LANDAU ASSOCIATES

January 15, 2020

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

Attn: Li Ma

Transmitted via email to: *lima461@ecy.wa.gov*

Re: Status Report No. 69, October through December 2019 Activity Period
Boeing Auburn Facility
WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345
Auburn, Washington
Project No. 0025164.170.501

Dear Mr. Ma:

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, Landau Associates, Inc. (LAI) is providing Status Report No. 69 on behalf of The Boeing Company (Boeing), which covers the 3-month activity period of October through December, 2019.

References

1. October 9, 2019. Email: Updates RE: Well during site visit. From Robin Harrover, Washington State Department of Ecology (Ecology), to Sarah Fees, LAI.
2. October 15, 2019. Letter: Status Report No. 68, July through September 2019 Activity Period, Boeing Auburn Facility, WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345, Auburn, Washington. From Jennifer Wynkoop and Sarah Fees, LAI, to Robin Harrover, Ecology.
3. October 30, 2019. LAI Report: Draft Feasibility Study, Boeing Auburn Facility, Auburn, Washington.
4. November 4, 2019. File Transfer: Boeing Auburn Draft Feasibility Study Report – Appendices. From Sarah Fees, LAI, to Li Ma and Christa Colouzis, Ecology.
5. November 6, 2019. Project Meeting: Feasibility Study Report Overview. Ecology NWRO: Sarah Fees, Jennifer Wynkoop, LAI; Debbie Taege, Boeing; Li Ma, Christa Colouzis, Ecology.
6. November 8, 2019. Letter: Algona Permit Extension for Groundwater and Stormwater Feature Monitoring. From Sarah Fees, LAI, to Kenneth Faucher, City of Algona.
7. November 8, 2019. Email: RE: Algona ROW Extension Request. From Kenneth Faucher, City of Algona, to Sarah Fees, LAI.

8. November 26, 2019. Email: Cyanide Analysis during the December sampling event at AOC A-09. From Sarah Fees, LAI, to Li Ma and Christa Colouzis, Ecology.
9. November 26, 2019. Ecology Listserv: Check out the new Futurewise Boeing Auburn webpage!
10. December 11, 2019. Project Meeting: Ecology comments on Feasibility Study Report. Ecology NWRO: Sarah Fees, Jennifer Wynkoop, LAI; Debbie Taege, Boeing; Li Ma, Christa Colouzis, Dean Yasuda, Ecology. Ecology provided agenda on December 9.
11. December 13, 2019. Email: RE: Instead of a B-A technical call on Dec 4. From: Li Ma, Ecology, to Sarah Fees, Jennifer Wynkoop, LAI; Debbie Taege, Boeing; Christa Colouzis, Ecology. Attachments: Copy of PowerPoint presentation from Dec. 11 meeting.
12. December 17, 2019. Email: Boeing Auburn - Follow-up on New Monitoring Well Requests. From Debbie Taege, Boeing, to Li Ma and Christa Colouzis, Ecology.
13. December 20, 2019. Email: EIM Data Submission - Study ID FS2018, Boeing Auburn. From Susan Pool, Ecology, to Kristi Schultz, LAI.
14. December 20, 2019. Letter: Groundwater Monitoring Results: Fourth Quarter 2018 and Second Quarter 2019, Auburn School District Warehouse Property Wells, Auburn, Washington. From Sarah Fees, LAI, to Cindi Blansfield, Assistant Superintendent of Business and Operations, Auburn School District.
15. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and May 2019, Coastal Farm and Ranch Well, Auburn, Washington. From Sarah Fees, LAI, to Byron Baule, Operations Manager, Coastal Farm and Ranch.
16. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and May and June 2019, Boeing Wells on Fana Auburn 234 LLC Property, Auburn, Washington. From Sarah Fees, LAI, to John Powers, Fana Group of Companies.
17. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and June 2019, Boeing Wells on Fana Auburn LLC Property, Auburn, Washington. From Sarah Fees, LAI, to John Powers, Fana Group of Companies.
18. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and June 2019, US General Services Administration Wells, Auburn, Washington. From Sarah Fees, LAI, to Dwayne Smith, US General Services Administration (GSA).
19. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and May 2019, 840 Industry Drive North Well, Algona, Washington. From Sarah Fees, LAI, to Janet Frentzel, Vice President, Global Environmental and Engineering, Prologis.
20. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and May 2019, Boeing Wells along the Interurban Trail, Auburn and Algona, Washington. From Sarah Fees, LAI, to Kurt Krebs, Puget Sound Energy (PSE).
21. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and June 2019, Washington State Department of Transportation Well, Auburn, Washington. From Sarah Fees, LAI, to Amir Ahmadi, Regional Materials Engineer, Washington State Department of Transportation (WSDOT).
22. December 20, 2019. Letter: Groundwater and Stormwater Feature Monitoring Results: March, May, and June, 2019, City of Algona Right-Of-Way, Algona, Washington. From Sarah Fees, LAI, to David Hill, Mayor, City of Algona.

23. December 20, 2019. Letter: Groundwater Monitoring Results: Fourth Quarter 2018 and Second Quarter 2019, City of Auburn Wells, Auburn, Washington. From Sarah Fees, LAI, to Chris Thorn, Water Quality Program Coordinator, City of Auburn.
24. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and May 2019, Sentry Wells, Auburn, Washington. From Sarah Fees, LAI, to Jim Morgan, Public Works Manager, City of Pacific.
25. December 20, 2019. Letter: Groundwater Monitoring Results: September and December 2018 and May 2019, Primus Wells, Algona, Washington. From Sarah Fees, LAI, to Peter Wazlawek, Primus International, Inc. (Primus).
26. December 20, 2019. Letter: Groundwater Monitoring Results: December 2018 and May and June 2019, WP Glimcher Wells, Auburn, Washington. From Sarah Fees, LAI, to Christian Faltenberger, General Manager, WP Glimcher.
27. December 23, 2019. Email: Auburn FS – Follow-up to Modeling Meeting. From Debbie Taege, Boeing, to Li Ma and Christa Colouzis, Ecology.

Work Conducted

General Site-wide Corrective Action Activities

On October 15, 2019, LAI submitted Status Report No. 68 regarding third quarter 2019 activities to Ecology for their records (Reference #2). During October, the Ecology project manager transitioned from Robin Harrover to Li Ma. Li Ma and Robin Harrover attended a monthly conference call with Boeing, LAI, and the City of Algona's environmental consultant, ICF International (ICF) in October. Conference calls in November and December were canceled and replaced with in-person meetings specific to feasibility study reporting. Regularly scheduled monthly conference calls will begin again in January 2020 to discuss technical aspects of the project scope, schedule, and public outreach.

As part of various offsite monitoring well access agreement and right-of-way (ROW) permits, Boeing provides annual individualized letters with groundwater monitoring results. The following groundwater data letters were distributed during the fourth quarter 2019:

- Data for AGW237(D), AGW238(I), and AGW239(S) located on the Auburn School District warehouse property to the Auburn School District (Reference #14)
- AGW236(S) data to Coastal Farm and Ranch (Reference #15)
- AGW179(I) and AGW180(D) data to Fana Auburn 234 LLC (Reference #16)
- AGW177(I) and AGW178(D) data to Fana Auburn LLC (Reference #17)
- Data for AGW256(I), AGW257(S), and AGW258(S) to GSA (Reference #18)
- AGW276(M) data to Prologis (Reference #19)
- Data for 16 wells located on the Interurban Trail to PSE (Reference #20)
- Data for APP-057 to WSDOT (Reference #21)

- Data for 35 wells and one stormwater feature located on City of Algona ROW to the City of Algona (Reference #22)
- Data for 32 wells located on City of Auburn ROW and City of Auburn property to the City of Auburn (Reference #23)
- Sentry well data to the City of Pacific (Reference #24)
- Data for 12 wells to Primus (Reference #25)
- Data for 17 wells located on The Outlet Collection property to WP Glimcher (Reference #26).

Groundwater Sampling

Phase 9 semiannual groundwater sampling took place from December 2 through December 11, 2019. 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 2019 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 9 groundwater sampling program, Boeing has been conducting sampling and analysis for total cyanide at five on-site wells. Prior to the December sampling event, Boeing requested modifications to the cyanide sampling (Reference #8). The modifications included analyzing all wells currently scheduled for cyanide analysis in the Phase 9 groundwater monitoring plan for free cyanide analysis by Method D7237-10. Total cyanide analysis by Method D7511 will still be completed at two locations where there appear to be possible matrix interferences. Results of the cyanide analysis are presented in Attachment 1.

Several sampling locations are within the City of Algona ROW and require a permit to access. The access agreement for monitoring wells and stormwater features in the City of Algona's ROW was set to expire on December 31, 2019. On November 8, 2019, Boeing requested a permit extension allowing access to the monitoring wells and stormwater features through December 31, 2024 (Reference #6). The request was approved on November 8, 2019 (Reference #7).

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. Ongoing pilot test monitoring is completed semiannually during the June and December groundwater sampling events.

The December 2019 groundwater sampling event was the thirteenth 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 eight 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 (baseline TOC concentrations were less than 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. Changes in vinyl chloride concentrations and detections of end products ethene and/or ethane have been observed at all 11 wells discussed above, with primary or secondary effects of enhanced bioremediation.

Monitoring data from fourth quarter 2019 indicate TOC concentrations have returned to near baseline at all eight wells that have exhibited primary indications of enhanced bioremediation as discussed above. However, treatment continues at all 11 wells that showed primary or secondary effects of enhanced bioremediation. This is indicated by persistence of the highly reduced (methanogenic) aquifer conditions needed for complete reductive dechlorination and the molar predominance of the non-toxic reductive dechlorination end products (ethene and ethane) at all 11 wells. Concentrations of total chlorinated volatile organic compounds (VOCs [sum of TCE, DCE, and VC]) have also decreased significantly at the 11 wells and do not show evidence of rebound through the fourth year of post-injection monitoring.

Feasibility Study Investigation and Reporting

The draft feasibility study (FS) report was submitted to Ecology on October 30, 2019 (Reference #3). Appendices to the draft FS report were submitted to Ecology on November 4, 2019 (Reference #4). Boeing presented a summary of the draft FS report to new Ecology project manager, Li Ma, and other Ecology team members on November 6, 2019 (Reference #5). Ecology provided initial comments on the draft FS report during a meeting on December 11, 2019 (Reference #10). The initial comments were provided to Boeing in the form of a copy of the PowerPoint presentation given by Ecology during the meeting (Reference #11). Boeing provided an understanding of next steps, based on Ecology comments, via email on December 23, 2019 (Reference #27). Boeing and Ecology will continue to discuss comments and next steps for potential revisions to the FS report.

Ecology, in its response letters for Boeing's Building 17-06 and Former Building 17-03 data submittals, requested installation of four additional monitoring wells at the site: two monitoring wells in Building 17-06 to continue to monitor petroleum hydrocarbons related to AOC A-13, and two continuous

multichannel tubing (CMT) monitoring wells in the Former Building 17-03 source area. Based on results of the FS evaluation, monitoring wells at Building 17-06 are no longer required. Boeing requested Ecology agreement that these wells are no longer needed, and determination of a plan for cleanup of site-wide groundwater VOC contamination prior to determining the need for additional wells at the Former Building 17-03 source area (Reference #12).

Data Management

Boeing and Ecology have agreed on annual submittals of data to Ecology's Environmental Information Management (EIM) database. On August 27, 2019, Boeing submitted required EIM data for the past year of data collected (July 2018 through June 2019). On December 20, 2019, Boeing received approval of the data submission from Ecology's EIM coordinator, and the data was loaded to the EIM database (Reference #13).

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 required. On November 26, 2019, Ecology posted a notification to the Ecology listserv about the new Futurewise Boeing Auburn webpage (Reference #9).

