2019 Annual Report
Remedial Action
Enhanced Anaerobic Bioremediation
Boeing Developmental Center
Tukwila, Washington

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Prepared for

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LIST OF ABBREVIATIONS AND ACRONYMS

µg/L ..... micrograms per liter
µmoles/L ..... micromoles per liter
AMEE ..... acetylene, methane, ethane, ethene
AOC ..... Area of Concern
ARI ..... Analytical Resources, Inc.
Boeing ..... The Boeing Company
BTEX ..... benzene, toluene, ethylbenzene, and xylenes
cDCE cis-1,2-dichloroethene
CO_2 ..... carbon dioxide
DC ..... Developmental Center
Dhc ..... *Dehalococcoides sp.*
DO ..... dissolved oxygen
Ecology ..... Washington State Department of Ecology
EPA ..... US Environmental Protection Agency
$FeCl_2$ ..... ferrous chloride
ft ..... feet, foot
IA ..... interim action
IAWP ..... interim action work plan
LAI ..... Landau Associates, Inc.
mg/L ..... milligrams per liter
mg-N/L ..... milligrams per liter as nitrogen
MNA ..... monitored natural attenuation
MTCA ..... Model Toxics Control Act
NAPL ..... non-aqueous phase liquid
ORP ..... oxidation-reduction potential
ORC® ..... Oxygen Release Compound
PCE ..... tetrachloroethene
PCUL ..... proposed cleanup level
RCRA ..... Resource Conservation and Recovery Act
redox ..... reduction-oxidation
RFA ..... RCRA Facility Assessment
SWMU ..... Solid Waste Management Unit
TCE ..... trichloroethene
TOC ..... total organic carbon
TPH ..... total petroleum hydrocarbons
TPH-G ..... gasoline-range total petroleum hydrocarbons
UST ..... underground storage tank

VC ..... vinyl chloride
VCP ..... voluntary cleanup program
VOC ..... volatile organic compound
WAC ..... Washington Administrative Code

1.0 INTRODUCTION

This document presents a 2019 annual report for the interim actions (IAs) underway at The Boeing Company's (Boeing) Developmental Center (DC) in Tukwila, Washington (Figure 1). The DC is a regulated facility under the Resource Conservation and Recovery Act (RCRA) with a facility identification number of WAD-09363-9946. The Washington State Department of Ecology (Ecology) is authorized by the US Environmental Protection Agency (EPA) to implement RCRA corrective action through its Model Toxics Control Act (MTCA) regulations.

IAs are underway at Area of Concern (AOC)-05, Solid Waste Management Unit (SWMU)-17, and SWMU-20. Boeing has performed these IAs at the DC under Ecology's Voluntary Cleanup Program (VCP), and this work will continue under Agreed Order No. DE 16275 signed July 23, 2019, and per the information presented in the Interim Action Work Plan (IAWP; Landau Associates, Inc. [LAI] 2019b). Beginning with the 2018 report (LAI 2019a), annual reporting for the three IAs was combined into a single report.

1.1 Site Description

The DC (site) is located at 9725 East Marginal Way South in Tukwila, Washington near Boeing Field and the Military Flight Center (now called the Military Delivery Center; Figure 2). The site is bounded by the Duwamish Waterway on the west and East Marginal Way South on the east. Boeing has been operating on portions of this site since 1956 (SAIC 1994), and the site currently consists of more than 30 buildings on approximately 117 acres.[1] The DC is an aircraft and aerospace research and development complex, primarily supporting projects for the US Department of Defense. Activities that have occurred at the DC facility include research and development programs and manufacturing (Boeing 2009, SAIC 1994). The DC facility continues to be the primary research and development center for carbon fiber composite structures.

1.2 Background

Under its RCRA corrective action authority, the EPA conducted a RCRA Facility Assessment (RFA) in 1994 and identified 157 SWMUs and five AOCs at the DC (SAIC 1994). Each of these SWMUs and AOCs was evaluated in a comprehensive Summary Report prepared for Boeing by LAI (LAI 2002). Based on this initial evaluation and the demonstration that they did not pose a threat to human health of the environment, Ecology approved the exclusion of most SWMUs and AOCs from further investigation.

After approving the Summary Report (LAI 2002), Ecology determined that only two SWMUs (SWMU-17 and SWMU-20) and three AOCs (AOC-01/02, AOC-03/04, and AOC-05) remained subject to continued monitoring and evaluation. Following additional groundwater monitoring at AOC-01/02 and

[1] Site acreage recalculated using publicly-available parcel information for King County, Washington. Previous documents stated 112 acres (LAI 2019a).

AOC-03/04 (Boeing 2002, 2003), Ecology agreed that no further monitoring or other remedial action was required.

IAs are underway at three areas requiring further remedial action (AOC-05, SWMU-17, and SWMU-20), as described in the following sections. A facility boundary map showing the locations of these three areas within the DC facility is presented on Figure 2. A site plan showing the specific IA areas, including monitoring wells and facility buildings of interest, is presented on Figure 3. Groundwater elevation contours in the vicinity of the three areas for May and November 2019 are presented on Figures 4 and 5, respectively.

1.2.1 AOC-05

AOC-05 is located in the vicinity of Building 9-61 (Figure 3). This AOC consists of a former 1,000-gallon steel underground storage tank (UST) designated as DC-01 and former associated pump island, which were located approximately 25–30 feet (ft) south of the southwest corner of Building 9-61. UST DC-01 contained unleaded gasoline and was removed in 1985 after it was punctured by a measuring rod and released approximately 830 gallons of unleaded gasoline (LAI 2004). Contaminants targeted by IA in AOC-05 are gasoline-range total petroleum hydrocarbons (TPH-G) and benzene, toluene, ethylbenzene, and xylenes (BTEX).

1.2.2 SWMU-17

SWMU-17 is located west of Building 9-64 (Figure 3). This SWMU consists of a former 67-gallon sump and former 4,000-gallon steel UST designated DC-05. Waste oil generated by the hydraulic testing shops, automotive maintenance shops, and other operations at the DC was poured into the sump, which drained to the UST. Periodically, waste oil was pumped from the UST for offsite treatment and disposal. Both the sump and UST were removed in 1986 (LAI 2004). Contaminants targeted by IA in SWMU-17 are volatile organic compounds (VOCs), arsenic, and copper. The specific VOCs of concern are tetrachloroethene (PCE) and its breakdown products (trichloroethene [TCE], cis-1,2-dichloroethene [cDCE], and vinyl chloride [VC]).

1.2.3 SWMU-20

SWMU-20 is located at the northwest corner of Building 9-101 (Figure 3). This SWMU consists of a former vapor degreaser located in the northwest corner of Building 9-101. PCE and TCE were reportedly used during the operation of the degreaser from 1956 to 1984. The vapor degreaser, associated piping, and other equipment were removed in 1984 and all openings through walls and floor slabs were plugged. The concrete-lined degreaser pits and sumps were backfilled with compacted sand material and capped with 10 inches of concrete slab (LAI 2004). Contaminants targeted by IA in SWMU-20 are VOCs resulting from a suspected solvent leak from the former vapor degreaser pit. Specific VOCs of concern are PCE, TCE, and breakdown products (cDCE and VC), as well as benzene and naphthalene.

2.0 AOC-05

This section describes the IA underway in AOC-05. A description of the remedial approach and a summary of previous work is provided. IA activities and performance monitoring results are presented for the 2019 reporting period.

2.1 Remedial Approach

Anaerobic bioremediation is performed as the IA at AOC-05 through stimulation of microorganisms present in the aquifer to degrade petroleum hydrocarbons. The addition of nitrate (electron acceptor) allows native bacteria to utilize total petroleum hydrocarbons (TPH; electron donors) as a source of energy. Biodegradation of TPH can occur under both aerobic and anaerobic conditions and is the result of microbially mediated reduction-oxidation (redox) reactions. In these redox reactions, TPH are used as the electron donor, while various other compounds are utilized as electron acceptors when available (e.g., oxygen, nitrate, manganese [IV], iron [III], sulfate, carbon dioxide [CO_2]). Bacteria gain the most energy by utilizing oxygen as an electron acceptor because it is a highly oxidized compound, meaning it can more readily accept electrons from electron donors, like TPH. When oxygen is depleted, microorganisms preferentially use less oxidized electron acceptors in the following order, based on energy gained: nitrate, manganese (IV), iron (III), sulfate, and CO_2.

In aquifers that are naturally anaerobic, with low dissolved oxygen (DO) and high natural organic carbon, it may be more effective to stimulate anaerobic bioremediation instead of aerobic bioremediation. Naturally anaerobic aquifers, like at the DC, have a high natural oxygen demand that make oxygen addition ineffective for stimulation of aerobic bioremediation. Nitrate is the ideal electron acceptor to stimulate anaerobic bioremediation.

In 2002, an attempt to stimulate aerobic bioremediation of TPH-G at AOC-05 through injection of Oxygen Release Compound (ORC®; LAI 2004) was unsuccessful because of the high oxygen demand in the naturally anaerobic aquifer. As a result, the IA has stimulated anaerobic bioremediation through injection of nitrate as an electron acceptor. Nitrate amendment to enhance anaerobic biodegradation has been successfully implemented on other full-scale remediation projects for gasoline-range and fuel oil-range TPH, both nationally (Lozier and Hicks 2005, Wasserman et. al. 2005) and in Washington State (LAI 2012).

2.2 Summary of Prior Work and Findings

Prior to the reporting period, work at AOC-05 included bioremediation pilot testing, monitoring and injection well installation, baseline sampling, full-scale treatment, and performance groundwater monitoring. Pilot testing of nitrate injection in 2007 using a single injection well (BDC-103; LAI 2006a) was expanded to full-scale treatment in 2008 utilizing existing injection well BDC-103 and new injection well BDC-104. Eleven full-scale nitrate injections have been performed through the last

injection in December 2016. Injection events are detailed in the IAWP (LAI 2019b) and prior annual reports for AOC-05.

2.2.1 Pilot Testing

Bioremediation pilot testing in 2007 demonstrated degradation of petroleum hydrocarbons resulting from a one-time addition of ammonium nitrate (LAI 2007a). Post-injection monitoring showed that concentrations of TPH-G decreased by about 50 percent, compared to baseline, over 4 months of post-injection monitoring. BTEX compounds decreased as much as 98 percent (LAI 2007a). As expected, contaminant concentrations rebounded upon depletion of injected nitrate as groundwater returned to equilibrium with sorbed mass and non-aqueous phase liquid (NAPL) mass remaining in the aquifer. Based on these promising pilot test results, full-scale anaerobic bioremediation was implemented as described below.

2.2.2 Well Installation and Baseline Sampling

Full-scale implementation of anaerobic bioremediation began in February 2008 with the installation of one additional injection well (BDC-104) and baseline sampling of all four AOC-05 wells (BDC-101, BDC-102, BDC-103, and BDC-104). The new injection well (BDC-104) was installed upgradient (east) and crossgradient (north) of existing injection well BDC-103, located within the former UST tank pit. BDC-104 is located near the known upgradient edge of contamination associated with the former UST (LAI 2004). Injection of both wells allowed for groundwater transport of injected nitrate solution to the area of highest contamination.

Baseline sampling was performed prior to full-scale treatment to determine initial contaminant concentrations and aquifer redox conditions at the four AOC-05 wells (BDC-101, BDC-102, BDC-103, and BDC-104). Baseline results indicated nitrate- to sulfate-reducing conditions at source zone wells BDC-103 and BDC-104, nitrate- to iron-reducing conditions at downgradient well BDC-102, and aerobic to nitrate-reducing conditions at downgradient well BDC-101. The same conditions were indicated by pre-pilot test monitoring (LAI 2006a). Baseline TPH-G concentrations at both source zone wells (BDC-103 and BDC-104) were in excess of the preliminary screening level, and baseline benzene concentrations at BDC-103 exceeded the preliminary screening level (preliminary screening levels in use at that time were developed in the Summary Report [LAI 2002]). TPH-G and BTEX were not detected at downgradient wells BDC-101 and BDC-102 during baseline sampling, but had been during prior sampling. Baseline sampling results and proposed cleanup levels (PCULs) are included in the data summary presented in Table 1.

2.2.3 Full-Scale Bioremediation and Performance Results

Eleven full-scale nitrate injections to stimulate bioremediation have been performed to date; the most recent injection was performed in December 2016. Performance monitoring results from 2008 through 2018 indicated effective treatment of TPH-G and BTEX at source zone wells BDC-103 and BDC-104, while maintaining relatively low or non-detect contaminant levels at downgradient wells

BDC-101 and BDC-102. As was observed during the pilot test, contaminant concentrations have demonstrated some degree of rebound at well BDC-103 following the depletion of injected nitrate, prompting additional nitrate injection. Rebound will continue to occur as long as contaminant mass remains in the sorbed-phase or as NAPL within the aquifer or in upper portions of the smear zone that are periodically contacted by the water table. The historical timeline of AOC-05 bioremediation is summarized as follows:[2]

- Nitrate solution was injected to both wells BDC-103 and BDC-104 a total of five times during 2008 and 2009. Post-injection monitoring results demonstrated that concentrations had declined below PCULs at BDC-104 following the fifth injection. As a result, injection was discontinued at BDC-104.
- Following the sixth injection in September 2010, contaminant concentrations at BDC-103 decreased to historical lows in February 2011.
- Repeated cycles of nitrate depletion and contaminant rebound prompted a seventh and an eighth injection in 2012 and a ninth injection in November 2013.
- In February 2013, contaminant concentrations at all wells declined below the PCULs for the first time since treatment began.
- In May 2014, contaminant concentrations at all wells declined to below their reporting limits for the first time since treatment began.
- The 2013 injection was followed by a period of slow nitrate consumption and a tenth injection was not needed until March 2016. Slower utilization of nitrate between 2013 and 2016 is indicative of decreased TPH mass remaining in the source.
- Contaminant concentrations rebounded once again in August and November 2016 at BDC-103, which prompted the eleventh nitrate injection in December 2016.

