6.1	<2.0	<2.0	0.31	<1.0	<1.0	0.50	-69.7	7.0	<1.0	24000	M	259	68	0.00	0.00	0.93	0.07	0.00
		3/6/2017	549	<0.040 (a)	0.16 (a)	3.6	<2.0	<0.040 (a)	1.2	1.1	<1.0	0.89	-38.9	4.5	<1.0	24000	M	88	58	0.00	0.01	0.38	0.20	0.41
		6/1/2017	636	<0.2	<0.2	1.7	0.4	<0.2	2.2	2.4	< 1.0	0.53	28.3	1.0	<1.0	30000	M	36.6	58	0.00	0.01	0.15	0.25	0.60
		9/5/2017	732	<0.20	<0.20	1.0	<0.20	<0.20	2.0	<1.2	<1.7	1.26	-16.3	4.5	<1.2	27000	M	37	42	0.00	0.00	0.24	0.76	0.00
		11/28/2017	816	<0.20	<0.20	0.85	<0.20	<0.20	1.1	<1.2	<1.7	0.45	8.1	3.0	<1.2	27000	M	46	26	0.00	0.00	0.33	0.67	0.00
		5/31/2018	1000	<0.20	<0.20	0.34	<0.20	<0.20	2.6	<1.2	2.9	1.35	121.9	5.0	<1.2	24000	M	32	45	0.00	0.00	0.02	0.29	0.68
		12/4/2018	1187	<0.200	<0.200	0.272	<0.200	<0.200	0.67	<0.24	<0.39	0.52	-2.7	4.00	<0.100	23300	M	46.99	14	0.00	0.00	0.21	0.79	0.00
IW35	SZ	8/17/2015	-18	<0.020	<0.2	3.3	0.5	<0.2	3.7	<1.0	<1.0	0.77	-22.8	2.0	1	1800	M	7.2	98	0.00	0.00	0.40	0.60	0.00
		11/28/2016	451	--	--	--	--	--	--	--	--	0.76	0.7	--	--	--	--	16.3	--	--	--	--	--	--