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 2019, free-phase product was detected in well AGW128 in October, November, and December (0.05, 0.03, and 0.01 feet, respectively). Free-phase product has not been detected in any of the other wells in Building 17-06. Boeing maintains a sorbent sock in AGW128 to remove accumulated product, which is replaced approximately monthly. The need for continuing this product monitoring is being evaluated.

Occurrence of Problems

On October 9, 2019, Ecology notified Boeing that the lock on AGW254 was missing (Reference #1). Boeing replaced the lock on October 10, 2019.

Projected Work for Next Reporting Period January through March 2020

Activities projected for the next reporting period pertain to the FS reporting, other reporting, and ongoing monitoring of stormwater and surface water features. Tasks during first quarter 2020 are expected to include:

- Continuing to discuss Ecology comments of the draft FS report. Boeing and Ecology will have additional meetings to discuss suggested revisions to the FS report
- Conducting wet season stormwater feature sampling
- Submitting updated site-wide plume figures and an updated vapor intrusion assessment for Algona with data from June 2019
- Complete permit renewal process for wells in City of Auburn right-of-way.

Other Significant Findings, Changes, and Contacts

Former Ecology site manager, Robin Harrover, retired in October 2019. Li Ma has replaced Robin as the Ecology site manager for the Boeing Auburn project. In addition, Sarah Fees, has replaced Jennifer Wynkoop, as the Landau Associates project manager.

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
Associate Geologist

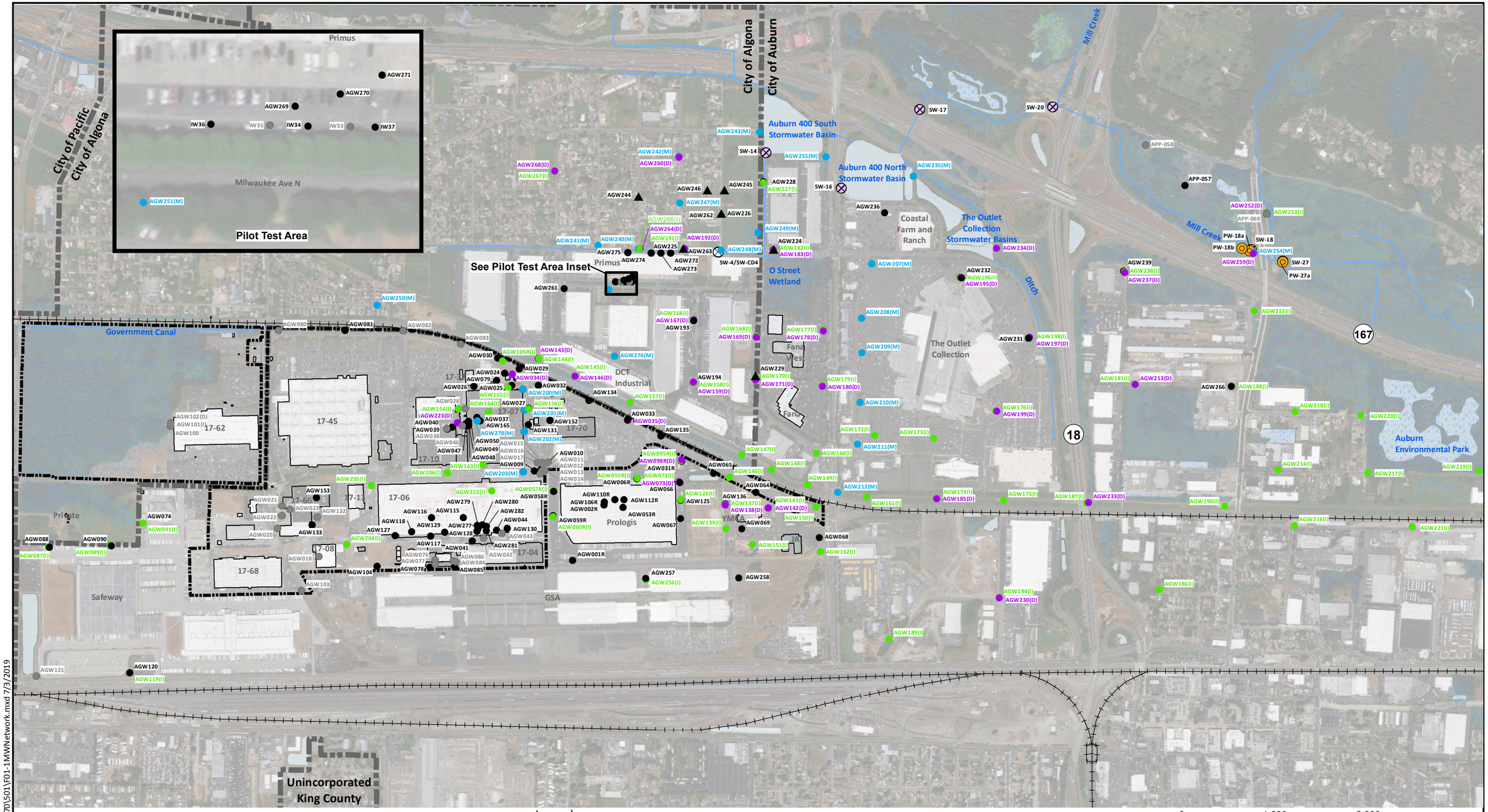
KMG/SEF/kjg
[Y:\025\164\R\QUARTERLY PROGRESS RPTS\2019\4Q2019\4Q2019 STATUS RPT NO. 69 LETTER RPT_DRAFT.DOCX

cc: Debbie Taege (email only)
Thomas MacMannis, Boeing (email only)
Kamara Sams, Boeing (email only)
James Swortz, Boeing (email only)
Kathryn Moxley, Boeing (email only)
Patrick McCabe, Boeing Realty (email only)
Janet Frentzel, Prologis (email only)
Kim Lemon, Prologis (email only)
Brett Richer, Prologis (email only)
Steve Campbell, Prologis (email only)
Jason Berry, YMCA Auburn (email only)
Christa Colouzis, Ecology (email only)

Attachments: Attachment 1: Groundwater Sampling Results
Attachment 2: Pilot Test Results
Attachment 3: 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
4Q2019 Semiannual 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)	Free Cyanide by ASTM D7237 (b)
AGW001R	AGW001R-20191210	12/10/2019	PDN	19L0180	19L0180-13	X									
AGW002R	AGW002R-20191211	12/11/2019	N	19L0247	19L0247-11	X				X	X	X			
AGW002R	AGW900-20191211	12/11/2019	FD	19L0247	19L0247-12	X				X	X	X			
AGW006R	AGW006R-20191210	12/10/2019	PDN	19L0180	19L0180-11	X									
AGW010	AGW010-20191203	12/3/2019	N	19L0057	19L0057-02	X	X	X	X						
AGW010	AGW901-20191203	12/3/2019	FD	19L0057	19L0057-03	X	X	X	X						
AGW024	AGW024-20191205	12/5/2019	PDN	19L0117	19L0117-22	X									
AGW025	AGW025-20191211	12/11/2019	PDN	19L0238	19L0238-09	X									
AGW026	AGW026-20191211	12/11/2019	PDN	19L0247	19L0247-03	X									
AGW027	AGW027-20191211	12/11/2019	PDN	19L0247	19L0247-02	X									
AGW031R	AGW031R-20191205	12/5/2019	PDN	19L0117	19L0117-12	X									
AGW032	AGW032-20191205	12/5/2019	PDN	19L0117	19L0117-20	X									
AGW033	AGW033-20191205	12/5/2019	PDN	19L0117	19L0117-15	X									
AGW037	AGW037-20191210	12/10/2019	PDN	19L0180	19L0180-18	X									
AGW047	AGW047-NAOH-20191209	12/9/2019	N	A9L0295	A9L0295-01									X	
AGW048	AGW048-NAOH-20191209	12/9/2019	N	A9L0295	A9L0295-03									X	
AGW049	AGW049-20191209	12/9/2019	N	19L0162	19L0162-10								X		
AGW049	AGW049-NAOH-20191209	12/9/2019	N	A9L0295	A9L0295-05									X	
AGW050	AGW050-20191209	12/9/2019	N	19L0162	19L0162-11								X		
AGW050	AGW050-NAOH-20191209	12/9/2019	N	A9L0295	A9L0295-07									X	X
AGW050	AGW902-20191209	12/9/2019	FD	19L0162	19L0162-12								X		
AGW050	AGW902-NAOH-20191209	12/9/2019	FD	A9L0295	A9L0295-11									X	X
AGW053R	AGW053R-20191211	12/11/2019	PDN	19L0247	19L0247-15	X									
AGW055R	AGW055R-20191210	12/10/2019	PDN	19L0180	19L0180-12	X									
AGW057R	AGW057R-20191211	12/11/2019	PDN	19L0247	19L0247-01	X									
AGW060R	AGW060R-20191210	12/10/2019	PDN	19L0180	19L0180-14	X									
AGW064	AGW064-20191205	12/5/2019	PDN	19L0117	19L0117-04	X									
AGW066	AGW066-20191210	12/10/2019	PDN	19L0180	19L0180-09	X									
AGW067	AGW067-20191210	12/10/2019	PDN	19L0180	19L0180-06	X									
AGW069	AGW069-20191205	12/5/2019	PDN	19L0117	19L0117-06	X									
AGW072	AGW072-20191210	12/10/2019	PDN	19L0180	19L0180-07	X									
AGW073	AGW073-20191210	12/10/2019	PDN	19L0180	19L0180-08	X									
AGW074	AGW074-20191211	12/11/2019	PDN	19L0247	19L0247-05	X									
AGW079	AGW079-20191205	12/5/2019	PDN	19L0117	19L0117-21	X									
AGW085	AGW085-20191204	12/4/2019	PDN	19L0078	19L0078-13	X									
AGW087	AGW087-20191211	12/11/2019	PDN	19L0247	19L0247-07	X									
AGW088	AGW088-20191211	12/11/2019	PDN	19L0247	19L0247-08	X									
AGW089	AGW089-20191211	12/11/2019	PDN	19L0247	19L0247-09	X									
AGW090	AGW090-20191211	12/11/2019	PDN	19L0247	19L0247-10	X									
AGW091	AGW091-20191211	12/11/2019	PDN	19L0247	19L0247-04	X									
AGW095R	AGW095R-20191205	12/5/2019	PDN	19L0117	19L0117-13	X									
AGW098R	AGW098R-20191205	12/5/2019	PDN	19L0117	19L0117-11	X									
AGW105R	AGW105R-20191205	12/5/2019	PDN	19L0117	19L0117-17	X									
AGW106R	AGW106R-20191211	12/11/2019	N	19L0247	19L0247-16	X				X	X	X			
AGW110R	AGW110R-20191211	12/11/2019	N	19L0247	19L0247-13	X				X	X	X			
AGW112R	AGW112R-20191211	12/11/2019	PDN	19L0247	19L0247-14	X									
AGW115	AGW115-20191204	12/4/2019	PDN	19L0078	19L0078-09	X									