TPH concentration rebound in 2016 followed a period of higher groundwater levels. The higher water table caused groundwater to contact higher portions of the contaminant smear zone not treated by prior injection events, resulting in increased TPH concentrations in groundwater. Groundwater elevations over time at AOC-05 are shown on Figure 6. The highest groundwater elevations recorded in AOC-05 occurred in spring of 2016 and 2018. Cumulative performance monitoring results are presented in Table 1.

As indicated in the AOC-05 Work Plan (LAI 2007b), Ecology required an action level for nitrate of 10 milligrams nitrogen per liter (mg-N/L) for IA at AOC-05. Detection of nitrate above the action level at either of the two nearest downgradient wells (BDC-101 or BDC-102) for two consecutive sampling events triggers implementation of additional groundwater monitoring at four wells (BDC-05-04, MW-17A, MW-18A, and MW-21A) located farther downgradient (Figure 3). Semiannual monitoring for nitrate is required to continue at these four downgradient wells for one year after nitrate at wells BDC-101 and BDC-102 decreases below 10 mg-N/L. Based on continued periodic exceedances of the action level at wells BDC-101 and BDC-102, semiannual nitrate monitoring has been performed at the

[2] Additional details of each injection are provided in the footnotes to Table 1.

four downgradient wells since November 2009. Nitrate has not been detected above the 10 mg-N/L action level at the four furthest downgradient wells (BDC-05-04, MW-17A, MW-18A, and MW-21A). Cumulative downgradient nitrate results are included in Table 2.

2.3 2019 Activities

Activities in AOC-05 for 2019 included one quarterly monitoring event and two semiannual monitoring events. All monitoring events were conducted at the four AOC-05 wells, while semiannual events also included measurement of nitrate at further downgradient wells. Groundwater monitoring transitioned from quarterly to semiannual following the February quarterly in accordance with the IAWP (LAI 2019b). No nitrate injections were performed.

Bioremediation progress was evaluated through monitoring performed in February, May, and November 2019. Groundwater levels were measured in May and November. In accordance with the AOC-05 Work Plan (LAI 2007b) and the IAWP (LAI 2019b), samples were analyzed for contaminant concentrations (TPH-G and BTEX) and parameters indicative of aquifer redox conditions (DO, oxidation-reduction potential [ORP], nitrate, ferrous iron, sulfate, and pH). Samples were also analyzed for nitrite, a short-lived intermediary product of nitrate reduction. TPH-G, BTEX, nitrate, nitrite, and sulfate were analyzed in the laboratory, while other parameters (DO, ORP, ferrous iron, and pH) were measured in the field. All laboratory analyses were performed by Analytical Resources, Inc. (ARI) in Tukwila, Washington. Cumulative monitoring results for the four AOC-05 wells (BDC-101 through BDC-104) are presented in Table 1. Laboratory reports for the reporting period are presented in Appendix A. Groundwater elevation contours for May and November 2019 are presented on Figures 4 and 5, respectively. Cumulative groundwater levels are presented in Appendix B.

Semiannual monitoring for nitrate continued in May and November 2019 at the four monitoring wells located farther downgradient of AOC-05 (MW-17A, MW-18A, MW-21A, and BDC-05-04). These results are presented with cumulative data in Table 2.

2.4 2019 Results and Discussion

Monitoring results through 2019 continue to suggest that bioremediation of TPH-G and BTEX is nearing completion in AOC-05, but additional nitrate injection may be required to complete treatment of residual contaminant mass. This is indicated by the extended period of contaminant concentrations below the PCULs followed by a slight rebound and depleted nitrate in November 2019. Highlights from 2019 results are as follows:

- Contaminant Reduction: Contaminant concentrations at all four AOC-05 wells remained below the PCULs and/or below the laboratory reporting limits for three years from November 2016 until November 2019. At BDC-103, TPH-G and BTEX concentrations rebounded slightly in November 2019, with TPH-G (1.3 milligrams per liter [mg/L]), benzene (13.2 micrograms per liter [µg/L]), and ethylbenzene (24.8 µg/L) exceeding PCULs. TPH-G and BTEX at the other three AOC-05 wells remained below the PCULs and/or below reporting limits throughout

2019. Two consecutive events of concentrations above PCULs have preceded previous injections in order to confirm rebound and not just an anomalous increase in concentrations during one sample event. Results from the May 2020 sampling event will be used to confirm these results and assess the need for an additional nitrate injection.

- Nitrate: Nitrate at BDC-103 has remained elevated for three years since the injection in December 2016. Nitrate reached an all-time maximum of 215 mg-N/L in May 2017, approximately 5 months post-injection, and persisted at 113 mg-N/L in May 2019, 29 months post-injection. Nitrate was depleted at 0.4 mg-N/L in November 2019. The slower nitrate utilization in 2014 through 2015 and 2017 through May 2019 coincident with low to non-detect levels of TPH-G and BTEX suggests that treatment of TPH mass is nearing completion in the current saturated zone. The contaminant rebound in November 2019 may indicate a need for an additional nitrate injection. However, a low nitrate concentration was also measured in November 2018 but was followed by an increase to over 100 mg-N/L in February 2019. Results from the May 2020 sampling event will be used to confirm these results and assess the need for an additional nitrate injection.
- Groundwater Elevations: The February 2019 groundwater elevations in AOC-05 were lower than 2016–2018 elevations. May and November 2019 elevations were also lower than prior years.
- Downgradient Monitoring: Nitrate concentrations at BDC-101 exceeded the action level during the May 2019 monitoring event, but were below the action level in November 2019. As a result, the downgradient monitoring continued during this reporting period with detections remaining below the 10-mg-N/L action level and below laboratory detection limits. Based on these results, semiannual nitrate monitoring will continue at the four downgradient wells in May 2020.
- Nitrite: Detection of low levels of nitrite is a result of nitrate reduction. Nitrite is a highly reactive, short-lived compound that is further reduced to nitrous oxide, nitric oxide, and finally nitrogen gas (Environment Agency 2005). Nitrite has been commonly detected at injection wells since the start of full-scale injection activities, but has not persisted. The maximum nitrite concentration detected during this reporting period was 0.180 mg-N/L at injection well BDC-103 in February 2019. Nitrite was also detected at downgradient well BDC-102 (0.154 mg-N/L), but it was not detected at wells BDC-104 or BDC-101. This data confirms that nitrite continues to be further reduced in the treatment area.

Monitoring results are presented in the following tables and figures: Cumulative monitoring results for wells BDC-101 through BDC-104 are presented in Table 1, with results compared to PCULs (LAI 2013b). Cumulative monitoring results for downgradient nitrate monitoring are presented in Table 2. Concentrations of TPH-G, benzene, and nitrate at BDC-103 and BDC-104 over time are presented on Figures 7 and 8, respectively.

3.0 SWMU-17

This section describes the IA in SWMU-17. A description of the remedial approach and a summary of previous work is provided. IA activities and performance monitoring results are presented for the 2019 reporting period.

3.1 Remedial Approach

IA at SWMU-17 consists of anaerobic bioremediation, which is accomplished through stimulation of microorganisms present in the aquifer to enhance reductive dechlorination of chlorinated ethenes. The addition of electron donor substrates stimulates the required reduced aquifer conditions and the biological reductive dechlorination of PCE and its breakdown products TCE, cDCE, and VC.

Reductive dechlorination of PCE and TCE occurs through microbially mediated (biotic) reactions, whereby microorganisms obtain energy through redox reactions. Anaerobic conditions are required for reductive dechlorination of PCE/TCE and breakdown products. Electron donors (natural organic carbon or injected substrates) are used by microbes to sequentially reduce the natural electron acceptors (oxygen, nitrate, manganese [IV], iron [III], sulfate, and CO_2), resulting in successively more reduced aquifer conditions. When oxygen is depleted, bacteria sequentially use the less-oxidized electron acceptors in the following order: nitrate, manganese (IV), iron (III), sulfate, and CO_2.

Chlorinated ethenes can also be used as electron acceptors by dechlorinating microorganisms. In this process, PCE and its breakdown products are used as electron acceptors and degraded to less chlorinated breakdown products. Degradation occurs sequentially from PCE through TCE, cDCE, and VC, to innocuous end products ethene and ethane. PCE is the most oxidized electron acceptor in typical groundwater systems after oxygen and, therefore, can be reduced as soon as oxygen is depleted (Vogel et al. 1987). TCE, cDCE, and VC, however, require successively more reducing aquifer conditions for degradation. Depletion of natural electron acceptors (e.g., oxygen, iron, sulfate, CO_2) creates the highly reducing aquifer conditions (sulfate-reducing to methanogenic conditions) required for complete reductive dechlorination of PCE and breakdown products.

Reductive dechlorination is enhanced through the injection of fermentable substrates (e.g., vegetable oil and lactate) as a source of electron donors for aquifer microorganisms. Substrates are injected into the contaminated aquifer, where a consortium of indigenous bacteria first ferment the substrate to volatile fatty acids and hydrogen. Other bacteria in this consortium then use these fermentation products to reduce natural electron acceptors and chlorinated ethenes. Hydrogen is the required electron donor for the primary chlorinated ethene degraders (i.e. *Dehalococcoides sp*. [*Dhc*]) that can completely degrade PCE to the non-toxic end products ethene and ethane.

3.2 Summary of Prior Work and Findings

Prior to 2019, field activities consisted of pilot testing, installation of injection and monitoring wells, baseline sampling, full-scale injections to stimulate anaerobic bioremediation, and performance groundwater monitoring. Two full-scale electron donor injection events were performed in 2011 and 2017; injection events and other IA work previously performed in SWMU-17 are described in detail in the IAWP (LAI 2019b) and prior annual reports.

3.2.1 Pilot Testing

A pilot test was performed in October 2008 to determine if electron donor (sodium lactate and vegetable oil) and ferrous sulfate amendments could successfully enhance anaerobic biodegradation of PCE and immobilization of copper and arsenic. One monitoring well (BDC-05-02) received injection solution containing the electron donor and ferrous sulfate amendments.

Monitoring results demonstrated that bioremediation of PCE at SWMU-17 was successfully stimulated by the electron donor pilot test injection. However, the relatively limited extent of PCE and TCE treatment observed during the pilot test indicated that the radius of injection created was smaller than anticipated and that the downgradient transport of electron donor was slow (LAI 2010b). Over the course of the pilot test, PCE and TCE concentrations decreased substantially at SWMU-17, but the lack of substantial VC, ethene, or ethane production indicated that the process of reductive dechlorination was incomplete. Copper and arsenic concentrations remained within the range of pre-injection results (LAI 2010b). Based on pilot test results, full-scale bioremediation of PCE and breakdown products was undertaken as described below.

3.2.2 Well Installation and Baseline Sampling

Full-scale IA began with installation of additional groundwater wells. Sixteen additional wells (BDC-05-09 through BDC-05-24) were installed for injection and/or monitoring in July 2011. This supplemented six existing wells (BDC-05-02 through BDC-05-05, BDC-05-07, and BDC 05-08) for a total of 22 wells utilized for IA in SWMU-17. Well locations are presented on Figure 3.

Baseline sampling was performed immediately following new well installation in July 2011, followed by quarterly (10 wells) and semiannual (22 wells) post-injection sampling through 2017 in accordance with the SWMU-17 Work Plan (LAI 2011). In 2018, monitoring transitioned to a semiannual frequency. Samples were analyzed for target contaminants and breakdown products (PCE, TCE, cDCE, and VC); non-toxic end products (ethene and ethane); parameters indicative of aquifer redox conditions (DO, ORP, nitrate, ferrous iron, sulfate, and methane); total organic carbon (TOC) and pH indicative of electron donor; and total and dissolved copper and arsenic. Laboratory analysis of acetylene, methane, ethane, and ethene (AMEE) was performed at select wells. Nitrate, which was consistently not detected, was determined to not be useful for evaluation of aquifer redox conditions at the site, and nitrate analysis was discontinued beginning in May 2012 (LAI 2013a). AMEE was added to wells

BDC-05-03, BDC-05-21, and BDC-05-24 beginning with the May 2013 semiannual sampling event to improve evaluation of treatment progress (LAI 2013a).

3.2.3 Full-Scale Electron Donor Injections

Two full-scale electron donor injections were performed through 2017. Various electron donor substrates have been used to stimulate treatment of PCE and TCE; additional amendments have also been added to the injection solution to provide secondary benefits. The injection timeline for this area is as follows:

- The first full-scale electron donor injection was performed at 11 wells in August 2011. Each of the 11 wells (BDC 05-02, BDC-05-07, and BDC-05-09 through BDC-05-17) was injected with injection solution containing LactOil®, a combination donor substrate containing both soluble (fast-release) ethyl lactate and insoluble (slow-release) soybean oil.
- A second, focused electron donor injection was performed at five wells in November 2017. The purpose of this injection was to address PCE and/or TCE concentrations that were greater than 1 µg/L within the source area. Injection solution containing molasses was delivered to each of the five wells (BDC-05-02, BDC-05-03, BDC-05-04, BDC-05-07, and BDC-05-10); molasses was used as the soluble (fast-release) electron donor instead of LactOil. Each well was also injected with ferrous chloride ($FeCl_2$) solution to provide ferrous iron for formation of iron sulfides. Iron sulfides are produced as a reactive coating on aquifer minerals when sulfate present in the molasses is reduced to sulfide and the sulfide complexes with ferrous iron. PCE, TCE, and cDCE are degraded abiotically on contact with iron sulfides to short-lived and non-toxic acetylene compounds without the production of VC. This favorable abiotic destruction mechanism is complementary and occurs simultaneously with biotic reductive dechlorination of TCE (LAI 2017).

3.2.4 Summary of Prior Results

Post-injection monitoring results through November 2018 demonstrated substantial treatment in 88 months (more than seven years) following the first donor injection.