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

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)	DO (mg/L)	ORP (mV)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	Aquifer Redox State	TOC (mg/L)		PCE	TCE	Total DCE	VC	Ethene+ Ethane
IW36	SZ	8/17/2015	-18	<0.020	0.2	3.3	0.7	<0.2	6	<1.0	<1.0	0.58	-29.5	2.8	<1.0	1700	M	7.6	139	0.00	0.01	0.30	0.69	0.00
		12/7/2015	94	<0.020	<1.0	1.6	<1.0	<1.0	3.8	<1.0	1.4	1.77	-100.2	6.0	<1.0	17000	M	63.7	77	0.00	0.00	0.13	0.49	0.38
		3/2/2016	180	<0.2	<0.2	1.5	0.4	<0.2	5.7	<1.0	2	0.32	-47.58	1.5	<1.0	14000	M	17.9	111	0.00	0.00	0.11	0.51	0.38
		6/16/2016	286	<0.2	<0.2	1.5	0.4	<0.2	4.5	<1.0	1.9	0.36	-7.85	1.0	<1.0	11000	M	11.4	92	0.00	0.00	0.13	0.47	0.41
		9/7/2016	369	<0.2	<0.2	1.7	0.4	<0.2	4.3	<1.0	1.8	0.35	-27.8	4.5	<1.0	6600	M	11.2	90	0.00	0.00	0.14	0.46	0.40
		11/28/2016	451	<0.2	<0.2	1.7	0.4	<0.2	4.8	<1.0	1.2	0.87	-8.2	6.0	<1.0	2900	M	10.1	98	0.00	0.00	0.16	0.56	0.29
		3/6/2017	549	<0.2	<0.2	1.3	0.4	<0.2	6.1	<1.0	<1.0	0.71	-38.9	1.5	<1.0	2500	M	10.8	115	0.00	0.00	0.15	0.85	0.00
		6/1/2017	636	<0.2	<0.2	1.3	0.4	<0.2	5.5	<1.0	2.0	0.36	5.9	1.5	<1.0	2800	M	10.3	106	0.00	0.00	0.10	0.51	0.39
		9/5/2017	732	<0.20	<0.20	0.36	0.23	<0.20	5.0	<0.40	1.7	0.69	-54.3	2.4	<1.2	2600	M	9.2	86	0.00	0.00	0.04	0.56	0.40
		11/29/2017	817	<0.20	<0.20	0.26	0.21	<0.20	4.9	0.41	1.3	0.34	-29.3	1.8	<1.2	2400	M	9.2	83	0.00	0.00	0.03	0.56	0.41
		3/13/2018	921	<0.20	<0.20	0.39	0.30	<0.20	6.2	--	--	1.20	155.5	--	--	--	--	--	106	0.00	0.00	0.07	0.93	0.00
		5/31/2018	1001	<0.20	<0.20	0.22	0.23	<0.20	3.3	1.2	2.2	0.65	106.2	4	<1.2	1900	M	9.8	57	0.00	0.00	0.03	0.30	0.67
		9/4/2018	1096	<0.20	<0.20	<0.20	<0.20	<0.20	2.0	--	--	5.85	109.6	--	--	--	--	--	32	0.00	0.00	0.00	1.00	0.00
		12/4/2018	1187	<0.200	<0.200	<0.200	<0.200	<0.200	2.65	<0.24	<0.39	0.51	-8.7	5.50	<0.100	2410	M	8.24	42	0.00	0.00	0.00	1.00	0.00
IW37	SZ	8/13/2015	-22	<0.020	<0.2	5.3	0.5	<0.2	4.9	<1.0	<1.0	0.56	-45	2.0	<1.0	1800	M	6.6	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	1.40	-24.2	9.0	6.6	3800	M	4780	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	0.47	35.1	5.0	<10.0	23000	M	2480	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	0.91	-81.5	2.5	<1.0	20000	M	1130	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	0.91	-123.4	5.0	1.3	17000	M	337	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	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	29	0.00	0.00	0.90	0.10	0.00
		6/1/2017	636	<0.2	<0.2	1.8	<0.2	<0.2	0.38	2.6	< 1.0	0.66	-49.3	4.5	<1.0	31000	M	87.6	25	0.00	0.00	0.16	0.05	0.79
		9/5/2017	732	<0.20	<0.20	0.80	<0.20	<0.20	1.3	<1.2	<1.7	0.88	-71.9	3.0	<1.2	31000	M	59	29	0.00	0.00	0.28	0.72	0.00
		11/28/2017	816	<0.20	<0.20	0.53	<0.20	<0.20	0.91	<1.2	<1.7	0.19	-40.3	3.6	<1.2	42000	M	48	20	0.00	0.00	0.27	0.73	0.00
		3/13/2018	921	<0.20	<0.20	0.36	<0.20	<0.20	1.3	--	--	1.27	157.1	--	--	--	--	--	25	0.00	0.00	0.15	0.85	0.00
		5/31/2018	1001	<0.20	<0.20	0.22	<0.20	<0.20	0.98	<1.2	3.3	0.52	83.9	4.0	<1.2	21000	M	20	18	0.00	0.00	0.02	0.12	0.86
		9/4/2018	1096	<0.20	<0.20	<0.20	<0.20	<0.20	0.42	--	--	1.04	108.6	--	--	--	--	--	7	0.00	0.00	0.00	1.00	0.00
		12/5/2018	1188	<0.200	<0.200	<0.200	<0.200	<0.200	0.309	<0.24	<0.39	0.42	-70.1	6.50	<0.100	23900	M	18.89	5	0.00	0.00	0.00	1.00	0.00

Notes:

Blue shading indicates the compound with highest molar fraction per event

Total DCE is the sum of cDCE, tDCE, and 11DCE

Acetylene was monitored from August 2015 through December 2016. There were no detections of this constituent; therefore, sampling was discontinued and it has been removed from this table.

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.

(b) Iron was measured on 12/14/2017.

(c) Iron was measured on November 28, 2017.

-- = not applicable/not analyzed

Abbreviations/Acronyms:

11DCE = 1,1-dichloroethene
cDCE = cis-1,2-dichlorethene
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