Table 1-1
4Q2019 Semiannual 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)	Free Cyanide by ASTM D7237 (b)
AGW116	AGW116-20191204	12/4/2019	PDN	19L0078	19L0078-10	X									
AGW117	AGW117-20191203	12/3/2019	PDN	19L0061	19L0061-06	X									
AGW118	AGW118-20191204	12/4/2019	PDN	19L0078	19L0078-11	X									
AGW119	AGW119-20191204	12/4/2019	PDN	19L0078	19L0078-05	X									
AGW120	AGW120-20191204	12/4/2019	PDN	19L0078	19L0078-06	X									
AGW125	AGW125-20191210	12/10/2019	PDN	19L0180	19L0180-04	X									
AGW125	AGW903-20191210	12/10/2019	PDFD	19L0180	19L0180-05	X									
AGW126	AGW126-20191210	12/10/2019	N	19L0180	19L0180-10	X									
AGW128	AGW128-20191204	12/4/2019	N	19L0078	19L0078-07	X			X						
AGW129	AGW129-20191204	12/4/2019	PDN	19L0078	19L0078-12	X									
AGW130	AGW130-20191203	12/3/2019	N	19L0061	19L0061-02	X			X						
AGW131	AGW131-20191205	12/5/2019	PDN	19L0117	19L0117-19	X									
AGW134	AGW134-20191205	12/5/2019	PDN	19L0117	19L0117-16	X									
AGW135	AGW135-20191205	12/5/2019	PDN	19L0117	19L0117-14	X									
AGW136	AGW136-20191205	12/5/2019	PDN	19L0117	19L0117-10	X									
AGW137	AGW137-20191205	12/5/2019	PDN	19L0117	19L0117-09	X									
AGW138	AGW138-20191205	12/5/2019	PDN	19L0117	19L0117-08	X									
AGW139	AGW139-20191205	12/5/2019	PDN	19L0117	19L0117-07	X									
AGW140	AGW140-20191205	12/5/2019	PDN	19L0118	19L0118-24	X									
AGW141	AGW141-20191205	12/5/2019	PDN	19L0117	19L0117-02	X									
AGW142	AGW142-20191205	12/5/2019	PDN	19L0117	19L0117-03	X									
AGW143	AGW143-20191205	12/5/2019	PDN	19L0118	19L0118-16	X									
AGW144	AGW144-20191205	12/5/2019	PDN	19L0118	19L0118-17	X									
AGW145	AGW145-20191205	12/5/2019	PDN	19L0118	19L0118-18	X									
AGW146	AGW146-20191205	12/5/2019	PDN	19L0118	19L0118-19	X									
AGW147	AGW147-20191205	12/5/2019	PDN	19L0118	19L0118-15	X									
AGW148	AGW148-20191205	12/5/2019	PDN	19L0118	19L0118-14	X									
AGW149	AGW149-20191205	12/5/2019	PDN	19L0118	19L0118-13	X									
AGW150	AGW150-20191202	12/2/2019	PDN	19L0025	19L0025-13	X									
AGW150	AGW904-20191202	12/2/2019	PDFD	19L0025	19L0025-14	X									
AGW151	AGW151-20191205	12/5/2019	PDN	19L0117	19L0117-05	X									
AGW152	AGW152-20191205	12/5/2019	PDN	19L0117	19L0117-18	X									
AGW154	AGW154-20191211	12/11/2019	PDN	19L0238	19L0238-07	X									
AGW155	AGW155-20191211	12/11/2019	PDN	19L0238	19L0238-08	X									
AGW156	AGW156-20191209	12/9/2019	PDN	19L0162	19L0162-08	X									
AGW157	AGW157-20191205	12/5/2019	PDN	19L0118	19L0118-20	X									
AGW158	AGW158-20191205	12/5/2019	PDN	19L0118	19L0118-21	X									
AGW159	AGW159-20191205	12/5/2019	PDN	19L0118	19L0118-22	X									
AGW160	AGW160-20191206	12/6/2019	PDN	19L0114	19L0114-09	X									
AGW161	AGW161-20191202	12/2/2019	PDN	19L0025	19L0025-09	X									
AGW162	AGW162-20191202	12/2/2019	PDN	19L0025	19L0025-12	X									
AGW163	AGW163-20191204	12/4/2019	PDN	19L0078	19L0078-15	X									
AGW164	AGW164-20191210	12/10/2019	PDN	19L0180	19L0180-20	X									
AGW165	AGW165-20191210	12/10/2019	PDN	19L0180	19L0180-19	X									
AGW166	AGW166-20191210	12/10/2019	PDN	19L0179	19L0179-14	X									
AGW167	AGW167-20191210	12/10/2019	PDN	19L0179	19L0179-15	X									
AGW168	AGW168-20191211	12/11/2019	PDN	19L0238	19L0238-02	X									

Table 1-1
4Q2019 Semiannual 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)	Free Cyanide by ASTM D7237 (b)
AGW169	AGW169-20191211	12/11/2019	PDN	19L0238	19L0238-03	X									
AGW170	AGW170-20191211	12/11/2019	PDN	19L0238	19L0238-05	X									
AGW171	AGW171-20191211	12/11/2019	PDN	19L0238	19L0238-06	X									
AGW172	AGW172-20191202	12/2/2019	PDN	19L0023	19L0023-07	X									
AGW173	AGW173-20191210	12/10/2019	PDN	19L0176	19L0176-03	X									
AGW174	AGW174-20191202	12/2/2019	PDN	19L0025	19L0025-08	X									
AGW175	AGW175-20191202	12/2/2019	N	19L0025	19L0025-04	X									
AGW176	AGW176-20191210	12/10/2019	PDN	19L0176	19L0176-05	X									
AGW177	AGW177-20191206	12/6/2019	PDN	19L0114	19L0114-07	X									
AGW178	AGW178-20191206	12/6/2019	PDN	19L0114	19L0114-08	X									
AGW179	AGW179-20191206	12/6/2019	PDN	19L0114	19L0114-05	X									
AGW180	AGW180-20191206	12/6/2019	PDN	19L0114	19L0114-06	X									
AGW181	AGW181-20191209	12/9/2019	PDN	19L0161	19L0161-06	X									
AGW182	AGW182-20191210	12/10/2019	PDN	19L0179	19L0179-12	X									
AGW183	AGW183-20191210	12/10/2019	PDN	19L0179	19L0179-13	X									
AGW184	AGW184-20191202	12/2/2019	PDN	19L0025	19L0025-11	X									
AGW185	AGW185-20191202	12/2/2019	PDN	19L0025	19L0025-15	X									
AGW186	AGW186-20191209	12/9/2019	PDN	19L0161	19L0161-07	X									
AGW187	AGW187-20191202	12/2/2019	PDN	19L0025	19L0025-06	X									
AGW188	AGW188-20191209	12/9/2019	N	19L0161	19L0161-03	X									
AGW189	AGW189-20191209	12/9/2019	PDN	19L0161	19L0161-08	X									
AGW190	AGW190-20191202	12/2/2019	PDN	19L0025	19L0025-07	X									
AGW191	AGW191-20191205	12/5/2019	PDN	19L0118	19L0118-04	X									
AGW192	AGW192-20191205	12/5/2019	PDN	19L0118	19L0118-05	X									
AGW193	AGW193-20191210	12/10/2019	PDN	19L0179	19L0179-16	X									
AGW194	AGW194-20191205	12/5/2019	PDN	19L0118	19L0118-23	X									
AGW195	AGW195-20191210	12/10/2019	PDN	19L0176	19L0176-10	X									
AGW196	AGW196-20191210	12/10/2019	PDN	19L0176	19L0176-09	X									
AGW197	AGW197-20191210	12/10/2019	PDN	19L0176	19L0176-08	X									
AGW198	AGW198-20191210	12/10/2019	PDN	19L0176	19L0176-07	X									
AGW199	AGW199-20191210	12/10/2019	PDN	19L0176	19L0176-04	X									
AGW200-2	AGW200-2-30-20191209	12/9/2019	N	19L0162	19L0162-01	X									
AGW200-5	AGW200-5-60-20191209	12/9/2019	N	19L0162	19L0162-03	X									
AGW200-5	AGW905-20191209	12/9/2019	FD	19L0162	19L0162-04	X									
AGW200-6	AGW200-6-80-20191209	12/9/2019	N	19L0162	19L0162-02	X									
AGW201-2	AGW201-2-30-20191209	12/9/2019	N	19L0162	19L0162-05	X									
AGW201-5	AGW201-5-60-20191209	12/9/2019	N	19L0162	19L0162-06	X									
AGW201-6	AGW201-6-80-20191209	12/9/2019	N	19L0162	19L0162-07	X									
AGW202-2	AGW202-2-30-20191211	12/11/2019	N	19L0239	19L0239-02	X									
AGW202-4	AGW202-4-51-20191211	12/11/2019	N	19L0239	19L0239-03	X									
AGW202-6	AGW202-6-81-20191211	12/11/2019	N	19L0239	19L0239-04	X									
AGW203-2	AGW203-2-30-20191211	12/11/2019	N	19L0239	19L0239-05	X									
AGW203-2	AGW906-20191211	12/11/2019	FD	19L0239	19L0239-08	X									
AGW203-4	AGW203-4-49-20191211	12/11/2019	N	19L0239	19L0239-06	X									
AGW203-6	AGW203-6-80-20191211	12/11/2019	N	19L0239	19L0239-07	X									
AGW206	AGW206-20191204	12/4/2019	PDN	19L0078	19L0078-14	X									
AGW207-2	AGW207-2-30-20191202	12/2/2019	N	19L0023	19L0023-02	X									

Table 1-1
4Q2019 Semiannual 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)	Free Cyanide by ASTM D7237 (b)
AGW207-4	AGW207-4-49-20191202	12/2/2019	N	19L0023	19L0023-03	X									
AGW207-7	AGW207-7-80-20191202	12/2/2019	N	19L0023	19L0023-04	X									
AGW208-2	AGW208-2-29-20191205	12/5/2019	N	19L0113	19L0113-08	X									
AGW208-4	AGW208-4-49-20191205	12/5/2019	N	19L0113	19L0113-09	X									
AGW208-6	AGW208-6-80-20191205	12/5/2019	N	19L0113	19L0113-10	X									
AGW209-2	AGW209-2-30-20191205	12/5/2019	N	19L0113	19L0113-04	X									
AGW209-5	AGW209-5-60-20191205	12/5/2019	N	19L0113	19L0113-05	X									
AGW209-6	AGW209-6-80-20191205	12/5/2019	N	19L0113	19L0113-06	X									
AGW210-5	AGW210-5-60-20191202	12/2/2019	N	19L0023	19L0023-05	X									
AGW210-6	AGW210-6-80-20191202	12/2/2019	N	19L0023	19L0023-06	X									
AGW211-5	AGW211-5-60-20191205	12/5/2019	N	19L0113	19L0113-02	X									
AGW211-6	AGW211-6-80-20191205	12/5/2019	N	19L0113	19L0113-03	X									
AGW211-6	AGW907-20191205	12/5/2019	FD	19L0113	19L0113-07	X									
AGW212-5	AGW212-5-60-20191202	12/2/2019	N	19L0025	19L0025-03	X									
AGW212-7	AGW212-7-100-20191202	12/2/2019	N	19L0025	19L0025-02	X									
AGW213	AGW213-20191209	12/9/2019	PDN	19L0161	19L0161-05	X									
AGW214	AGW214-20191206	12/6/2019	N	19L0114	19L0114-04	X									
AGW215	AGW215-20191206	12/6/2019	N	19L0114	19L0114-02	X									
AGW215	AGW908-20191206	12/6/2019	FD	19L0114	19L0114-03	X									
AGW216	AGW216-20191203	12/3/2019	N	19L0056	19L0056-02	X									
AGW217	AGW217-20191203	12/3/2019	N	19L0056	19L0056-04	X									
AGW218	AGW218-20191209	12/9/2019	N	19L0161	19L0161-02	X									
AGW219	AGW219-20191203	12/3/2019	PDN	19L0056	19L0056-06	X									
AGW220	AGW220-20191203	12/3/2019	N	19L0056	19L0056-05	X									
AGW221	AGW221-20191203	12/3/2019	N	19L0056	19L0056-03	X									
AGW222	AGW222-20191204	12/4/2019	PDN	19L0078	19L0078-08	X									
AGW225	AGW225-20191205	12/5/2019	N	19L0118	19L0118-07	X				X	X	X			
AGW226	AGW226-20191202	12/2/2019	N	19L0026	19L0026-07	X				X	X	X			
AGW227	AGW227-20191210	12/10/2019	PDN	19L0179	19L0179-07	X									
AGW228	AGW228-20191210	12/10/2019	N	19L0179	19L0179-06	X									
AGW228	AGW909-20191210	12/10/2019	FD	19L0179	19L0179-08	X									
AGW229	AGW229-20191211	12/11/2019	PDN	19L0238	19L0238-04	X									
AGW230	AGW230-20191202	12/2/2019	PDN	19L0025	19L0025-10	X									
AGW231	AGW231-20191210	12/10/2019	PDN	19L0176	19L0176-06	X									
AGW232	AGW232-20191210	12/10/2019	PDN	19L0176	19L0176-11	X									
AGW233	AGW233-20191202	12/2/2019	PDN	19L0025	19L0025-05	X									
AGW234	AGW234-20191204	12/4/2019	PDN	19L0080	19L0080-05	X									
AGW235-2	AGW235-2-19-20191206	12/6/2019	N	19L0115	19L0115-02	X									
AGW235-4	AGW235-4-39-20191206	12/6/2019	N	19L0115	19L0115-03	X									
AGW235-7	AGW235-7-71-20191206	12/6/2019	N	19L0115	19L0115-04	X									
AGW236	AGW236-20191205	12/5/2019	N	19L0113	19L0113-11	X									
AGW237	AGW237-20191210	12/10/2019	PDN	19L0176	19L0176-02	X									
AGW238	AGW238-20191210	12/10/2019	PDN	19L0180	19L0180-02	X									
AGW239	AGW239-20191210	12/10/2019	N	19L0180	19L0180-03	X									
AGW240-1	AGW240-1-7-20191205	12/5/2019	N	19L0118	19L0118-10	X				X	X	X			
AGW240-5	AGW240-5-28-20191205	12/5/2019	N	19L0118	19L0118-11	X				X	X	X			
AGW240-5	AGW910-20191205	12/5/2019	FD	19L0118	19L0118-12	X				X	X	X			