Baseline data showed conditions conducive to limited biodegradation of PCE and TCE. The highest baseline concentrations of PCE and TCE were 39 µg/L (BDC-05-10) and 28 µg/L (BDC-05-15), respectively. cDCE, the first reductive dechlorination sequential breakdown product, was commonly detected (detections ranged from 0.2 to 58 µg/L), but VC and end products ethene and ethane were not detected. Baseline aquifer redox conditions were variable, with more highly reducing conditions (sulfate-reducing to methanogenic) occurring at source zone wells BDC-05-02 and BDC-05-07 because of prior pilot testing, and predominantly mild to moderately reducing conditions (nitrate- to iron-reducing) occurring elsewhere in the plume. TOC concentrations were below 10 mg/L at most wells, which is the threshold generally considered to represent sufficient electron donor to support substantial reductive dechlorination (Major et al. 2003).

Post-injection monitoring results through November 2018 indicated that bioremediation was substantially enhanced by the electron donor injection. Evidence of biodegradation consisted of

elevated TOC; more highly reduced aquifer redox conditions; and changes in concentrations of PCE, TCE, breakdown products, and end products. Continued production of end products ethene and ethane indicated complete reductive dechlorination through to non-toxic end products (LAI 2019a).

3.3 2019 Activities

Activities in 2019 consisted of two semiannual performance monitoring events at all 22 wells to evaluate ongoing treatment and included measurement of groundwater elevations. No injections were performed in 2019.

Samples collected during monitoring events were analyzed for target contaminants and breakdown products (PCE, TCE, cDCE, and VC); parameters indicative of aquifer redox conditions (DO, ORP, ferrous iron, and sulfate); TOC and pH indicative of electron donor; and total and dissolved copper and arsenic. Laboratory analysis of AMEE was also performed at all wells except four (BDC-05-05, BDC-05-08, BDC-05-22, and BDC-05-23). Laboratory analysis of contaminant and breakdown products, sulfate, TOC, metals, and AMEE was performed by ARI in Tukwila, Washington. Parameters DO, ORP, ferrous iron, and pH were measured in the field. Groundwater monitoring data are presented in Table 3. Laboratory reports for the reporting period are presented in Appendix A.

Groundwater elevations were measured during the May and November 2019 semiannual sampling events. Consistent with previous measurements, groundwater flow is generally west-southwesterly in direction. These groundwater flow directions are consistent with the alignment of the contaminant plume. Groundwater elevation contours for May and November 2019 are presented on Figures 4 and 5, respectively. Cumulative groundwater elevations for SWMU-17 wells are presented in Appendix B.

3.4 2019 Results and Discussion

This section presents discussion and interpretation of data collected during 2019. As of the November 2019 sampling event, 20 of the 22 wells remained below PCULs for PCE, TCE, cDCE, and VC. Groundwater monitoring results show that aquifer conditions continue to be enhanced for anaerobic bioremediation, as indicated by elevated TOC concentrations since the 2017 injection and highly reducing (sulfate-reducing to methanogenic) aquifer redox conditions. Detections of end products ethene and/or ethane demonstrate continued complete reductive dechlorination of the toxic parent and breakdown products to non-toxic end products. November 2019 data were collected 100 months (more than eight years) following the first electron donor injection in August 2011 and 24 months from the focused second injection in November 2017.

Monitoring results, including VOC molar fractions, are summarized in a cumulative data table (Table 3), presented on various figures and appendices, and discussed further in the following sections. Appendix C presents time plots of VOC concentrations at representative injection wells and monitoring wells. Time plots for molar concentrations of VOCs and breakdown products for the same

representative wells are presented in Appendix D. Time plots of redox parameters (methane and sulfate) and TOC for the representative wells are presented in Appendix E.

3.4.1 Reductive Dechlorination of VOCs

Enhanced reductive dechlorination following the August 2011 and November 2017 donor injections has resulted in substantially decreased PCE/TCE concentrations, with conversion through intermediary breakdown products cDCE and VC to end products ethene and ethane. Reductive dechlorination has resulted in concentration reduction at all SWMU-17 wells with the exception of upgradient well BDC-05-05, which is outside the treatment area. During 2019, PCE remained below the PCUL (5.3 µg/L) at all wells, and TCE was below the PCUL (1.4 µg/L) at all but one well (BDC-05-18). At BDC-05-18, TCE was measured just above the PCUL at a concentration of 1.47 µg/L in May and 1.42 µg/L in November. PCE/TCE concentrations in groundwater are presented on Figure 9 for November 2019.

At well BDC-05-10, which had the highest baseline concentration of PCE and the second highest TCE concentration, PCE and TCE have remained persistently less than the reporting limit from May 2012 through 2019; this represents a concentration reduction of greater than 99 percent.

Concentrations of breakdown products cDCE and VC increased temporarily after the first injection in 2011, but remained low or below PCULs at wells until November 2019. After reaching a maximum concentration of 250 µg/L at well BDC-05-09 in May 2012, cDCE concentrations have remained below the PCUL (134 µg/L) at all wells since November 2012. The maximum cDCE detection in 2019 (6.48 µg/L) was well below the PCUL. VC was slightly above the PCUL (2.4 µg/L) at just one well (BDC-05-03) in 2019, with a detection of 2.56 µg/L in November. VC concentrations at BDC-05-03 have been low or non-detect since sampling began in 2007, and the 2019 increase was coincident with increasing then decreasing cDCE at this well, indicating effective biodegradation of cDCE to VC. November 2019 VC concentrations in groundwater are presented on Figure 10.

Complete reductive dechlorination resulting from bioremediation treatment has been evidenced by occurrence and molar predominance of innocuous end products ethene and ethane. Ethene+ethane represented just 1.7 percent of the total ethenes (i.e., 1.7 percent molar fraction) during baseline sampling in July 2011. Because of biodegradation stimulated by the 2011 injections, the ethene+ethane molar fraction increased to a maximum level of 91.5 percent in November 2016. Ethene and ethane were detected in May 2019, but not in November. The number of wells where ethene+ethane is detected is decreasing over time, as treatment results in more wells that are low to non-detect for PCE, TCE, cDCE, and VC. Ethene and/or ethane were detected at four of the 18 wells where analyzed in 2019, compared to detections at 15 wells in 2016. Figure 11 presents the percentage (average molar fraction) of total ethenes contributed by PCE, TCE, cDCE, VC, and ethene+ethane over time for all 18 SWMU-17 wells where ethene and ethane are analyzed; the shift from parent product and breakdown product predominance to predominance of non-toxic

ethene+ethane is readily apparent from November 2012 to May 2019. In May 2019, ethene+ethane constituted just more than 50 percent of total ethenes detected on a molar basis. Ethene+ethane predominance means that ethene+ethane constitutes a higher percentage of total ethenes (i.e., VOCs plus end products) than do each of the chlorinated ethenes (PCE, TCE, cDCE, or VC).

The succession of chlorinated ethene conversion to innocuous end products results in a decrease in total chlorinated ethenes concentrations (micromoles per liter [µmoles/L]) over time. Total chlorinated ethenes is the molar sum of PCE + TCE + cDCE + VC. A decrease in the concentration of total chlorinated ethenes demonstrates mass destruction, not just conversion to a less-chlorinated breakdown product (e.g., TCE to VC). Initial periods of increased total chlorinated ethenes commonly indicate enhanced desorption of contaminant mass that was partitioned to the aquifer soil matrix and liberated by surfactant properties of the injected donor solution and by biosurfactants released by stimulated bacteria. Decreasing concentrations of total chlorinated ethenes reflects the final conversion step from VC to non-chlorinated end products ethene and ethane. Total chlorinated ethenes are tabulated in Table 3 and are shown on time plots for representative wells in Appendix D. Figure 11 presents a time plot of average total chlorinated ethenes for all SWMU-17 wells. As shown on Figure 11, the average total chlorinated ethenes increased through May 2012 was due to enhanced desorption; it then decreased substantially through 2019. Average total chlorinated ethenes through November 2019 show a substantial reduction (approximately 95 percent) compared to baseline and a 96 percent reduction compared to the May 2012 peak.

In summary, data show that PCE and its associated breakdown products have been effectively converted to non-toxic end products by bioremediation in SWMU-17. Comparison of current contaminant concentrations to PCULs indicates that treatment is in its final stages. As of November 2019, PCE, TCE, cDCE, and VC concentrations were below PCULs at all 22 wells, with the exception of minor exceedances for TCE at BDC-05-18 and for VC at BDC-05-03. Detection and long-term predominance of ethene+ethane has confirmed complete reductive dechlorination to these non-toxic end products. No additional electron donor injections are needed at this time.

3.4.2 TOC and Redox Conditions

Monitoring results indicate aquifer TOC and/or redox conditions have been enhanced throughout the core of the contaminant plume and at many of the crossgradient and downgradient monitoring wells following the August 2011 and November 2017 electron donor injections. These results indicate conditions conducive to continued enhanced bioremediation of PCE/TCE and breakdown products. As a result of the November 2017 injection, TOC increased from near baseline levels (5.3 to 33 mg/L) at the five injected wells (BDC-05-02, BDC-05-03, BDC 05-04, BDC-05-07, and BDC-05-10) to a range of 627–9,629 mg/L in May 2018.

As of November 2019, TOC remains greater than 10 mg/L (13–1,233 mg/L) at all of the wells injected in 2011 and 2017. A TOC concentration of 10 mg/L or more is generally considered to represent

sufficient electron donor to support substantial reductive dechlorination (Major et al. 2003). Lower levels of TOC may support an extended period of residual treatment.

Highly reducing conditions required for reductive dechlorination persist throughout the core of the plume, as indicated by generally low concentrations of sulfate and elevated concentrations of methane in all injection wells through November 2019. These enhanced redox conditions also continue at three monitoring wells. At other downgradient and crossgradient monitoring wells, redox changes were minor (e.g., decreased DO or increased ferrous iron) or short-lived (e.g., a brief decrease in sulfate followed by a rebound to baseline levels) following the two injection events.

3.4.3 Copper and Arsenic

Total and/or dissolved copper concentrations were above the PCUL (0.008 mg/L) at three of 22 wells as of the November 2019 sampling event. These three wells are three of the five wells injected in 2017. A similar increase in copper concentrations was observed at many of the wells injected in 2011, followed by a decrease to below the PCUL.

As of November 2019, total and/or dissolved arsenic concentrations remained above the PCUL (0.008 mg/L) at 14 of 22 sampled wells, compared to 16 of 22 wells above the PCUL in November 2017. Concentrations at these 14 wells have been consistently near or above the PCUL for arsenic since the first injection, except for BDC-05-04 which, had been below the PCUL from May 2014 to until November 2017. The highest detection in November 2019 was a dissolved arsenic result of 0.050 mg/L at well BDC-05-15.

Reducing conditions may cause mobilization of naturally occurring arsenic (along with manganese and iron) as a localized and temporary phenomenon within the portion of the aquifer that has been artificially reduced through donor amendment. Once the injected donor has been consumed and natural conditions are re-established, these metals will precipitate as the less soluble forms that existed prior to donor amendment (Solutions-EIS 2006, Suthersan et al. 2003). However, because of elevated natural background concentrations of arsenic commonly observed within the Duwamish area because of naturally reduced aquifer conditions, arsenic concentrations are not expected to achieve the PCUL at project completion. Final cleanup levels for arsenic will need to consider appropriate background concentrations in accordance with Washington Administrative Code (WAC) 173-340-720 (7)(c).

Time plots for total copper and arsenic are presented for injection wells and monitoring wells in Appendix F.

4.0 SWMU-20

This section describes the IA underway at SWMU-20. A description of the remedial approach and a summary of previous work is provided. IA activities and performance monitoring results are presented for the 2019 reporting period.

4.1 Remedial Approach

IA in SWMU-20 has consisted of groundwater pump-and-treat followed by bioremediation for the treatment of PCE and TCE in groundwater. Anaerobic bioremediation of VOCs like PCE and TCE relies on reductive dechlorination—the microbially mediated process by which these compounds are reduced to transformation products, cDCE and VC, and non-toxic end products, ethene and ethane. Microorganisms gain energy through reductive dechlorination by utilizing PCE, TCE, and breakdown products as electron acceptors and hydrogen as an electron donor. Fermentable substrates like sodium lactate and vegetable oil can serve as sources of electron donor for this process. The reductive dechlorination process is described in more detail in Section 3.1.

Full-scale implementation of anaerobic bioremediation through addition of fermentable substrates has been successful. Treatment methods and performance results are summarized in the following section. The details of the pump-and-treat system shutdown and indoor air modeling and sampling are also provided in the following section.

4.2 Summary of Prior Work and Findings

Prior to the reporting period, work at SWMU-20 included groundwater pump-and-treat, bioremediation injections, indoor air evaluations and sampling, and performance groundwater monitoring. Five full-scale electron donor injections for bioremediation have been performed to date; all events are detailed in the IAWP (LAI 2019b) and prior annual reports for SWMU-20.

4.2.1 Groundwater Pump and Treat

Following soil and groundwater investigations around the former degreaser location, a groundwater treatment system was installed to remove chlorinated VOCs from groundwater for source area treatment and for the prevention of further contaminant migration. The treatment system, consisting of two extraction wells (E-1 and E-2) and a sieve tray aerating treatment system, operated from Fall 1993 to December 2001 (approximately 8 years). The system was shut down in December 2001 to allow the groundwater to equilibrate for evaluation of potential rebound and evaluation of natural attenuation as a remedial alternative to achieve site PCULs (LAI 2004).

Substantial contaminant concentration rebound was observed within 2 years following the shutdown of the groundwater treatment system. Enhanced reductive dechlorination through electron donor amendment (i.e., bioremediation) was recommended to address the rebound in VOC concentrations observed following groundwater treatment system shutdown (LAI 2002).