Table 1-1
4Q2019 Semiannual 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)	Free Cyanide by ASTM D7237 (b)
AGW241-1	AGW241-1-6-20191206	12/6/2019	N	19L0115	19L0115-09	X									
AGW241-5	AGW241-5-27-20191206	12/6/2019	N	19L0115	19L0115-08	X									
AGW242-1	AGW242-1-6-20191210	12/10/2019	N	19L0179	19L0179-02	X									
AGW242-2	AGW242-2-16-20191210	12/10/2019	N	19L0179	19L0179-03	X									
AGW242-5	AGW242-5-60-20191210	12/10/2019	N	19L0179	19L0179-04	X									
AGW243-1	AGW243-1-6-20191204	12/4/2019	N	19L0081	19L0081-06	X									
AGW243-3	AGW243-3-25-20191204	12/4/2019	N	19L0081	19L0081-07	X									
AGW243-5	AGW243-5-50-20191204	12/4/2019	N	19L0081	19L0081-08	X									
AGW244	AGW244-20191204	12/4/2019	N	19L0081	19L0081-05	X				X	X	X			
AGW245	AGW245-20191210	12/10/2019	PDN	19L0179	19L0179-10	X									
AGW246	AGW246-20191210	12/10/2019	PDN	19L0179	19L0179-11	X									
AGW247-1	AGW247-1-6-20191202	12/2/2019	N	19L0026	19L0026-05	X				X	X	X			
AGW247-5	AGW247-5-27-20191202	12/2/2019	N	19L0026	19L0026-06	X				X	X	X			
AGW248-1	AGW248-1-5-20191205	12/5/2019	N	19L0118	19L0118-02	X									
AGW248-5	AGW248-5-26-20191205	12/5/2019	N	19L0118	19L0118-03	X									
AGW249-1	AGW249-1-8-20191206	12/6/2019	N	19L0115	19L0115-10	X									
AGW249-5	AGW249-5-29-20191206	12/6/2019	N	19L0115	19L0115-11	X									
AGW250-1	AGW250-1-9-20191209	12/9/2019	N	19L0163	19L0163-06	X									
AGW250-2	AGW250-2-26-20191209	12/9/2019	N	19L0163	19L0163-07	X									
AGW250-3	AGW250-3-41-20191209	12/9/2019	N	19L0163	19L0163-09	X									
AGW250-3	AGW911-20191209	12/9/2019	FD	19L0163	19L0163-08	X									
AGW250-6	AGW250-6-81-20191209	12/9/2019	N	19L0163	19L0163-10	X									
AGW251-1	AGW251-1-8-20191209	12/9/2019	N	19L0163	19L0163-02	X				X	X				
AGW251-1	AGW251-1-8-20191209	12/9/2019	N	19L0179	19L0179-17							X			
AGW251-2	AGW251-2-25-20191209	12/9/2019	N	19L0163	19L0163-03	X				X	X	X			
AGW251-3	AGW251-3-40-20191209	12/9/2019	N	19L0163	19L0163-04	X				X	X	X			
AGW251-6	AGW251-6-76-20191209	12/9/2019	N	19L0163	19L0163-05	X									
AGW252	AGW252-20191204	12/4/2019	PDN	19L0080	19L0080-02	X									
AGW254-1	AGW254-1-6-20191204	12/4/2019	N	19L0080	19L0080-09	X									
AGW254-2	AGW254-2-20-20191204	12/4/2019	N	19L0080	19L0080-06	X									
AGW254-5	AGW254-5-50-20191204	12/4/2019	N	19L0080	19L0080-07	X									
AGW254-5	AGW912-20191204	12/4/2019	FD	19L0080	19L0080-08	X									
AGW255-1	AGW255-1-13-20191206	12/6/2019	N	19L0115	19L0115-07	X									
AGW255-3	AGW255-3-30-20191206	12/6/2019	N	19L0115	19L0115-05	X									
AGW255-5	AGW255-5-55-20191206	12/6/2019	N	19L0115	19L0115-06	X									
AGW256	AGW256-20191204	12/4/2019	PDN	19L0078	19L0078-02	X									
AGW257	AGW257-20191204	12/4/2019	PDN	19L0078	19L0078-03	X									
AGW258	AGW258-20191204	12/4/2019	PDN	19L0078	19L0078-04	X									
AGW259	AGW259-20191204	12/4/2019	PDN	19L0080	19L0080-03	X									
AGW260	AGW260-20191210	12/10/2019	PDN	19L0179	19L0179-05	X									
AGW261	AGW261-20191210	12/10/2019	PDN	19L0179	19L0179-09	X									
AGW262	AGW262-20191204	12/4/2019	PDN	19L0081	19L0081-11	X									
AGW263	AGW263-20191205	12/5/2019	PDN	19L0118	19L0118-06	X									
AGW264	AGW264-20191205	12/5/2019	PDN	19L0118	19L0118-08	X									
AGW265	AGW265-20191205	12/5/2019	PDN	19L0118	19L0118-09	X									
AGW266	AGW266-20191209	12/9/2019	PDN	19L0161	19L0161-04	X									
AGW267	AGW267-20191204	12/4/2019	PDN	19L0081	19L0081-09	X									

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4Q2019 Semiannual 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)	Free Cyanide by ASTM D7237 (b)
AGW268	AGW268-20191204	12/4/2019	PDN	19L0081	19L0081-10	X									
AGW269	AGW269-20191203	12/3/2019	N	19L0059	19L0059-03	X				X	X	X			
AGW270	AGW270-20191203	12/3/2019	N	19L0059	19L0059-02	X				X	X	X			
AGW271	AGW271-20191203	12/3/2019	N	19L0059	19L0059-07	X				X	X	X			
AGW272	AGW272-20191203	12/3/2019	N	19L0059	19L0059-08	X				X	X	X			
AGW273	AGW273-20191204	12/4/2019	N	19L0081	19L0081-02	X				X	X	X			
AGW274	AGW274-20191204	12/4/2019	N	19L0081	19L0081-03	X				X	X	X			
AGW275	AGW275-20191204	12/4/2019	N	19L0081	19L0081-04	X				X	X	X			
AGW276-2	AGW276-2-25-20191202	12/2/2019	N	19L0026	19L0026-02	X									
AGW276-5	AGW276-5-60-20191202	12/2/2019	N	19L0026	19L0026-03	X									
AGW276-6	AGW276-6-80-20191202	12/2/2019	N	19L0026	19L0026-04	X									
AGW277	AGW277-20191203	12/3/2019	N	19L0061	19L0061-05				X						
AGW278-1	AGW278-1-17-20191209	12/9/2019	N	19L0162	19L0162-13	X									
AGW278-1	AGW278-1-17-NAOH-20191209	12/9/2019	N	A9L0295	A9L0295-09									X	X
AGW278-2	AGW278-2-25-20191210	12/10/2019	N	19L0180	19L0180-16	X									
AGW278-4	AGW278-4-45-20191210	12/10/2019	N	19L0180	19L0180-15	X									
AGW278-6	AGW278-6-80-20191210	12/10/2019	N	19L0180	19L0180-17	X									
AGW281	AGW281-20191203	12/3/2019	N	19L0061	19L0061-03				X						
AGW282	AGW282-20191203	12/3/2019	N	19L0061	19L0061-04				X						
APP-057	APP-057-20191204	12/4/2019	N	19L0080	19L0080-04	X									
IW34	IW34-20191203	12/3/2019	N	19L0059	19L0059-06	X				X	X	X			
IW36	IW36-20191203	12/3/2019	N	19L0059	19L0059-04	X				X	X	X			
IW37	IW37-20191203	12/3/2019	N	19L0059	19L0059-05	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 Analytical Resources, Incorporated.

Abbreviations/Acronyms:

BTEX = benzene, toluene, ethylbenzene, xylenes
Diss. = Dissolved
EPA = US Environmental Protection Agency
FD = field duplicate
ID = Identification
MEE = methane, ethane, ethene
N = primary sample
NWTPH = Northwest Total Petroleum Hydrocarbon
PDN = primary passive diffusion
SDG = sample delivery group
TOC = total organic carbon
TPH = total petroleum hydrocarbons
VOCs = volatile organic compounds

Table 1-2
4Q2019 Semiannual Groundwater Sampling 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 by EPA 300.0, SM5310C (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	Shallow	19L0180	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.23**	0.0200 U	--	--	--	--	--
AGW002R	Shallow	19L0247	12/11/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0678**	**0.643**	**2.10**	0.39 U	0.24 U	**792**
AGW002R	Shallow	19L0247	12/11/2019	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0685**	**0.534**	**2.13**	0.39 U	0.24 U	**947**
AGW006R	Shallow	19L0180	12/10/2019	PDN	0.200 U	**0.455**	0.200 U	0.200 U	**0.418**	0.0200 U	--	--	--	--	--
AGW010	Shallow-WT	19L0057	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW010	Shallow-WT	19L0057	12/3/2019	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW024	Shallow	19L0117	12/5/2019	PDN	0.200 U	**1.33**	0.200 U	0.200 U	0.200 U	**0.896**	--	--	--	--	--
AGW025	Shallow	19L0238	12/11/2019	PDN	0.200 U	**2.40**	0.200 U	**0.231**	0.200 U	**1.21**	--	--	--	--	--
AGW026	Shallow	19L0247	12/11/2019	PDN	0.200 U	**0.632**	0.200 U	0.200 U	**0.641**	**0.0321**	--	--	--	--	--
AGW027	Shallow-WT	19L0247	12/11/2019	PDN	0.200 U	**1.25**	0.200 U	0.200 U	0.200 U	**0.331**	--	--	--	--	--
AGW031R	Shallow	19L0117	12/5/2019	PDN	0.200 U	**1.95**	0.200 U	0.200 U	**0.638**	0.0200 U	--	--	--	--	--
AGW032	Shallow-WT	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.194**	--	--	--	--	--
AGW033	Shallow-WT	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW037	Shallow-WT	19L0180	12/10/2019	PDN	0.200 U	**0.792**	0.200 U	0.200 U	**1.77**	**0.0910**	--	--	--	--	--
AGW053R	Shallow-WT	19L0247	12/11/2019	PDN	0.200 U	**0.478**	0.200 U	0.200 U	**0.857**	**0.0569**	--	--	--	--	--
AGW055R	Intermediate	19L0180	12/10/2019	PDN	0.200 U	**0.408**	0.200 U	0.200 U	**0.469**	**0.0221**	--	--	--	--	--
AGW057R	Intermediate	19L0247	12/11/2019	PDN	0.200 U	0.200 U	**0.456**	0.200 U	**0.865**	0.0200 U	--	--	--	--	--
AGW060R	Intermediate	19L0180	12/10/2019	PDN	0.200 U	**1.36**	0.200 U	0.200 U	**0.616**	**0.0239**	--	--	--	--	--
AGW064	Shallow-WT	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.386**	0.0200 U	--	--	--	--	--
AGW066	Shallow-WT	19L0180	12/10/2019	PDN	0.200 U	**1.07**	0.200 U	0.200 U	**2.73**	0.0200 U	--	--	--	--	--
AGW067	Shallow-WT	19L0180	12/10/2019	PDN	0.200 U	**2.01**	0.200 U	0.200 U	**3.43**	0.0200 U	--	--	--	--	--
AGW069	Shallow-WT	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW072	Intermediate	19L0180	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.800**	0.0200 U	--	--	--	--	--
AGW073	Deep	19L0180	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW074	Shallow-WT	19L0247	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW079	Shallow-WT	19L0117	12/5/2019	PDN	0.200 U	**0.720**	0.200 U	0.200 U	0.200 U	**0.276**	--	--	--	--	--
AGW085	Shallow-WT	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.301**	0.200 U	**0.387**	0.0200 U	--	--	--	--	--
AGW087	Intermediate	19L0247	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW088	Shallow	19L0247	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW089	Intermediate	19L0247	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW090	Shallow	19L0247	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW091	Intermediate	19L0247	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW095R	Intermediate	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.720**	0.0200 U	--	--	--	--	--
AGW098R	Deep	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.310**	0.0200 U	--	--	--	--	--
AGW105R	Intermediate	19L0117	12/5/2019	PDN	0.200 U	**0.411**	0.200 U	0.200 U	**0.610**	**0.326**	--	--	--	--	--
AGW106R	Shallow	19L0247	12/11/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**14.3**	**0.53**	0.39 U	0.24 U	**2.87**
AGW110R	Shallow	19L0247	12/11/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.107**	**0.161**	**1.84**	0.39 U	0.24 U	**859**
AGW112R	Shallow	19L0247	12/11/2019	PDN	0.200 U	**0.774**	0.200 U	0.200 U	**1.31**	**0.149**	--	--	--	--	--
AGW115	Shallow-WT	19L0078	12/4/2019	PDN	0.200 U	**2.86**	0.200 U	0.200 U	0.200 U	**0.224**	--	--	--	--	--

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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 by EPA 300.0, SM5310C (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	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.372**	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW117	Shallow-WT	19L0061	12/3/2019	PDN	0.200 U	0.200 U	**0.408**	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW118	Shallow-WT	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.492**	0.200 U	**0.235**	0.0200 U	--	--	--	--	--
AGW119	Intermediate	19L0078	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW120	Shallow	19L0078	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW125	Shallow	19L0180	12/10/2019	PDN	0.200 U	**1.14**	0.200 U	0.200 U	**5.89**	0.0200 U	--	--	--	--	--
AGW125	Shallow	19L0180	12/10/2019	PDFD	0.200 U	**1.22**	0.200 U	0.200 U	**6.24**	0.0200 U	--	--	--	--	--
AGW126	Intermediate	19L0180	12/10/2019	N	0.200 U	**3.90**	0.200 U	0.200 U	**5.83**	**0.0375**	--	--	--	--	--
AGW128	Shallow-WT	19L0078	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW129	Shallow-WT	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.348**	0.200 U	**0.328**	0.0200 U	--	--	--	--	--
AGW130	Shallow-WT	19L0061	12/3/2019	N	0.200 U	**0.236**	0.200 U	0.200 U	0.200 U	**0.0224**	--	--	--	--	--
AGW131	Shallow	19L0117	12/5/2019	PDN	0.200 U	**0.659**	0.200 U	0.200 U	0.200 U	**2.13**	--	--	--	--	--
AGW134	Shallow	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.217**	--	--	--	--	--
AGW135	Shallow	19L0117	12/5/2019	PDN	0.200 U	**0.346**	0.200 U	0.200 U	**1.01**	**0.0317**	--	--	--	--	--
AGW136	Shallow	19L0117	12/5/2019	PDN	0.200 U	**1.12**	0.200 U	0.200 U	**2.19**	0.0200 U	--	--	--	--	--
AGW137	Intermediate	19L0117	12/5/2019	PDN	0.200 U	**1.12**	0.200 U	0.200 U	**2.76**	0.0200 U	--	--	--	--	--
AGW138	Deep	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.401**	0.0200 U	--	--	--	--	--
AGW139	Intermediate	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.59**	0.0200 U	--	--	--	--	--
AGW140	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**1.34**	0.200 U	0.200 U	**2.81**	**0.251**	--	--	--	--	--
AGW141	Intermediate	19L0117	12/5/2019	PDN	0.200 U	**0.283**	0.200 U	0.200 U	**1.49**	0.0200 U	--	--	--	--	--
AGW142	Deep	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW143	Deep	19L0118	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW144	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**1.50**	0.200 U	**0.233**	**0.272**	**0.238**	--	--	--	--	--
AGW145	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**5.18**	0.200 U	**0.593**	**8.79**	**0.466**	--	--	--	--	--
AGW146	Deep	19L0118	12/5/2019	PDN	0.200 U	**1.25**	0.200 U	0.200 U	**3.09**	**0.0737**	--	--	--	--	--
AGW147	Intermediate	19L0118	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW148	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**1.17**	0.200 U	0.200 U	**2.69**	**0.0552**	--	--	--	--	--
AGW149	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**0.244**	0.200 U	0.200 U	**2.69**	0.0200 U	--	--	--	--	--
AGW150	Intermediate	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.03**	0.0200 U	--	--	--	--	--
AGW150	Intermediate	19L0025	12/2/2019	PDFD	0.200 U	0.200 U	0.200 U	0.200 U	**1.05**	0.0200 U	--	--	--	--	--
AGW151	Intermediate	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.380**	0.0200 U	--	--	--	--	--
AGW152	Shallow	19L0117	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**2.00**	--	--	--	--	--
AGW154	Intermediate	19L0238	12/11/2019	PDN	0.200 U	**0.322**	0.200 U	0.200 U	**0.244**	0.0200 U	--	--	--	--	--
AGW155	Intermediate	19L0238	12/11/2019	PDN	0.200 U	**2.28**	0.200 U	**0.277**	0.200 U	**3.04**	--	--	--	--	--
AGW156	Intermediate	19L0162	12/9/2019	PDN	0.200 U	**4.26**	0.200 U	**0.384**	**0.411**	**1.09**	--	--	--	--	--
AGW157	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**1.90**	0.200 U	0.200 U	**0.316**	**0.222**	--	--	--	--	--
AGW158	Intermediate	19L0118	12/5/2019	PDN	0.200 U	**0.401**	0.200 U	0.200 U	**1.79**	**0.0214**	--	--	--	--	--
AGW159	Deep	19L0118	12/5/2019	PDN	0.200 U	**0.667**	0.200 U	0.200 U	**3.29**	**0.0618**	--	--	--	--	--
AGW160	Intermediate	19L0114	12/6/2019	PDN	0.200 U	**0.272**	0.200 U	0.200 U	**3.99**	0.0200 U	--	--	--	--	--

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Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C SIM (µg/L)						General Chemistry by EPA 300.0, SM5310C (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
AGW161	Intermediate	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.23**	0.0200 U	--	--	--	--	--
AGW162	Intermediate	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.489**	0.0200 U	--	--	--	--	--
AGW163	Intermediate	19L0078	12/4/2019	PDN	0.200 U	**1.20**	0.200 U	0.200 U	**3.42**	**0.0336**	--	--	--	--	--
AGW164	Intermediate	19L0180	12/10/2019	PDN	0.200 U	**0.294**	0.200 U	0.200 U	**1.28**	**0.0374**	--	--	--	--	--
AGW165	Shallow	19L0180	12/10/2019	PDN	0.200 U	**0.802**	0.200 U	0.200 U	**1.64**	**0.100**	--	--	--	--	--
AGW166	Intermediate	19L0179	12/10/2019	PDN	0.200 U	**1.06**	0.200 U	0.200 U	0.200 U	**0.264**	--	--	--	--	--
AGW167	Deep	19L0179	12/10/2019	PDN	0.200 U	**2.07**	0.200 U	**0.247**	**3.91**	**0.142**	--	--	--	--	--
AGW168	Intermediate	19L0238	12/11/2019	PDN	0.200 U	**1.29**	0.200 U	0.200 U	**3.58**	**0.0417**	--	--	--	--	--
AGW169	Deep	19L0238	12/11/2019	PDN	0.200 U	**1.17**	0.200 U	0.200 U	**4.70**	**0.0263**	--	--	--	--	--
AGW170	Intermediate	19L0238	12/11/2019	PDN	0.200 U	**0.470**	0.200 U	0.200 U	**1.98**	**0.0231**	--	--	--	--	--
AGW171	Deep	19L0238	12/11/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.83**	0.0200 U	--	--	--	--	--
AGW172	Intermediate	19L0023	12/2/2019	PDN	0.200 U	**0.286**	0.200 U	0.200 U	**2.72**	0.0200 U	--	--	--	--	--
AGW173	Intermediate	19L0176	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW174	Intermediate	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.32**	0.0200 U	--	--	--	--	--
AGW175	Intermediate	19L0025	12/2/2019	N	0.200 U	**0.485**	0.200 U	0.200 U	**1.63**	0.0200 U	--	--	--	--	--
AGW176	Intermediate	19L0176	12/10/2019	PDN	0.200 U	**0.287**	0.200 U	0.200 U	**2.68**	0.0200 U	--	--	--	--	--
AGW177	Intermediate	19L0114	12/6/2019	PDN	0.200 U	**0.472**	0.200 U	0.200 U	**3.10**	0.0200 U	--	--	--	--	--
AGW178	Deep	19L0114	12/6/2019	PDN	0.200 U	**0.293**	0.200 U	0.200 U	**3.31**	0.0200 U	--	--	--	--	--
AGW179	Intermediate	19L0114	12/6/2019	PDN	0.200 U	**4.35**	0.200 U	0.200 U	**0.222**	**0.134**	--	--	--	--	--
AGW180	Deep	19L0114	12/6/2019	PDN	0.200 U	**0.416**	0.200 U	0.200 U	**2.42**	0.0200 U	--	--	--	--	--
AGW181	Intermediate	19L0161	12/9/2019	PDN	0.200 U	**1.04**	0.200 U	0.200 U	**3.02**	**0.0202**	--	--	--	--	--
AGW182	Intermediate	19L0179	12/10/2019	PDN	0.200 U	**2.03**	0.200 U	**0.235**	**1.33**	**0.185**	--	--	--	--	--
AGW183	Deep	19L0179	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW184	Intermediate	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.338**	0.0200 U	--	--	--	--	--
AGW185	Deep	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**2.18**	0.0200 U	--	--	--	--	--
AGW186	Intermediate	19L0161	12/9/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.500**	0.0200 U	--	--	--	--	--
AGW187	Intermediate	19L0025	12/2/2019	PDN	0.200 U	**0.228**	0.200 U	0.200 U	**1.54**	0.0200 U	--	--	--	--	--
AGW188	Intermediate	19L0161	12/9/2019	N	0.200 U	**0.336**	0.200 U	0.200 U	**3.11**	0.0200 U	--	--	--	--	--
AGW189	Intermediate	19L0161	12/9/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.342**	0.0200 U	--	--	--	--	--
AGW190	Intermediate	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.11**	0.0200 U	--	--	--	--	--
AGW191	Intermediate	19L0118	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW192	Deep	19L0118	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW193	Shallow	19L0179	12/10/2019	PDN	0.200 U	**1.58**	0.200 U	0.200 U	**2.17**	**0.242**	--	--	--	--	--
AGW194	Shallow	19L0118	12/5/2019	PDN	0.200 U	**0.428**	0.200 U	0.200 U	**1.57**	0.0200 U	--	--	--	--	--
AGW195	Deep	19L0176	12/10/2019	PDN	0.200 U	**0.665**	0.200 U	0.200 U	**5.17**	0.0200 U	--	--	--	--	--
AGW196	Intermediate	19L0176	12/10/2019	PDN	0.200 U	**3.06**	0.200 U	0.200 U	0.200 U	**2.95**	--	--	--	--	--
AGW197	Deep	19L0176	12/10/2019	PDN	0.200 U	**0.974**	0.200 U	0.200 U	**6.46**	0.0200 U	--	--	--	--	--
AGW198	Intermediate	19L0176	12/10/2019	PDN	0.200 U	**0.518**	0.200 U	0.200 U	**5.45**	**0.0215**	--	--	--	--	--
AGW199	Deep	19L0176	12/10/2019	PDN	0.200 U	**1.54**	0.200 U	0.200 U	**5.18**	**0.0230**	--	--	--	--	--