The groundwater treatment system in SWMU-20 was decommissioned in June 2014. Ecology agreed that the treatment system was not likely to be needed in the future because of effective bioremediation treatment. The air stripper was relocated to another Boeing site for reuse. Submersible pumps were removed from extraction wells and system piping was disconnected and capped. The treatment building remained at the site for future use or later removal.

4.2.2 Bioremediation

A series of five bioremediation injection events were performed to address contaminant concentrations near the former degreaser, downgradient, and ultimately at peripheral wells not affected by the earlier injections. Iterative full-scale bioremediation was implemented without pilot testing. These injections are described in detail in the IAWP (LAI 2019b) and summarized below:

- Injection solution containing sodium lactate and vegetable oil emulsion was injected at six monitoring wells (MW-6A, MW-6B, MW-6C, MW-9A, MW-9B, and MW-9C) during the first injection in June 2004 using groundwater from two extraction wells (E-1 and E-2). Post-injection monitoring results indicated that the first injection was successful at establishing more reducing redox conditions and enhancing reductive dechlorination.
- A second injection was performed in December 2004, just 6 months after the first injection to maintain elevated TOC concentrations for continued bioremediation. Four monitoring wells (MW-6A, MW-6B, MW-9A, and MW-9B) were injected with injection solution containing sodium lactate and vegetable oil; the mixture of the two substrates was intended to maximize the extent and longevity of treatment. Groundwater extracted from two extraction wells (E-1 and E-2) was used in the injection solution.
- One monitoring well (MW-14A) was used for the third injection in March 2005. Injection solution containing groundwater from extraction wells (E-1 and E-2), sodium lactate, and vegetable oil was injected at MW-14A only in order to extend the treatment zone downgradient of the source and to treat relatively high concentrations of VC observed at the well following prior injections nearer the source zone. Two additional monitoring wells (MW-22A and MW-23A) were installed to monitor the effects of the third injection and to monitor treatment progress farther downgradient.
- The fourth injection in August 2008 utilized groundwater from two extraction wells (E-1 and E-2) and solution was injected at three monitoring wells (MW-6A, MW-9A, and MW-10A) to provide additional source zone treatment. Injection solution contained sodium lactate and vegetable oil emulsion mixed with groundwater.
- Nine monitoring wells (MW-6A, MW-6B, MW-10C, MW-15C, MW-16A, MW-16C, MW-17A, MW-20C, and MW-22A) were injected during the fifth injection in October and November 2015 to target residual contaminant mass at source zone wells and additional wells located on the fringes of the treatment area. Injection solution contained sodium lactate mixed with tap water; only soluble donor substrate was injected in order to provide rapid treatment of residual contaminant mass without persistent elevated TOC concentrations.

It is anticipated that biodegradation stimulated by the fifth injection event will result in VOC concentrations below anticipated final cleanup levels at all SWMU-20 wells. Once TOC concentrations fall below approximately twice the baseline concentration at monitored wells, it is anticipated that 1–

2 years of semiannual monitoring will be required to demonstrate no rebound of VOCs above final cleanup levels.

4.2.3 Groundwater Monitoring

Quarterly to semiannual monitoring began in January 1994. After reviewing long-term monitoring data at SWMU-20 wells, sampling reductions were proposed in April 2010 and again in March 2015. The 2010 sampling reduction discontinued semiannual monitoring at 11 of the 29 existing SWMU-20 monitoring wells, where VOCs of concern (PCE, TCE, cDCE, and VC) had been below reporting limits for 2 years or more (LAI 2010a). Ecology approved additional sampling reduction in 2015, which discontinued semiannual monitoring at four of the 18 sampled wells.[3] The 14 wells retained for ongoing sampling were all wells where PCE, TCE, or VC was detected at a concentration of more than half of the PCUL in May 2014 or were of continued interest for Ecology. Semiannual monitoring at these 14 wells will continue during 2020 to evaluate ongoing monitored natural attenuation (MNA) in SWMU-20 (LAI 2015a, b). Wells not included in the current monitoring program have not yet been decommissioned.

4.2.4 Indoor Air Evaluation and Sampling

Indoor air evaluations were performed in the vicinity of SWMU-20 using the Johnson-Ettinger model to estimate potential human health risks associated with exposure to indoor air because of VOCs in the underlying shallow groundwater. These evaluations were performed for Building 9-101, a manufacturing building which overlies the source, and Building 9-90, an office building located hydraulically downgradient of the source (Figure 3). The model concluded that the associated risk levels for occupational inhalation of potentially impacted indoor air were at, or below, the regulatory criteria (LAI 2005a).

Further evaluation of indoor air followed increased VC concentrations in groundwater at MW-14A in October 2004 (LAI 2005a). Recognizing that ongoing SMWU-20 source zone treatment (i.e., bioremediation injections) could result in higher VC concentrations at downgradient well MW-14A, the model was run to identify the threshold average groundwater VC concentration beneath Building 9-90. Above this threshold, a potential would exist for unacceptable risks to human health from inhalation of indoor air. The model output estimated that the threshold VC groundwater concentration protective of human health was 43 µg/L. Ecology comments to this additional evaluation resulted in indoor air sampling in Building 9-90 (LAI 2005b).

Three indoor air samples were collected in January 2006 in the north portion of Building 9-90 and along the estimated axis of the VOC groundwater plume in order to characterize potential vapor intrusion. This sampling event occurred as the result of VC concentrations increasing as high as

[3] Ecology approved discontinued sampling at four of 18 sampled wells and not nine, as previously stated (LAI 2019b). This section has been updated to reflect that sampling is performed at 14 wells in SWMU-20. The correct number of wells has been sampled for SWMU-20 since the 2015 sampling reduction.

1,000 µg/L at upgradient well MW-14A as a result of source zone bioremediation. A concurrent ambient air sample was collected outdoors near ground level to assess possible background contributions to any indoor air detections. Low levels of PCE and TCE were detected in all three indoor air samples and in the outdoor ambient air sample. cDCE and VC were not detected in any sample. The detected concentrations of corrected indoor air results for PCE and TCE were below the MTCA Method B cleanup levels (LAI 2006b).

4.3 2019 Activities

Activities in 2019 consisted of two semiannual performance monitoring events at 14 wells in SWMU-20 to evaluate the progress of MNA following the bioremediation injection in 2015. No injections were performed in 2019.

All samples collected during monitoring events were analyzed for VOCs and several aquifer redox parameters (DO, ORP, and pH). Four wells (MW-6A, MW-6B, MW-9A, and MW-22A) were also analyzed for parameters indicative of MNA performance (methane, ethane, ethene, TOC, and sulfate). Laboratory analysis for VOCs, methane, ethane, ethene, TOC, and sulfate was performed by ARI in Tukwila, Washington. Aquifer redox parameters DO, ORP, and pH were measured in the field.

4.4 2019 Results and Discussion

Groundwater monitoring data for wells in the source zone and non-source zone are summarized in Tables 4 and 5, respectively. Results for PCE, TCE, and breakdown products are also presented on Figures 12 through 15, with detections highlighted. Contaminant concentration trend charts are presented in Appendix G. Laboratory reports for analytical results are presented in Appendix A. Cumulative groundwater elevation data for SWMU-20 wells are presented in Appendix B.

Groundwater monitoring results indicate concentrations of PCE, TCE, and breakdown products were below the PCULs at all SWMU-20 monitoring wells in November 2019 for the third consecutive event. Results indicate aquifer redox conditions remain conducive to continued bioremediation following the fifth electron donor injection in October and November 2015 (LAI 2019b); sulfate-reducing to methanogenic aquifer conditions continue at most wells. Additional electron donor injection is not anticipated.

5.0 PLANNED ACTIONS AND SCHEDULE

Planned actions for 2020 consist of two site-wide semiannual (May and November) monitoring events and reporting. Site-wide monitoring will be conducted in accordance with the sampling matrix presented in the IAWP (LAI 2019b) and in Table 6.[4] Monitoring locations are presented on Figure 16. Additional nitrate injection may be conducted in AOC-05, dependent on monitoring results.

Reporting will consist of site-wide semiannual groundwater monitoring data reports and one site-wide annual report. Semiannual reports will present data and a brief summary of activities and results. Semiannual reports will be submitted to Ecology no later than 60 days after the receipt of the previous semiannual sampling event's analytical data. The site-wide annual report will document all activities and data collected for the calendar year and provide discussion and evaluation of data. The 2020 annual report will be submitted to Ecology by May 15, 2021.

[4] The matrix has been updated to indicate that MW-17A is sampled as part of AOC-05, but that VOCs at this well are reported for SWMU-20. The matrix has also been corrected to show that VOCs at MW-17A are collected in non-preserved containers. Revision notes have been added to the matrix (Table 6). Wells sampled and analyses performed have not been added or removed. See Footnote 3.

6.0 USE OF THIS REPORT

This annual evaluation report has been prepared for the exclusive use of The Boeing Company for specific application to the Developmental Center site in Tukwila, Washington. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of LAI. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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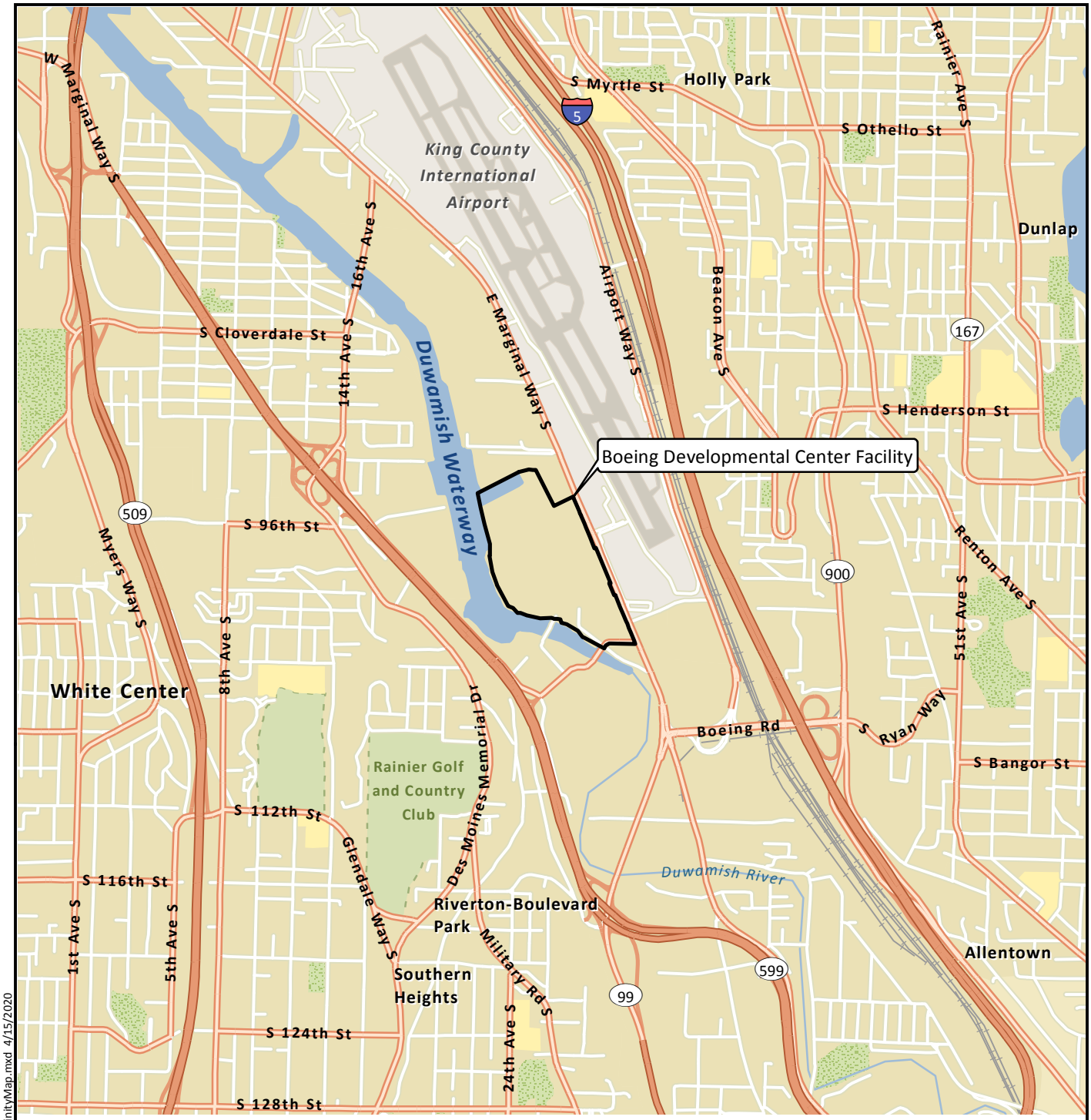
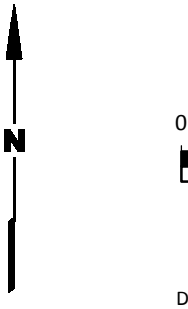
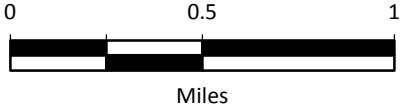