Table 1-2
4Q2019 Semiannual Groundwater Sampling 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 by EPA 300.0, SM5310C (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
AGW200-2	Shallow	19L0162	12/9/2019	N	0.200 U	**1.12**	0.200 U	0.200 U	0.200 U	**1.05**	--	--	--	--	--
AGW200-5	Intermediate	19L0162	12/9/2019	N	0.200 U	**4.55**	0.200 U	**0.312**	**0.794**	**1.20**	--	--	--	--	--
AGW200-5	Intermediate	19L0162	12/9/2019	FD	0.200 U	**4.63**	0.200 U	**0.316**	**0.817**	**1.23**	--	--	--	--	--
AGW200-6	Deep	19L0162	12/9/2019	N	0.200 U	**4.10**	0.200 U	**0.361**	**0.644**	**0.594**	--	--	--	--	--
AGW201-2	Shallow	19L0162	12/9/2019	N	0.200 U	**1.71**	0.200 U	0.200 U	**0.299**	**1.57**	--	--	--	--	--
AGW201-5	Intermediate	19L0162	12/9/2019	N	0.200 U	**3.28**	0.200 U	**0.258**	**2.79**	**0.545**	--	--	--	--	--
AGW201-6	Deep	19L0162	12/9/2019	N	0.200 U	**3.12**	0.200 U	**0.293**	**4.95**	**0.379**	--	--	--	--	--
AGW202-2	Shallow	19L0239	12/11/2019	N	0.200 U	**2.86**	0.200 U	0.200 U	**0.844**	**1.28**	--	--	--	--	--
AGW202-4	Intermediate	19L0239	12/11/2019	N	0.200 U	**1.07**	0.200 U	0.200 U	**1.68**	**0.213**	--	--	--	--	--
AGW202-6	Deep	19L0239	12/11/2019	N	0.200 U	**0.297**	0.200 U	0.200 U	**0.708**	0.0200 U	--	--	--	--	--
AGW203-2	Shallow	19L0239	12/11/2019	N	0.200 U	**0.207**	**0.320**	0.200 U	**0.981**	0.0200 U	--	--	--	--	--
AGW203-2	Shallow	19L0239	12/11/2019	FD	0.200 U	**0.217**	**0.325**	0.200 U	**1.01**	0.0200 U	--	--	--	--	--
AGW203-4	Intermediate	19L0239	12/11/2019	N	0.200 U	0.200 U	**0.319**	0.200 U	**2.35**	0.0200 U	--	--	--	--	--
AGW203-6	Deep	19L0239	12/11/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW206	Intermediate	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.332**	0.200 U	**0.835**	0.0200 U	--	--	--	--	--
AGW207-2	Shallow	19L0023	12/2/2019	N	0.200 U	**5.06**	0.200 U	0.200 U	**4.21**	**0.134**	--	--	--	--	--
AGW207-4	Intermediate	19L0023	12/2/2019	N	0.200 U	**1.66**	0.200 U	0.200 U	**3.69**	**0.776**	--	--	--	--	--
AGW207-7	Deep	19L0023	12/2/2019	N	0.200 U	**0.574**	0.200 U	0.200 U	**4.83**	0.0200 U	--	--	--	--	--
AGW208-2	Shallow	19L0113	12/5/2019	N	0.200 U	**3.44**	0.200 U	0.200 U	**1.38**	**0.196**	--	--	--	--	--
AGW208-4	Intermediate	19L0113	12/5/2019	N	0.200 U	**3.54**	0.200 U	0.200 U	**0.742**	**0.173**	--	--	--	--	--
AGW208-6	Deep	19L0113	12/5/2019	N	0.200 U	**0.360**	0.200 U	0.200 U	**3.67**	0.0200 U	--	--	--	--	--
AGW209-2	Shallow	19L0113	12/5/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.782**	--	--	--	--	--
AGW209-5	Intermediate	19L0113	12/5/2019	N	0.200 U	**0.817**	0.200 U	0.200 U	**1.39**	**0.729**	--	--	--	--	--
AGW209-6	Deep	19L0113	12/5/2019	N	0.200 U	**0.457**	0.200 U	0.200 U	**3.48**	0.0200 U	--	--	--	--	--
AGW210-5	Intermediate	19L0023	12/2/2019	N	0.200 U	**1.91**	0.200 U	0.200 U	**0.641**	**0.0492**	--	--	--	--	--
AGW210-6	Deep	19L0023	12/2/2019	N	0.200 U	**0.607**	0.200 U	0.200 U	**3.14**	**0.0288**	--	--	--	--	--
AGW211-5	Intermediate	19L0113	12/5/2019	N	0.200 U	**0.823**	0.200 U	0.200 U	**1.90**	0.0200 U	--	--	--	--	--
AGW211-6	Deep	19L0113	12/5/2019	N	0.200 U	**0.317**	0.200 U	0.200 U	**1.49**	0.0200 U	--	--	--	--	--
AGW211-6	Deep	19L0113	12/5/2019	FD	0.200 U	**0.306**	0.200 U	0.200 U	**1.54**	0.0200 U	--	--	--	--	--
AGW212-5	Intermediate	19L0025	12/2/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	**1.63**	0.0200 U	--	--	--	--	--
AGW212-7	Deep	19L0025	12/2/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	**3.55**	0.0200 U	--	--	--	--	--
AGW213	Deep	19L0161	12/9/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW214	Intermediate	19L0114	12/6/2019	N	0.200 U	**0.220**	0.200 U	0.200 U	**1.96**	0.0200 U	--	--	--	--	--
AGW215	Intermediate	19L0114	12/6/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW215	Intermediate	19L0114	12/6/2019	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW216	Intermediate	19L0056	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	**0.905**	**0.0206**	--	--	--	--	--
AGW217	Intermediate	19L0056	12/3/2019	N	0.200 U	**0.217**	0.200 U	0.200 U	**1.54**	**0.0230**	--	--	--	--	--
AGW218	Intermediate	19L0161	12/9/2019	N	0.200 U	**0.249**	0.200 U	0.200 U	**2.51**	0.0200 U	--	--	--	--	--
AGW219	Intermediate	19L0056	12/3/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--

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Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260C SIM (µg/L)						General Chemistry by EPA 300.0, SM5310C (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
AGW220	Intermediate	19L0056	12/3/2019	N	0.200 U	**0.204**	0.200 U	0.200 U	**0.208**	0.0200 U	--	--	--	--	--
AGW221	Intermediate	19L0056	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW222	Intermediate	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.431**	0.200 U	**0.345**	0.0200 U	--	--	--	--	--
AGW225	Shallow	19L0118	12/5/2019	N	0.200 U	**3.03**	0.200 U	**0.251**	**1.88**	**0.320**	**3.08**	**4.28**	0.39 U	0.24 U	**355**
AGW226	Shallow	19L0026	12/2/2019	N	0.200 U	**2.00**	0.200 U	0.200 U	**1.25**	**0.795**	**22.2**	**7.06**	0.39 U	0.24 U	**1,600**
AGW227	Intermediate	19L0179	12/10/2019	PDN	0.200 U	**2.09**	0.200 U	**0.234**	**1.35**	**0.226**	--	--	--	--	--
AGW228	Shallow	19L0179	12/10/2019	N	0.200 U	**2.38**	0.200 U	**0.285**	**2.64**	**0.234**	--	--	--	--	--
AGW228	Shallow	19L0179	12/10/2019	FD	0.200 U	**2.34**	0.200 U	**0.283**	**2.52**	**0.229**	--	--	--	--	--
AGW229	Shallow-WT	19L0238	12/11/2019	PDN	0.200 U	**0.836**	0.200 U	0.200 U	**0.870**	0.0200 U	--	--	--	--	--
AGW230	Deep	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.797**	0.0200 U	--	--	--	--	--
AGW231	Shallow	19L0176	12/10/2019	PDN	0.200 U	**0.587**	0.200 U	0.200 U	0.200 U	**2.26**	--	--	--	--	--
AGW232	Shallow	19L0176	12/10/2019	PDN	0.200 U	**0.640**	0.200 U	0.200 U	0.200 U	**6.42**	--	--	--	--	--
AGW233	Deep	19L0025	12/2/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW234	Deep	19L0080	12/4/2019	PDN	**0.232**	**1.49**	0.200 U	0.200 U	**6.75**	**0.108**	--	--	--	--	--
AGW235-2	Shallow	19L0115	12/6/2019	N	0.200 U	**2.07**	0.200 U	0.200 U	0.200 U	**2.47**	--	--	--	--	--
AGW235-4	Intermediate	19L0115	12/6/2019	N	0.200 U	**7.49**	0.200 U	0.200 U	**1.83**	**0.111**	--	--	--	--	--
AGW235-7	Deep	19L0115	12/6/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW236	Shallow	19L0113	12/5/2019	N	0.200 U	**3.98**	0.200 U	0.200 U	**1.29**	**0.0880**	--	--	--	--	--
AGW237	Deep	19L0176	12/10/2019	PDN	**0.625**	**0.883**	0.200 U	0.200 U	**1.79**	**0.0332**	--	--	--	--	--
AGW238	Intermediate	19L0180	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW239	Shallow	19L0180	12/10/2019	N	0.200 U	**1.17**	0.200 U	0.200 U	0.200 U	**0.356**	--	--	--	--	--
AGW240-1	Shallow-WT	19L0118	12/5/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0365**	**0.442**	**8.67**	**2.13**	0.24 U	**8,350**
AGW240-5	Shallow	19L0118	12/5/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**0.161 J**	**7.47**	**2.47**	0.24 U	**5,060**
AGW240-5	Shallow	19L0118	12/5/2019	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**0.321 J**	**7.44**	**2.63**	0.24 U	**5,110**
AGW241-1	Shallow-WT	19L0115	12/6/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW241-5	Shallow	19L0115	12/6/2019	N	0.200 U	**0.336**	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW242-1	Shallow-WT	19L0179	12/10/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.264**	--	--	--	--	--
AGW242-2	Shallow	19L0179	12/10/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW242-5	Intermediate	19L0179	12/10/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW243-1	Shallow-WT	19L0081	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0255**	--	--	--	--	--
AGW243-3	Shallow	19L0081	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW243-5	Intermediate	19L0081	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW244	Shallow-WT	19L0081	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**15.3**	**11.20**	0.39 U	0.24 U	**506**
AGW245	Shallow-WT	19L0179	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW246	Shallow-WT	19L0179	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW247-1	Shallow-WT	19L0026	12/2/2019	N	0.200 U	0.200 U	0.200 U	**0.207**	0.200 U	**0.380**	**0.810**	**15.91**	0.39 U	0.24 U	**2,110**
AGW247-5	Shallow	19L0026	12/2/2019	N	0.200 U	**0.446**	0.200 U	**0.294**	0.200 U	**0.957**	**0.351**	**6.22**	0.39 U	0.24 U	**1,920**
AGW248-1	Shallow-WT	19L0118	12/5/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW248-5	Shallow	19L0118	12/5/2019	N	0.200 U	**1.28**	0.200 U	0.200 U	**3.44**	**0.0342**	--	--	--	--	--