Data Source: Esri 2012

G:\Projects\025\093\120\012\2019 Annual Report\F01VicinityMap.mxd 4/15/2020

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**Vicinity Map**	Figure 1

G:\Projects\025\093\120\012\2019 Annual Report\F02FacilityBoundary.mxd 4/15/2020

Legend

- AOCs
- SWMUs
- Facility Boundary

0 300 600

Scale in Feet

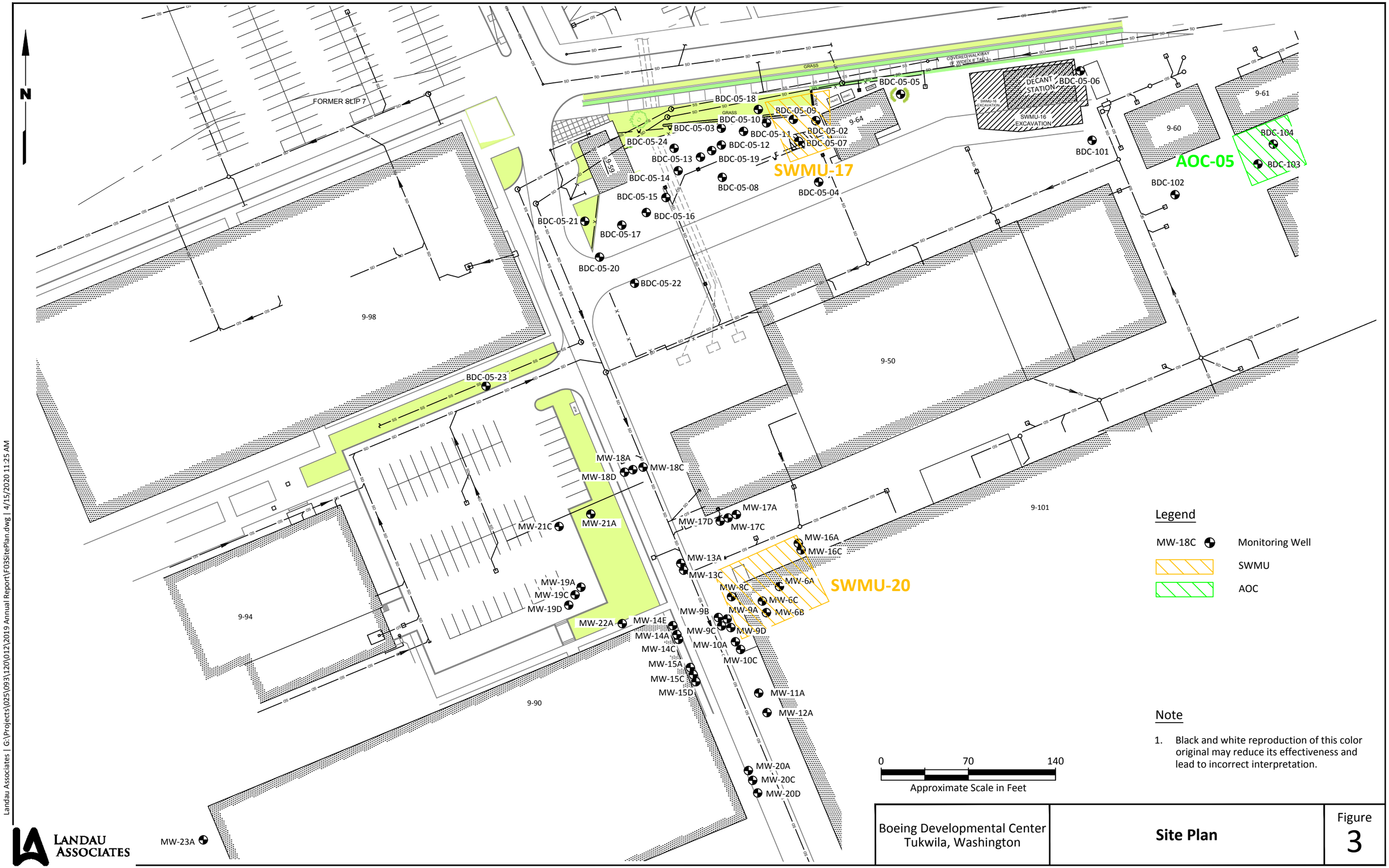
Notes

1. Drainage Area boundaries and outfall locations are subject to change due to planned modifications required for stormwater treatment.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

LANDAU ASSOCIATES

Data Sources: Boeing; Esri World Imagery.

Boeing Developmental Center Tukwila, Washington	**Facility Boundary**	Figure 2



Legend

- MW-18C — Monitoring Well
- SWMU
- AOC

Note

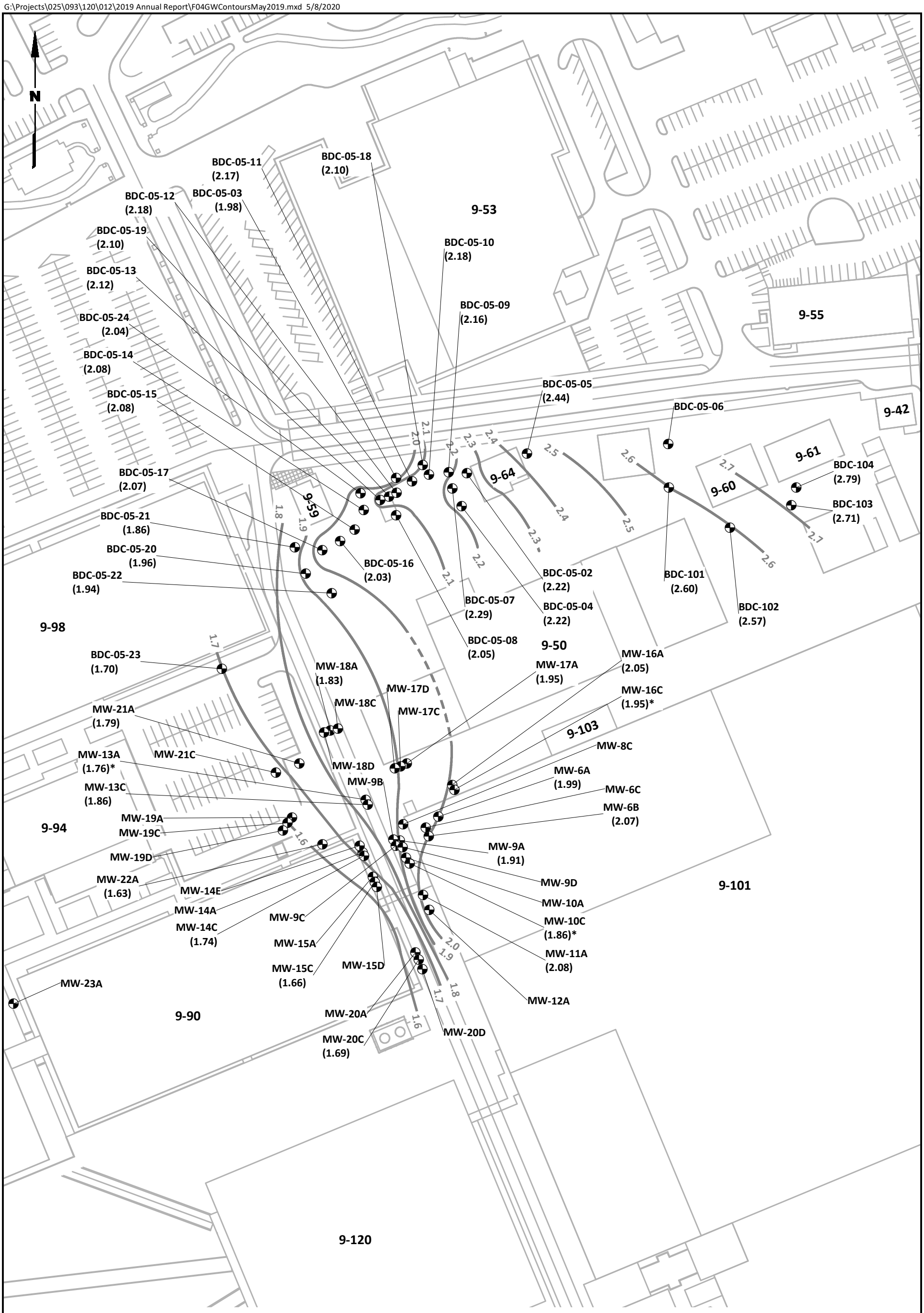
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Boeing Developmental Center Tukwila, Washington	**Site Plan**	Figure 3

LANDAU ASSOCIATES

Landau Associates | G:\Projects\025\093\120\012\2019 Annual Report\F03SitePlan.dwg | 4/15/2020 11:25 AM

G:\Projects\025\093\120\012\2019 Annual Report\F04GWContoursMay2019.mxd 5/8/2020



Legend

- Monitoring Well
- Groundwater Contour
- Groundwater Contour (Approx.)

Notes

1. Contours based primarily on A-Zone wells.
2. * Anomalous groundwater not used.

0 100 200

Scale in Feet

Data Sources: Boeing; Esri World Imagery.

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**Groundwater Elevation Contours - May 2019**	Figure 4

G:\Projects\025\093\120\012\2019 Annual Report\F05GWContoursNov2019.mxd 5/8/2020

N

BDC-05-12 (1.81)
BDC-05-18 (1.69)
BDC-05-19 (1.77)
BDC-05-11 (1.87)
BDC-05-10 (1.78)
BDC-05-13 (1.77)
BDC-05-03* (1.63)
BDC-05-07 (1.75)
BDC-05-24 (1.69)
BDC-05-09 (1.75)
BDC-05-14 (1.75)
BDC-05-05 (1.99)
BDC-05-15 (1.69)
BDC-05-06
BDC-05-16 (1.69)
BDC-05-17 (1.64)
BDC-05-21 (1.53)
BDC-05-02 (1.77)
BDC-101 (2.10)
BDC-104 (2.27)
BDC-05-20 (1.57)
BDC-103 (2.26)
BDC-05-08 (1.65)
BDC-05-04 (1.83)
BDC-102 (2.12)
MW-18A (1.45)
MW-18D
BDC-05-22 (1.55)
BDC-05-23 (1.34)
MW-18C
MW-13A (1.58)
MW-16A (1.70)
MW-16C* (1.60)
MW-21A (1.36)
MW-17C
MW-17A (1.55)
MW-13C* (1.69)
MW-21C
MW-8C
MW-6A (1.66)
MW-6C
MW-19A
MW-17D
MW-6B* (1.56)
MW-19C
MW-9B
MW-19D
MW-9A (1.56)
MW-22A (1.53)
MW-14E
MW-9C
MW-9D
MW-14A
MW-14C (1.50)
MW-11A (1.65)
MW-10C (1.53)
MW-15A
MW-15C (1.41)
MW-10A
MW-12A
MW-15D
MW-20A
MW-23A
MW-20C (1.33)
MW-20D

9-53
9-55
9-42
9-61
9-60
9-64
9-59
9-98
9-50
9-103
9-94
9-101
9-90
9-120

1.7 1.8 1.9 2.0 2.1 2.2 1.6 1.5 1.4 1.3 1.8 1.9 2.0 2.1 2.2 1.7 1.6 1.5 1.4 1.3

Legend

- Monitoring Well Location and Designation
- Groundwater Contours

Notes

1. Contours based primarily on A-Zone wells.
2. * Anomalous groundwater not used.

0 100 200

Scale in Feet

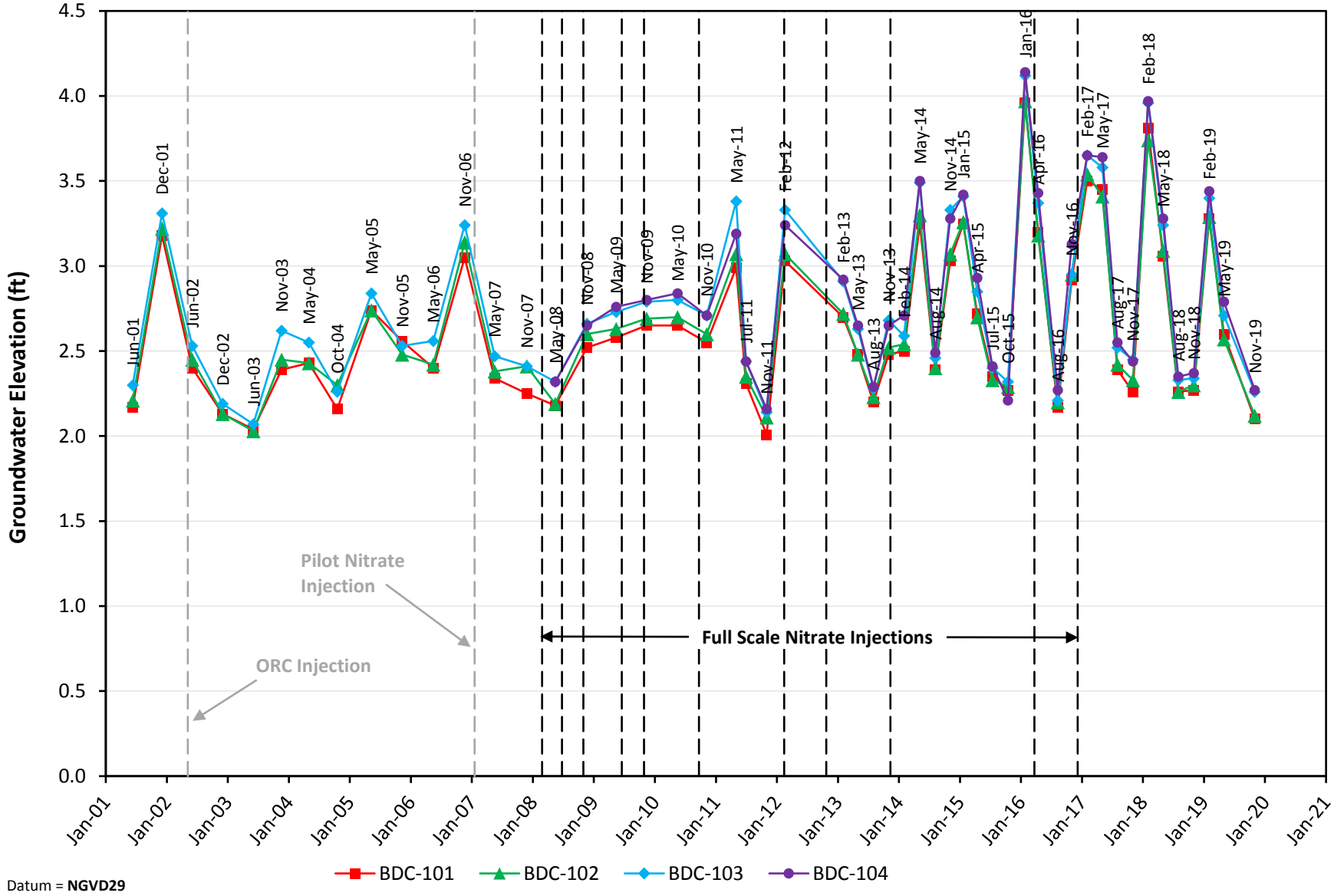
Data Sources: Boeing; Esri World Imagery.

LANDAU ASSOCIATES

Boeing Developmental Center
Seattle, Washington

Groundwater Elevation Contours - November 2019

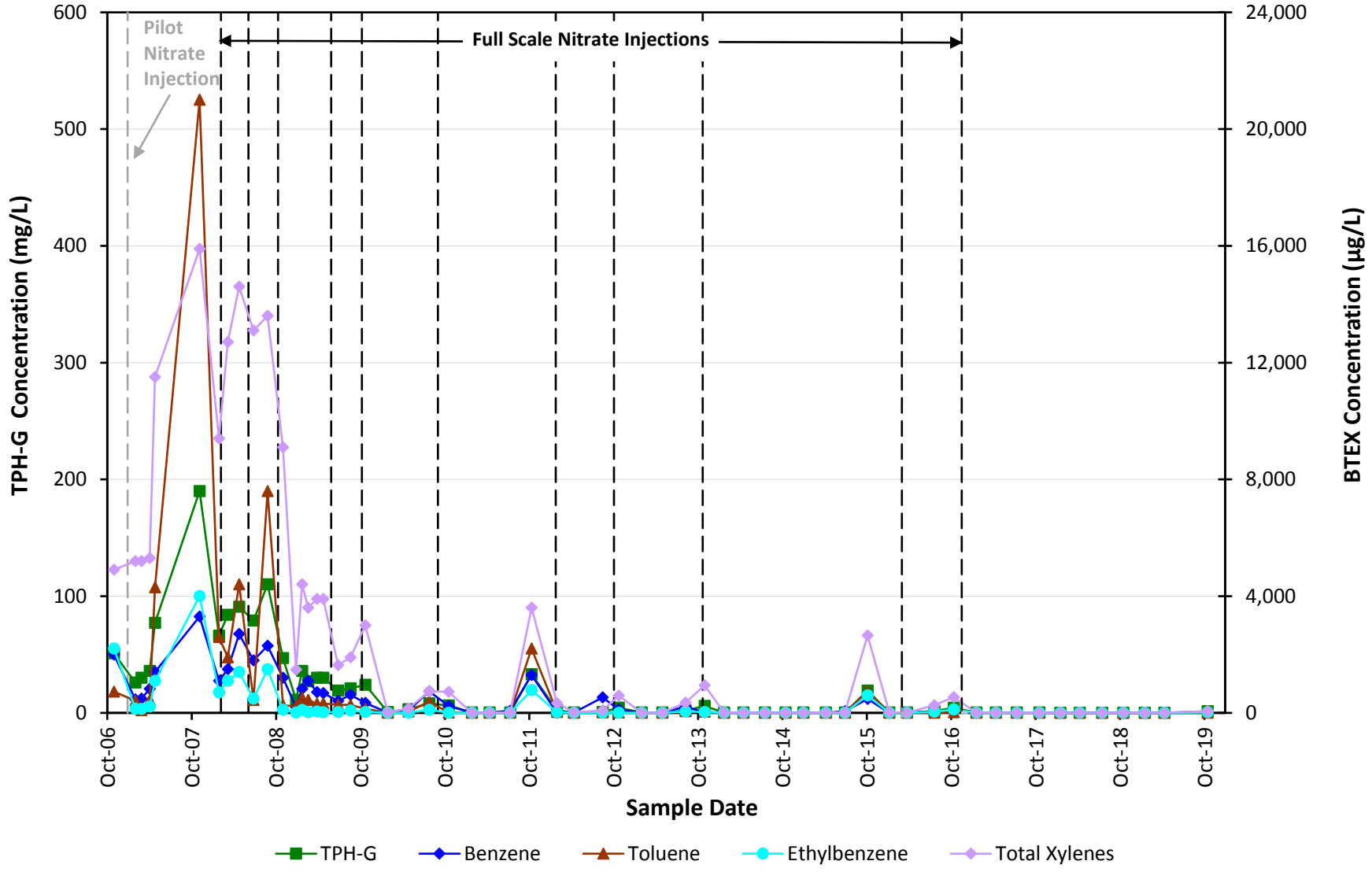
Figure 5



Datum = **NGVD29**

LANDAU ASSOCIATES	Boeing Developmental Center Tukwila, Washington	**AOC-05: Groundwater Elevations**

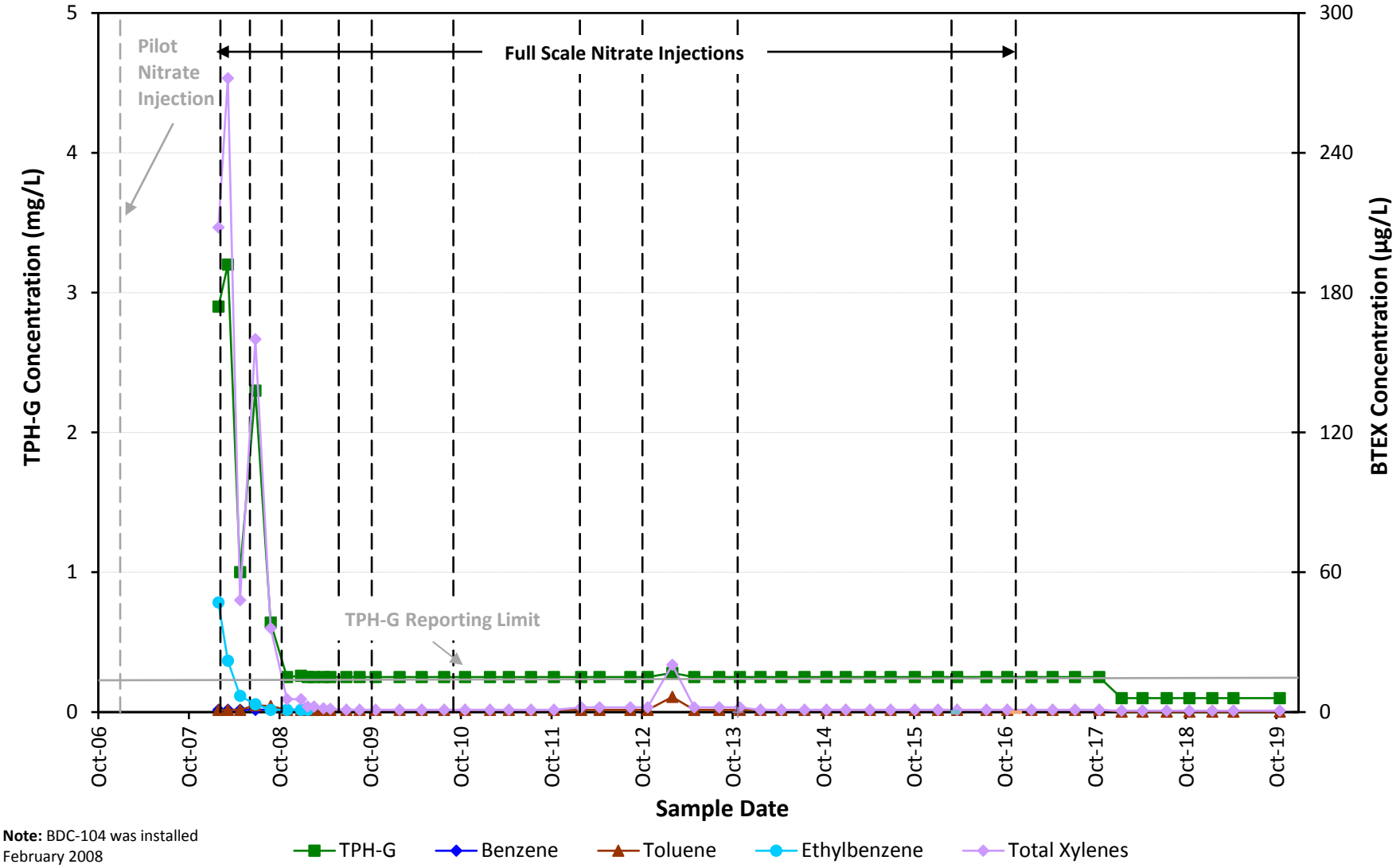
Figure
6



Boeing Developmental Center Tukwila, Washington	**AOC-05: BDC-103 Nitrate, TPH-G, and Benzene Concentrations**	Figure 7

LANDAU ASSOCIATES

Source: P:\025\093\WIP\T\Data\Master Data Tables\AOC-5\AOC-5 cleanup action tables MASTER.xlsx



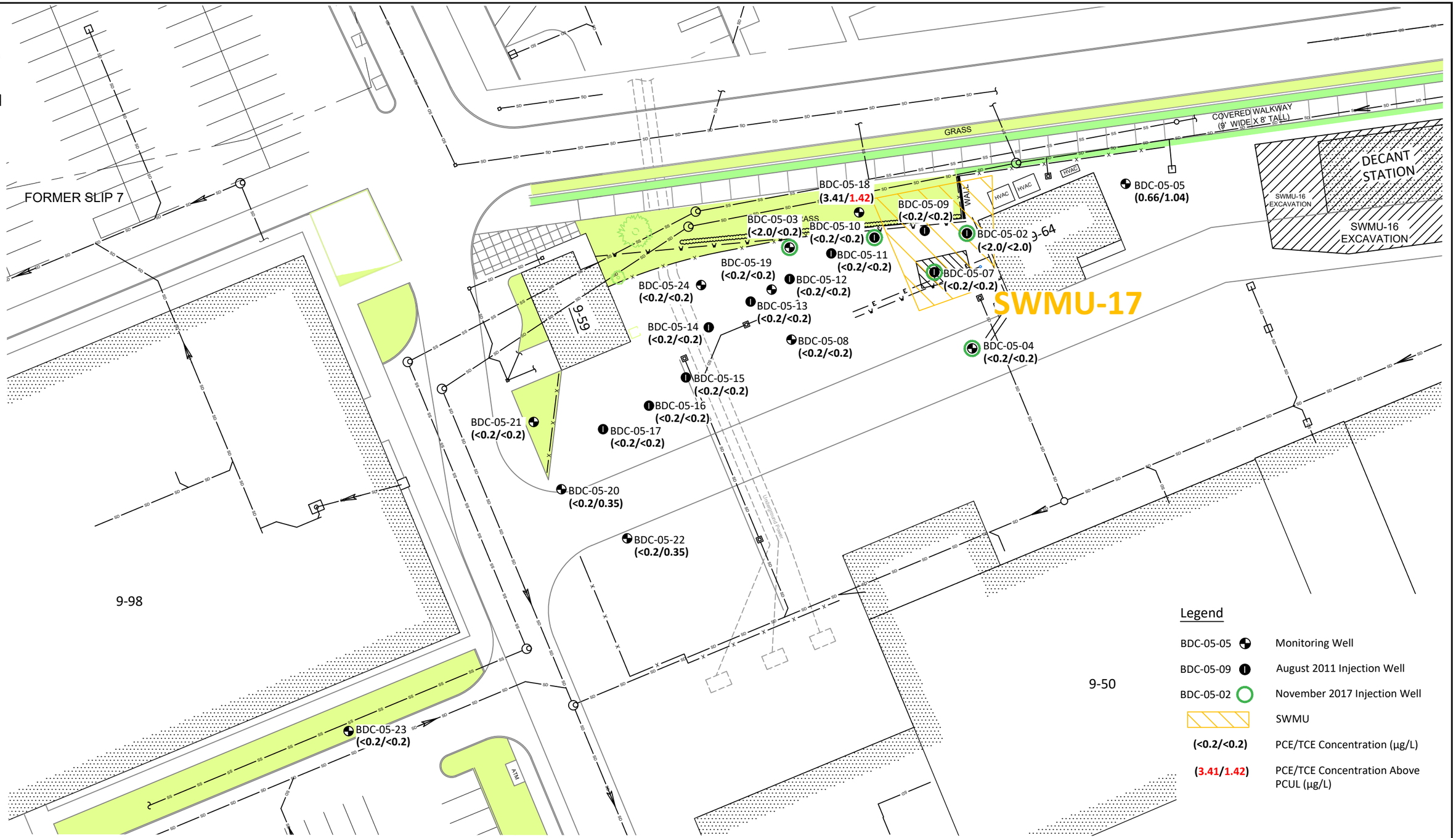
Note: BDC-104 was installed February 2008