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					Select VOCs by SW-846 8260C SIM (µg/L)						General Chemistry by EPA 300.0, SM5310C (mg/L)		Dissolved Gases by RSK-175 (µg/L)		
Sample Location	**Zone**	**Laboratory SDG**	**Sample Date**	**Sample Type**	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	19L0115	12/6/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**1.10**	--	--	--	--	--
AGW249-5	Shallow	19L0115	12/6/2019	N	0.200 U	**1.43**	0.200 U	0.200 U	**4.71**	**0.0677**	--	--	--	--	--
AGW250-1	Shallow-WT	19L0163	12/9/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW250-2	Shallow	19L0163	12/9/2019	N	0.200 U	**0.224**	0.200 U	0.200 U	0.200 U	**0.0284**	--	--	--	--	--
AGW250-3	Intermediate	19L0163	12/9/2019	N	0.200 U	**0.446**	0.200 U	0.200 U	**0.404**	**0.0388**	--	--	--	--	--
AGW250-3	Intermediate	19L0163	12/9/2019	FD	0.200 U	**0.463**	0.200 U	0.200 U	**0.407**	**0.0394**	--	--	--	--	--
AGW250-6	Deep	19L0163	12/9/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW251-1	Shallow-WT	19L0163/19L0179	12/9/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	**170**	**35.56**	0.39 U	0.24 U	**5.96**
AGW251-2	Shallow	19L0163	12/9/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.649**	**0.144**	**6.25**	**2.09**	**0.98 J**	**3,020**
AGW251-3	Intermediate	19L0163	12/9/2019	N	0.200 U	**0.201**	0.200 U	0.200 U	0.200 U	**4.87**	0.100 U	**5.97**	**0.65 J**	**0.64 J**	**2,250**
AGW251-6	Deep	19L0163	12/9/2019	N	0.200 U	**0.297**	0.200 U	0.200 U	0.200 U	**0.181**	--	--	--	--	--
AGW252	Deep	19L0080	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW254-1	Shallow-WT	19L0080	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW254-2	Shallow	19L0080	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW254-5	Intermediate	19L0080	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW254-5	Intermediate	19L0080	12/4/2019	FD	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW255-1	Shallow-WT	19L0115	12/6/2019	N	0.200 U	**1.76**	0.200 U	0.200 U	**0.376**	**0.315**	--	--	--	--	--
AGW255-3	Shallow	19L0115	12/6/2019	N	0.200 U	**0.952**	0.200 U	0.200 U	0.200 U	**0.126**	--	--	--	--	--
AGW255-5	Intermediate	19L0115	12/6/2019	N	0.200 U	**0.665**	0.200 U	0.200 U	0.200 U	**0.131**	--	--	--	--	--
AGW256	Intermediate	19L0078	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.640**	0.0200 U	--	--	--	--	--
AGW257	Shallow	19L0078	12/4/2019	PDN	0.200 U	0.200 U	**0.341**	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW258	Shallow	19L0078	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW259	Deep	19L0080	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW260	Deep	19L0179	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW261	Shallow	19L0179	12/10/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW262	Shallow-WT	19L0081	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0554**	--	--	--	--	--
AGW263	Shallow-WT	19L0118	12/5/2019	PDN	0.200 U	**2.09**	0.200 U	0.200 U	**0.534**	0.0200 U	--	--	--	--	--
AGW264	Deep	19L0118	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW265	Intermediate	19L0118	12/5/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW266	Shallow	19L0161	12/9/2019	PDN	0.200 U	**0.314**	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW267	Intermediate	19L0081	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW268	Deep	19L0081	12/4/2019	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
AGW269	Shallow	19L0059	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0696**	**0.681**	**8.26**	**2.04**	0.24 U	**12,600**
AGW270	Shallow	19L0059	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**1.11**	**0.109**	**10.30**	**1.37**	0.24 U	**11,000**
AGW271	Shallow	19L0059	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.142**	0.100 U	**11.39**	**2.00**	0.24 U	**8,380**
AGW272	Shallow	19L0059	12/3/2019	N	0.200 U	**1.67**	0.200 U	**0.439**	0.200 U	**3.68**	0.100 U	**4.22**	0.39 U	**0.44 J**	**1,170**
AGW273	Shallow	19L0081	12/4/2019	N	0.200 U	**0.209**	0.200 U	0.200 U	0.200 U	**2.00**	**0.120**	**6.53**	**1.98**	**0.78 J**	**4,160**
AGW274	Shallow	19L0081	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0957**	0.100 U	**9.64**	**1.94**	0.24 U	**7,040**
AGW275	Shallow	19L0081	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.0266**	0.100 U	**6.69**	**2.29**	0.24 U	**2,130**

Table 1-2
4Q2019 Semiannual Groundwater Sampling 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 by EPA 300.0, SM5310C (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
AGW276-2	Shallow	19L0026	12/2/2019	N	0.200 U	**1.80**	0.200 U	**0.216**	**0.278**	**1.67**	--	--	--	--	--
AGW276-5	Intermediate	19L0026	12/2/2019	N	0.200 U	**6.80**	0.200 U	**0.544**	0.200 U	**2.01**	--	--	--	--	--
AGW276-6	Deep	19L0026	12/2/2019	N	0.200 U	**2.34**	0.200 U	0.200 U	**2.86**	**0.110**	--	--	--	--	--
AGW278-1	Shallow-WT	19L0162	12/9/2019	N	0.200 U	**0.996**	0.200 U	0.200 U	**0.710**	**0.626**	--	--	--	--	--
AGW278-2	Shallow	19L0180	12/10/2019	N	0.200 U	**1.36**	0.200 U	0.200 U	**0.745**	**0.288**	--	--	--	--	--
AGW278-4	Intermediate	19L0180	12/10/2019	N	0.200 U	**0.436**	0.200 U	0.200 U	0.200 U	**1.71**	--	--	--	--	--
AGW278-6	Deep	19L0180	12/10/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
APP-057	Shallow	19L0080	12/4/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U	--	--	--	--	--
IW34	Shallow	19L0059	12/3/2019	N	0.200 U	**0.269**	0.200 U	0.200 U	0.200 U	**0.568**	**0.114**	**21.05**	**0.94 J**	0.24 U	**17,200**
IW36	Shallow	19L0059	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**1.71**	**0.150**	**8.87**	**1.24**	**0.48 J**	**2,290**
IW37	Shallow	19L0059	12/3/2019	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.285**	0.100 U	**13.73**	**2.09**	0.24 U	**16,200**

Notes:

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.

Abbreviations/Acronyms:

EPA = U.S. Environmental Protection Agency

FD = field duplicate

µg/L = micrograms per liter

mg/L = milligrams per liter

-- = not analyzed

N = primary sample

SDG = sample delivery group

VOCs = volatile organic compounds

WT = water table

Table 1-3
4Q2019 Semiannual Groundwater Sampling 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)						Petroleum Hydrocarbons by NWTPH-Gx/Dx (mg/L)			Dissolved Metals by SW-846 6020A (mg/L)			Cyanide by ASTM D7511-12/D7237-10 (mg/L)	
					Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Xylenes	Gasoline Range Organics (C7-C12)	Diesel Range Organics (C12-C24)	Oil Range Organics (C24-C40)	Cadmium	Copper	Nickel	Cyanide	Free Cyanide
AGW010	Shallow-WT	19L0057	12/3/2019	N	**1.09**	**3.55**	**926**	**1360**	**249**	**1610**	**38.8**	**0.684**	0.200 U	--	--	--	--	--
AGW010	Shallow-WT	19L0057	12/3/2019	FD	**1.12**	**3.53**	**894**	**1310**	**234**	**1540**	**37.6**	**0.795**	0.200 U	--	--	--	--	--
AGW047	Shallow	A9L0295	12/9/2019	N	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00500 UJ
AGW048	Shallow	A9L0295	12/9/2019	N	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00500 U
AGW049	Shallow	A9L0295/19L0162	12/9/2019	N	--	--	--	--	--	--	--	--	--	**0.0102**	**0.279**	**0.0252**	--	0.00500 U
AGW050	Shallow	19L0162	12/9/2019	N	--	--	--	--	--	--	--	--	--	**0.00940**	**--**	**0.0117**	--	--
AGW050	Shallow	19L0162	12/9/2019	FD	--	--	--	--	--	--	--	--	--	**0.0101**	**--**	**0.0127**	--	--
AGW050	Shallow	A9L0295	12/9/2019	N	--	--	--	--	--	--	--	--	--	--	--	--	**0.153**	0.00500 U
AGW050	Shallow	A9L0295	12/9/2019	FD	--	--	--	--	--	--	--	--	--	--	--	--	**0.155**	0.00500 U
AGW128	Shallow-WT	19L0078	12/4/2019	N	--	--	--	--	--	--	--	**0.268**	**1.54**	--	--	--	--	--
AGW130	Shallow-WT	19L0061	12/3/2019	N	--	--	--	--	--	--	--	**0.166**	**1.40**	--	--	--	--	--
AGW277	Shallow-WT	19L0061	12/3/2019	N	--	--	--	--	--	--	--	**0.224**	**1.01**	--	--	--	--	--
AGW278-1	Shallow-WT	A9L0295	12/9/2019	N	--	--	--	--	--	--	--	--	--	--	--	--	0.00500 U	0.00500 U
AGW281	Shallow-WT	19L0061	12/3/2019	N	--	--	--	--	--	--	--	**0.120**	**0.421**	--	--	--	--	--
AGW282	Shallow-WT	19L0061	12/3/2019	N	--	--	--	--	--	--	--	0.100 U	0.200 U	--	--	--	--	--

Notes:

Bold text indicates detected analyte.

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.