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

AOC-05: BDC-104 Nitrate, TPH-G, andBenzene Concentrations

Figure
8



Notes

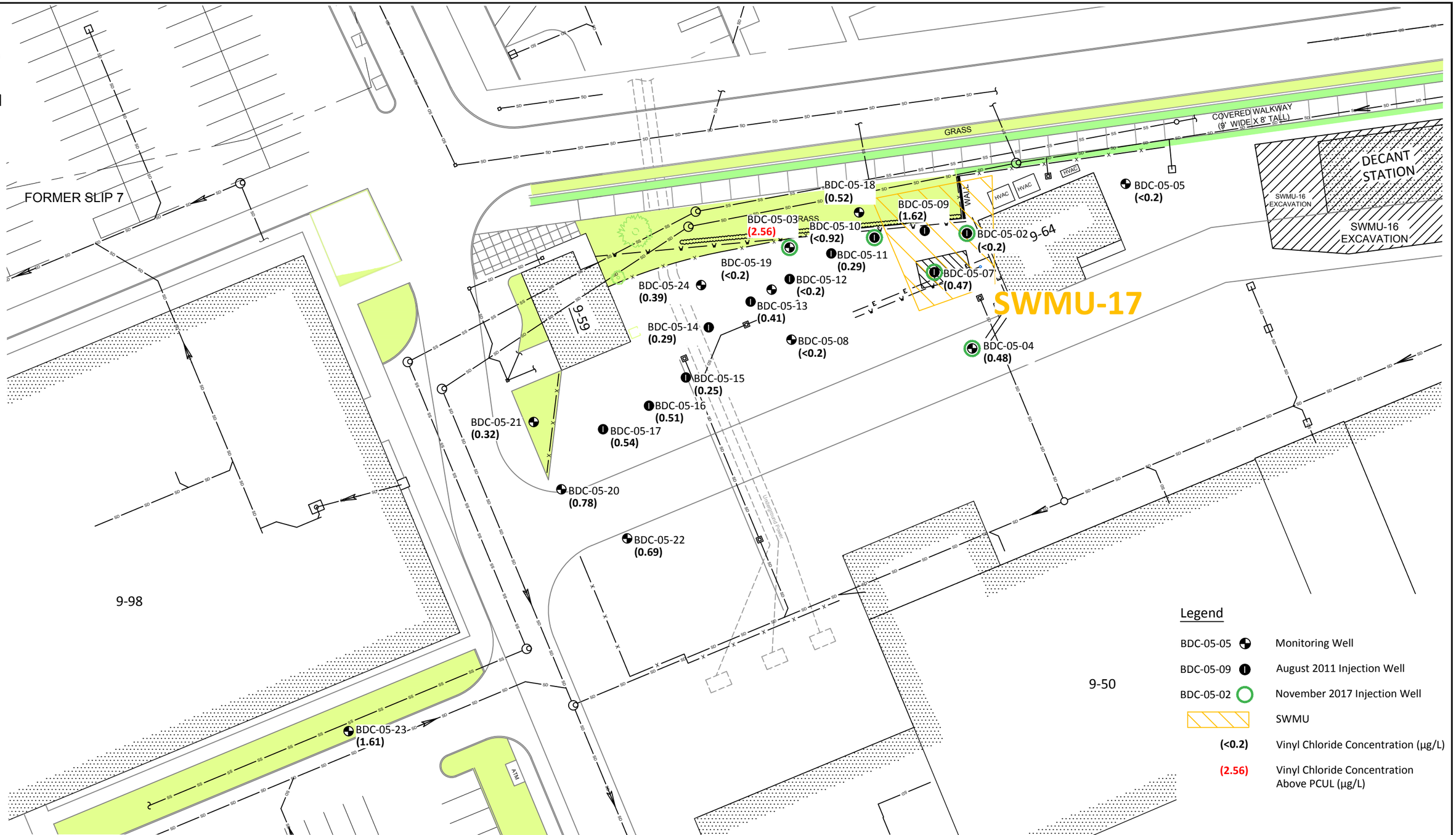
1. The proposed cleanup levels (PCULs) for tetrachloroethene (PCE) and trichloroethylene (TCE) are 5.3 and 1.4 µg/L respectively.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 40 80
Approximate Scale in Feet

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**PCE / TCE in Groundwater November 2019**	Figure 9

Landau Associates | G:\Projects\025\093\120\012\2019 Annual Report\F09-F10PCT-TCE-VC November 2019.dwg | 4/30/2020 5:02 PM



Note

1. The proposed cleanup level for vinyl chloride is 2.4 µg/L.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

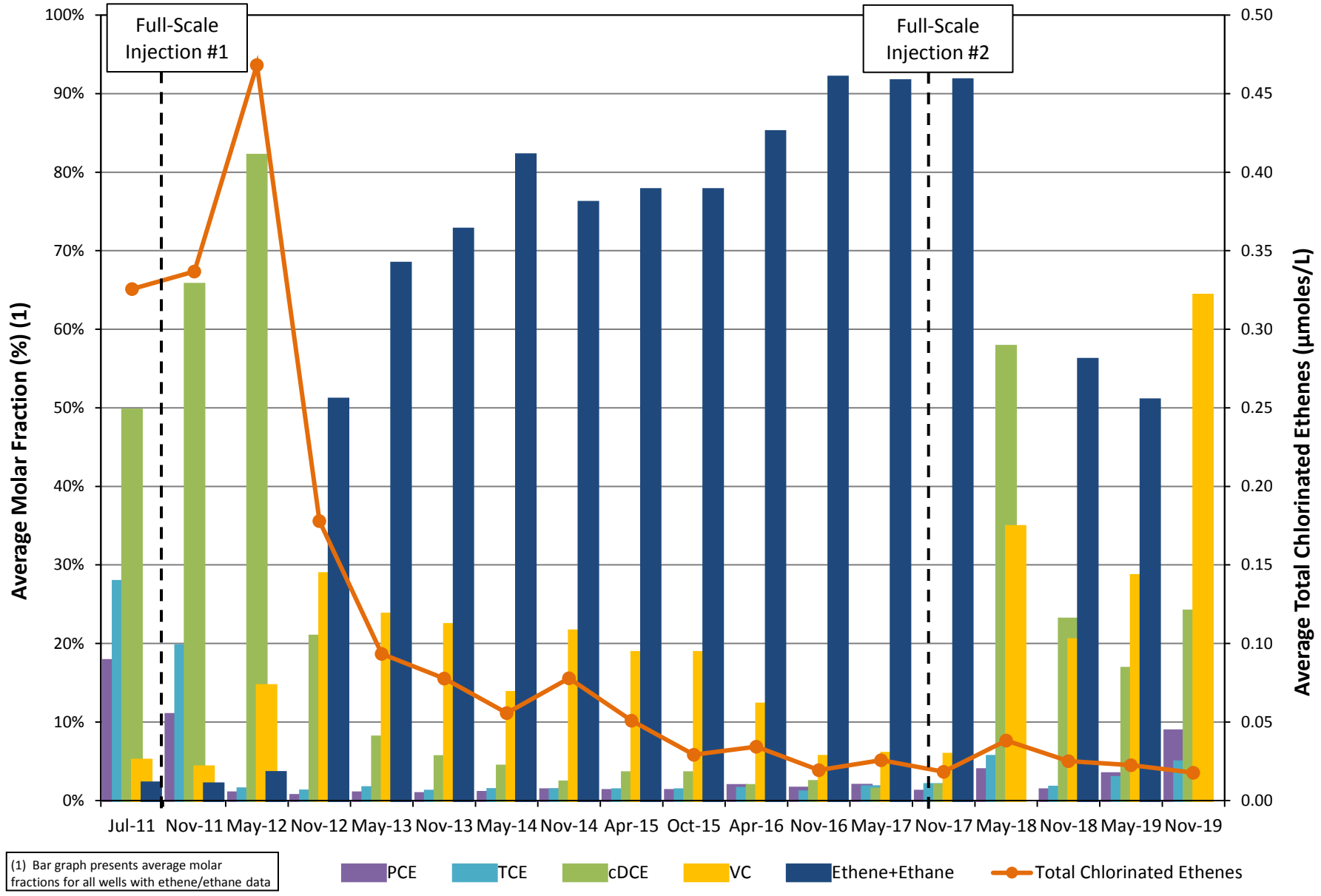
0 40 80
Approximate Scale in Feet

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**Vinyl Chloride in Groundwater November 2019**	Figure 10

Landau Associates | G:\Projects\025\093\120\012\2019 Annual Report\F09-F10PCT-TCE-VC November2019.dwg | 4/25/2020 9:10 PM

Source: \\edmdata01\projects\025\093\WIP\T\Data\Master Data Tables\SWMU-17\SWMU-17 Summary Tables

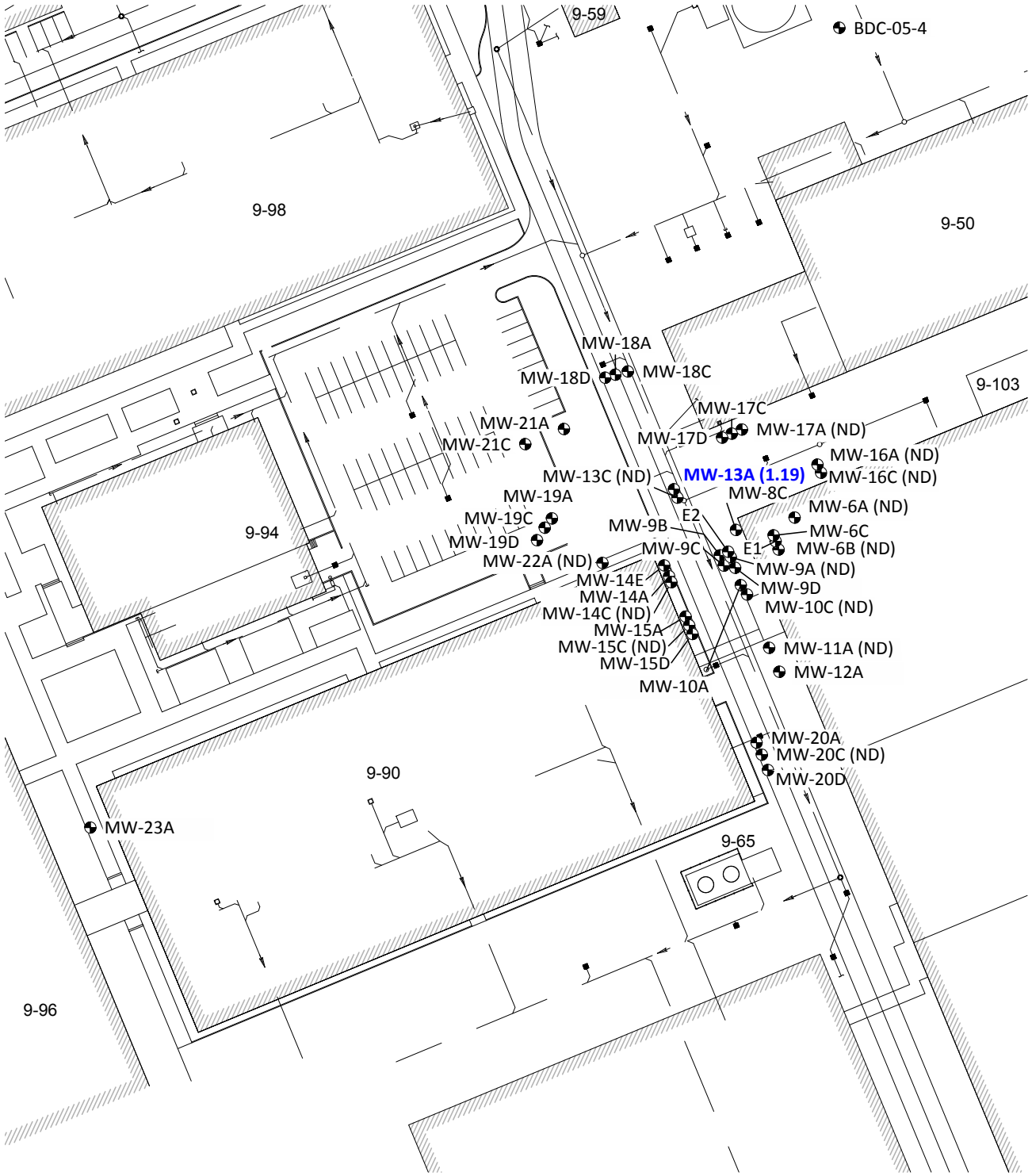


Boeing Developmental Center
Tukwila, Washington

SWMU-17: Average Molar Fraction and Average Chlorinated Ethenes

Figure
11

LANDAU ASSOCIATES



Legend

- Monitoring Well Location
- (ND) Tetrachloroethene Not Detected at 0.2 µg/L Detection Limit
- (1.1) Tetrachloroethene Groundwater Concentration in µg/L

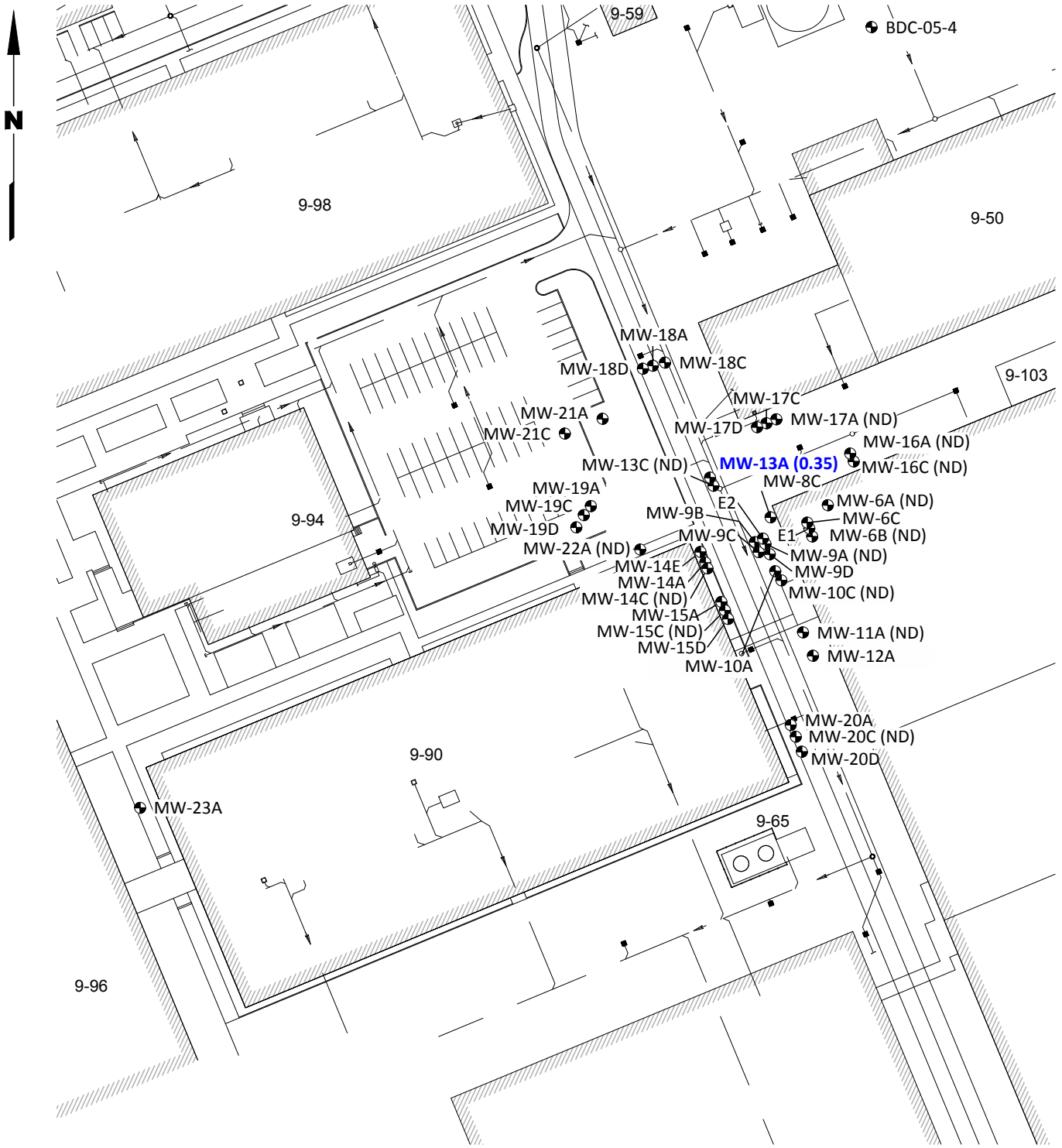
Boeing/Developmental Center/Summary Report | G:\Projects\025\093\120\012\2019 Annual Report\F12-15 SWMU-20.dwg (A) "Figure 12" 4/30/2020