Abbreviations/Acronyms:

BTEX = benzene, toluene, ethylbenzene, and xylenes

FD = field duplicate

µg/L = micrograms per liter

mg/L = milligrams per liter

-- = not analyzed

N = primary sample

SDG = sample delivery group

WT = water table

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

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	**	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
		5/31/2019	1366	<0.200	2.00	4.01	0.401	<0.200	0.435	<0.24	<0.39	0.58	166.8	1.50	3.22	476	Fe/S	4.52	68	0.00	0.22	0.67	0.10	0.00
		12/5/2019	1553	<0.200	1.88	3.03	0.251	<0.200	0.320	<0.24	<0.39	0.28	-22.6	4.0	3.08	355	Fe/S	4.28	53	0.00	0.27	0.64	0.10	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
		6/5/2019	1371	<0.200	1.18	4.14	0.248	<0.200	0.561	<0.24	<0.39	0.36	-8.4	2.60	5.78	1480	S/M	2.35	63	0.00	0.14	0.72	0.14	0.00
		12/2/2019	1550	<0.200	1.25	2.00	<0.200	<0.200	0.795	<0.24	<0.39	0.20	-94.9	0.80	22.2	1600	S/M	7.06	43	0.00	0.22	0.48	0.30	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	1.8	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	1.5	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	2.1	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	2.1	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	**	15.9	2.0	<1.0	1200	M	7.1	0.8	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	1.1	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	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	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	0.8	0.00	0.00	0.00	1.00	0.00
		6/5/2019	1370	<0.200	<0.200	<0.200	<0.200	<0.200	0.0624	<0.24	2.68	1.32	-19.3	4.20	0.127	9690	M	8.07	1.0	0.00	0.00	0.00	1.00	0.00
		12/5/2019	1553	<0.200	<0.200	<0.200	<0.200	<0.200	0.0365	<0.24	2.13	0.32	-33.9	4.60	0.442	8350	M	8.67	0.6	0.00	0.00	0.00	0.01	0.99

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

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds								Aquifer Redox Conditions						Donor Indicators	Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	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
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	1.1	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	1.2	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	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	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	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
		6/5/2019	1370	<0.200	<0.200	<0.200	<0.200	<0.200	0.0475	<0.24	2.86	0.39	-80.4	6.00	0.134	11900	M	5.75	0.8	0.00	0.00	0.00	1.00	0.00
		12/5/2019	1553	<0.200	<0.200	<0.200	<0.200	<0.200	<0.0200	<0.24	2.47	0.41	-48.1	4.00	0.161	5060	M	7.47	0.0	0.00	0.00	0.00	0.00	1.00
AGW244	WT	12/1/2016	454	<0.2	<0.2	<0.2	<0.2	<0.2	<0.020	<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
		6/5/2019	1371	<0.200	<0.200	<0.200	<0.200	<0.200	<0.0200	<0.24	<0.39	0.5	13.0	2.00	6.55	605	S/M	15.11	0	0.00	0.00	0.00	0.00	0.00
		12/4/2019	1552	<0.200	<0.200	<0.200	<0.200	<0.200	<0.0200	<0.24	<0.39	0.76	-169.8	1.20	15.3	506	S/M	11.20	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
		5/28/2019	1363	<0.200	<0.200	<0.200	0.318	<0.200	1.77	<0.24	<0.39	0.55	-40.4	4.50	0.212	7310	M	8.28	32	0.00	0.00	0.10	0.90	0.00
		12/2/2019	1550	<0.200	<0.200	<0.200	0.207	<0.200	0.38	<0.24	<0.39	0.69	-102.1	5.00	0.81	2110	M	15.91	8	0.00	0.00	0.26	0.74	0.00

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

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds								Aquifer Redox Conditions						Donor Indicators	Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	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
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
		5/28/2019	1363	<0.200	<0.200	0.824	0.273	<0.200	1.06	<0.24	<0.39	0.42	-61.1	2.00	0.157	3520	M	5.23	28	0.00	0.00	0.40	0.60	0.00
		12/2/2019	1550	<0.200	<0.200	0.446	0.294	<0.200	0.957	<0.24	<0.39	0.30	-102.9	4.00	0.351	1920	M	6.22	23	0.00	0.00	0.33	0.67	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	**	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	**	-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
		5/29/2019	1363	<0.200	<0.200	<0.200	<0.200	<0.200	0.0575	<0.24	<0.39	9.72	20.0	3.5	152	21.8	Fe	8.19	1	0.00	0.00	0.00	1.00	0.00
		12/9/2019	1557	<0.200	<0.200	<0.200	<0.200	<0.200	<0.0200	<0.24	<0.39	--	--	2.20	170	5.96	Fe	35.56	0	0.00	0.00	0.00	0.00	0.00
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	**	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	**	-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
		5/29/2019	1363	<0.200	<0.200	<0.200	<0.200	<0.200	0.724	<0.24	<0.39	0.63	-72.6	3.5	0.521	3030	M	7.00	12	0.00	0.00	0.00	1.00	0.00
		12/9/2019	1557	<0.200	<0.200	<0.200	<0.200	<0.200	0.649	0.98	2.09	0.23	-197.6	4.60	0.144	3020	M	6.25	10	0.00	0.00	0.00	0.09	0.91

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

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds								Aquifer Redox Conditions						Donor Indicators	Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	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
AGW251-3	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	**	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	**	-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
		5/29/2019	1364	<0.200	<0.200	<0.200	<0.200	<0.200	4.39	<0.24	<0.39	0.50	-32.9	4.5	0.190	3000	M	6.80	70	0.00	0.00	0.00	1.00	0.00
		12/9/2019	1557	<0.200	<0.200	0.201	<0.200	<0.200	4.87	0.64	0.65	0.25	-235.2	3.60	<0.100	2250	M	5.97	80	0.00	0.00	0.02	0.63	0.36
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
		5/30/2019	1365	<0.200	<0.200	<0.200	<0.200	<0.200	0.718	<0.24	1.77	0.53	-20.1	6.00	0.115	5710	M	7.65	11	0.00	0.00	0.00	0.16	0.84
		12/3/2019	1551	<0.200	<0.200	<0.200	<0.200	<0.200	0.0696	<0.24	2.04	0.19	-177.8	4.60	0.681	12600	M	8.26	1	0.00	0.00	0.00	0.02	0.98
AGW270	SZ	8/13/2015	-22	<0.020	<0.2	7.3	1	<0.2	2.2	<1.0	<1.0	1.58	**	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
		5/30/2019	1365	<0.200	<0.200	<0.200	<0.200	<0.200	3.36	<0.37	1.32	0.33	-29.6	2.50	0.147	16900	M	10.35	54	0.00	0.00	0.00	0.55	0.45
		12/3/2019	1551	<0.200	<0.200	<0.200	<0.200	<0.200	1.11	<0.24	1.37	0.19	-145.6	3.80	0.109	11000	M	10.30	18	0.00	0.00	0.00	0.28	0.72

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

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds								Aquifer Redox Conditions						Donor Indicators	Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	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
AGW271	SZ	8/13/2015	-22	<0.020	<0.2	6.5	0.7	<0.2	4.6	<1.0	<1.0	1.32	**	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
		5/30/2019	1364	<0.200	<0.200	<0.200	<0.200	<0.200	0.467	<0.24	2.23	0.47	-70.0	4.50	0.158	12100	M	13.71	7	0.00	0.00	0.00	0.09	0.91
		12/3/2019	1551	<0.200	<0.200	<0.200	<0.200	<0.200	0.142	<0.24	2.00	0.21	-169.4	1.80	<0.100	8380	M	11.39	2	0.00	0.00	0.00	0.03	0.97
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
		5/30/2019	1365	<0.200	0.323	3.22	0.507	<0.200	1.5	<0.30	<0.39	2.09	-20.9	4.00	0.410	841	M	4.10	65	0.00	0.04	0.59	0.37	0.00
		12/3/2019	1551	<0.200	<0.200	1.67	0.439	<0.200	3.68	0.44	<0.39	0.18	-185.5	3.40	<0.100	1170	M	4.22	81	0.00	0.00	0.23	0.61	0.16
AGW273	SZ	8/13/2015	-22	<0.020	<0.2	6.3	0.7	<0.2	4.2	<1.0	<1.0	1.61	**	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
		5/31/2019	1365	<0.200	<0.200	0.870	0.267	<0.200	3.18	1.17	0.83	0.59	61.0	5.50	0.129	1880	M	6.09	63	0.00	0.00	0.09	0.39	0.53
		12/4/2019	1552	<0.200	<0.200	0.209	<0.200	<0.200	2.00	0.78	1.98	0.31	-211.7	3.60	0.120	4160	M	6.53	34	0.00	0.00	0.02	0.25	0.73

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

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds								Aquifer Redox Conditions						Donor Indicators	Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	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
		5/31/2019	1365	<0.200	<0.200	<0.200	<0.200	<0.200	1.82	0.57	1.47	0.51	85.1	5.00	0.152	1910	M	6.59	29	0.00	0.00	0.00	0.30	0.70
		12/4/2019	1552	<0.200	<0.200	<0.200	<0.200	<0.200	0.0957	<0.24	1.94	0.25	-209.5	3.60	<0.100	7040	M	9.64	2	0.00	0.00	0.00	0.02	0.98
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	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	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	0.5	0.00	0.00	0.00	1.00	0.00
		5/31/2019	1365	<0.200	<0.200	<0.200	<0.200	<0.200	0.0260	<0.24	2.65	0.39	93.5	5.50	0.317	4390	M	7.55	0.4	0.00	0.00	0.00	0.00	1.00
		12/4/2019	1552	<0.200	<0.200	<0.200	<0.200	<0.200	0.0266	<0.24	2.29	0.18	-205.9	4.60	<0.100	2130	M	6.69	0.4	0.00	0.00	0.00	0.01	0.99
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	--	--	--	--	--	--	--	--	**	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
		5/30/2019	1364	<0.200	<0.200	<0.200	<0.200	<0.200	3.90	<0.27	<0.61	0.51	-4.2	4.50	0.158	24800	M	12.63	62	0.00	0.00	0.00	1.00	0.00
		12/3/2019	1551	<0.200	<0.200	0.269	<0.200	<0.200	0.568	<0.24	0.94	0.23	-192.4	3.80	0.114	17200	M	21.05	12	0.00	0.00	0.06	0.21	0.72

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

Well	Aquifer Zone	Date	Elapsed Time from Injection (days)	Volatile Organic Compounds								Aquifer Redox Conditions						Donor Indicators	Total cVOC (nmol/L)	Molar Fraction				
				PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	11DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	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
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	--	--	--	--	--	--
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
		5/30/2019	1364	<0.200	<0.200	<0.200	<0.200	<0.200	2.92	<0.36	1.16	0.43	-13.3	3.50	0.114	1830	M	8.57	47	0.00	0.00	0.00	0.55	0.45
		12/3/2019	1551	<0.200	<0.200	<0.200	<0.200	<0.200	1.71	0.48	1.24	0.18	-187.7	3.00	0.15	2290	M	8.87	27	0.00	0.00	0.00	0.32	0.68
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
		5/30/2019	1365	<0.200	<0.200	<0.200	<0.200	<0.200	0.466	<0.24	1.65	0.44	-38.2	5.50	0.132	12200	M	9.93	7	0.00	0.00	0.00	0.12	0.88
		12/3/2019	1551	<0.200	<0.200	<0.200	<0.200	<0.200	0.285	<0.24	2.09	0.18	-188.2	2.60	<0.100	16200	M	13.73	5	0.00	0.00	0.00	0.06	0.94

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

Notes:

Blue shading indicates the compound with highest molar fraction per event

Electron donor injection performed August 18 through September 4, 2015

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.

Methane, Ethene, and Ethane values are reported to the method detection limit and non-detect values are presented as less than the method detection limit.

The number of significant figures and reporting limits have varied throughout the analysis period due to changes in laboratory reporting.

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

(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 December 14, 2017.

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

Abbreviations/Acronyms:

Aquifer Redox Condition/Zone

Fe = Iron-reducing

M = Methanogenic

S = Sulfate-reducing

IZ = Intermediate Zone

SZ = Shallow Zone

WT = Water Table Zone

Units/Analytical Results

-- = not applicable/not analyzed

** = Instrument Error

µg/L = micrograms per liter

µmol/L = micromoles per liter

mg/L = micrograms per liter

mV = millivolt

nmol/L = nanomole per liter

Chemicals

11DCE = 1,1-dichloroethene

cDCE = cis-1,2-dichlorethene

cVOC = chlorinated volatile organic compounds

DO = dissolved oxygen

ORP = oxygen-reduction potential

PCE = tetrachloroethene

tDCE = trans-1,2-dichloroethene

TCE = trichloroethene

VC = vinyl chloride

ATTACHMENT 3

Laboratory Data Packages
(only included in final hard copy on DVD)