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

SWMU-20 PCE
November 2019
Groundwater Concentrations

Figure
12



Legend

- Monitoring Well Location
- (ND) Trichloroethene Not Detected at 0.2 µg/L Detection Limit
- (0.4) Trichloroethene Groundwater Concentration in µg/L

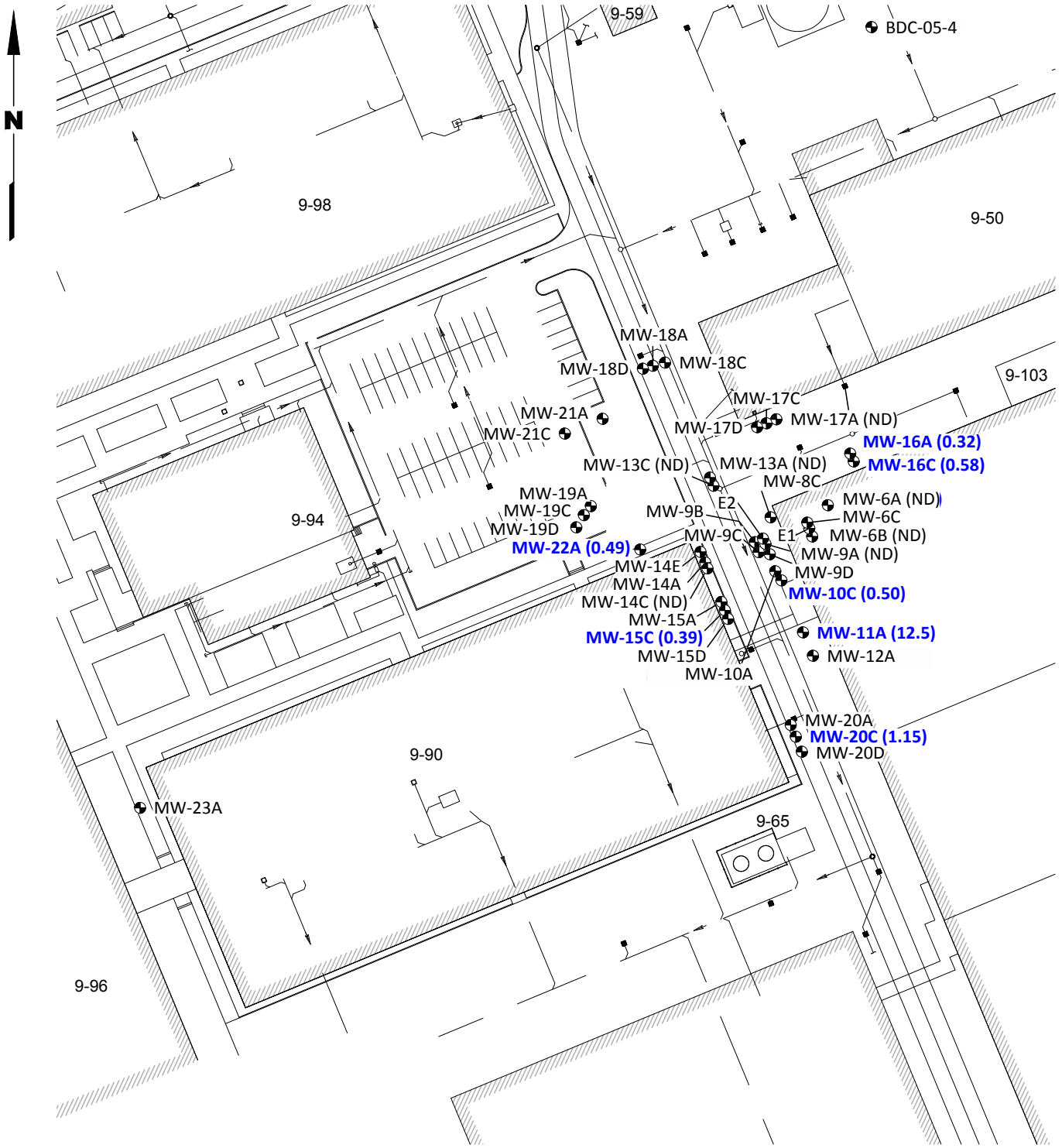
Boeing/Developmental Center/Summary Report | G:\Projects\025\093\120\012\2019 Annual Report\F12-15 SWMU-20.dwg (A) "Figure 13" 4/30/2020

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

SWMU-20 TCE
November 2019
Groundwater Concentrations

Figure
13



Legend

- Monitoring Well Location
- (ND) Cis-1,2-Dichloroethene Not Detected at 0.2 µg/L Detection Limit
- (18) Cis-1,2-Dichloroethene Groundwater Concentration in µg/L

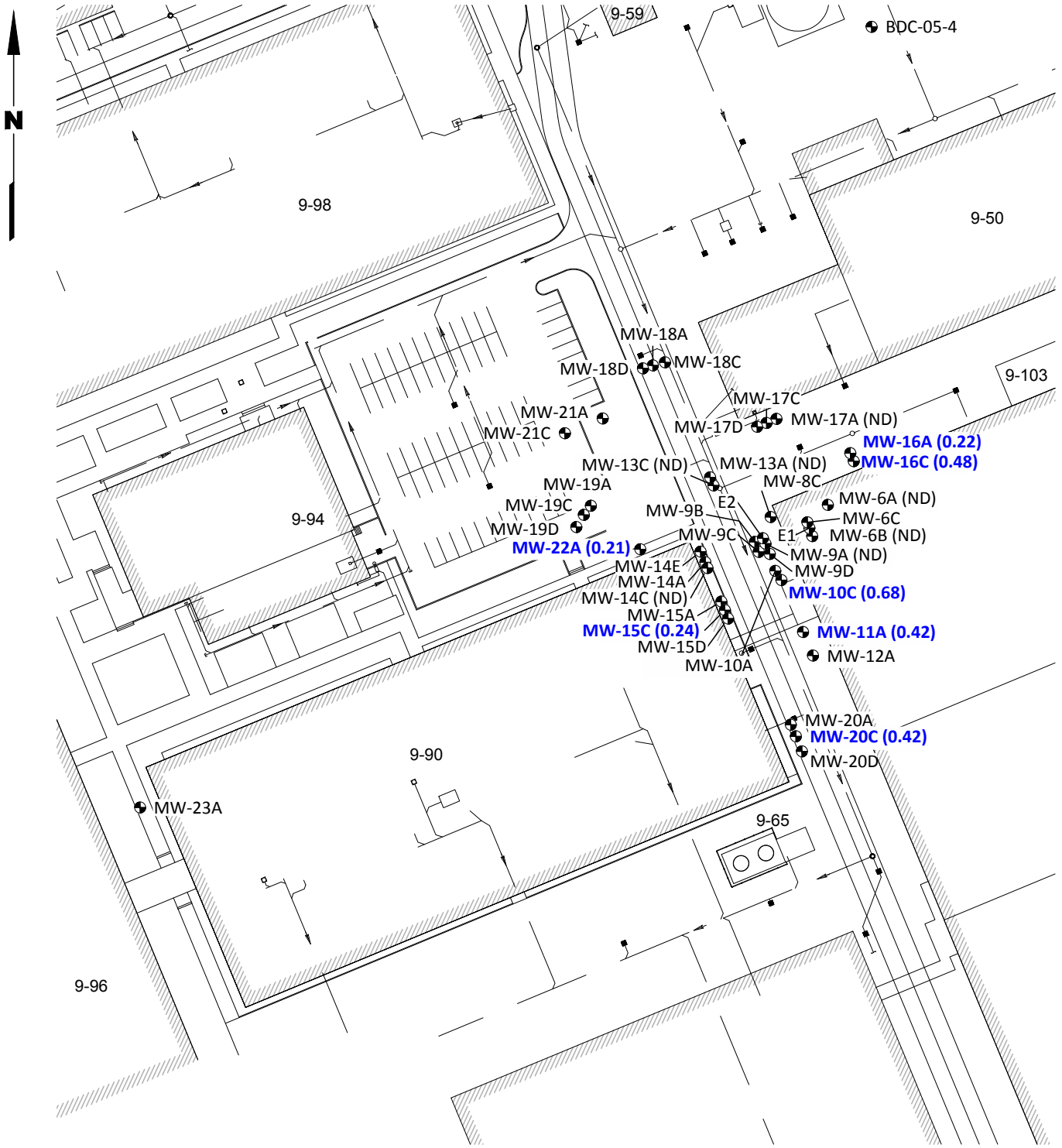
Boeing/Developmental Center/Summary Report | G:\Projects\025\093\120\012\2019 Annual Report\F12-15 SWMU-20.dwg (A) "Figure 14" 4/30/2020

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

SWMU-20 cDCE
November 2019
Groundwater Concentrations

Figure
14



Boeing/Developmental Center/Summary Report | G:\Projects\025\093\120\012\2019 Annual Report\F12-15 SWMU-20.dwg (A) "Figure 15" 4/30/2020

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

SWMU-20 VC
November 2019
Groundwater Concentrations

Figure
15

N

FORMER SLIP 7

9-98

9-94

9-90

9-50

9-101

9-64

9-59

9-60

9-61

GRASS

COVERED WALKWAY 8' WIDE IX & TAN 10

DECANT STATION

SWMU-16 EXCAVATION

BDC-05-06

BDC-05-05

BDC-05-18

BDC-05-09

BDC-05-10

BDC-05-03

BDC-05-11

BDC-05-02

BDC-05-24

BDC-05-12

BDC-05-07

BDC-05-13

BDC-05-19

BDC-05-14

BDC-05-08

BDC-05-04

SWMU-17

BDC-05-15

BDC-05-16

BDC-05-21

BDC-05-17

BDC-05-20

BDC-05-22

BDC-05-23

BDC-101

BDC-104

BDC-103

AOC-05

BDC-102

MW-18A

MW-18C

MW-18D

MW-21A

MW-21C

MW-17A

MW-17C

MW-17D

MW-16A

MW-16C

MW-13A

MW-13C

SWMU-20

MW-6A

MW-6C

MW-6B

MW-8C

MW-9A

MW-9B

MW-9C

MW-9D

MW-10A

MW-10C

MW-14E

MW-14A

MW-14C

MW-22A

MW-15A

MW-15C

MW-15D

MW-11A

MW-12A

MW-19A

MW-19C

MW-19D

MW-20A

MW-20C

MW-20D

MW-23A

Legend

- MW-18C — Monitoring Well
- MW-11A — Monitoring Well Sampled Semi-Annually (May/Nov)
- SWMU
- AOC

Note

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

0 70 140

Approximate Scale in Feet

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**Performance Monitoring Locations**	Figure 16

Landau Associates | G:\Projects\025\093\120\012\2019 Annual Report\F16PerformanceMonitoringLocations.dwg | 4/15/2020 1:26 PM

Table 1
AOC-05 Clean-Up Action Data Summary
Boeing Developmental Center
Tukwila, Washington

		ORC Injection BDC-103	Pilot Injection BDC-103	Full Scale Injection 1 BDC-103/104	Full Scale Injection 2 BDC-103/104	Full Scale Injection 3 BDC-103/104	Full Scale Injection 4 BDC-103/104	Full Scale Injection 5 BDC-103/104	Full Scale Injection 6 BDC-103	Full Scale Injection 7 BDC-103	Full Scale Injection 8 BDC-103	Full Scale Injection 9 BDC-103	Full Scale Injection 10 BDC-103	Full Scale Injection 11 BDC-103	Volatile Organic Compounds							Aquifer Redox Conditions							Donor Indicators		
		Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	TPH-G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Nitrite-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	ORP (mV)	TOC (mg/L)	pH	
Proposed Groundwater Cleanup Levels (a)															**0.8**	**2.0**	**1294**	**1.7**	**NA**	**NA**	**1546**									
Well	Date																													Comments
BDC-101	6/11/2001														3.0	11.9	<1.0	113.1			109.2									
BDC-101	9/4/2001														5.0	7.13	10.7	50.4			53.8									
BDC-101	12/3/2001														6.5	95	1.6	750			650									
BDC-101	3/13/2002														<0.25	1.4	<1.0	4.4			<1.0									
BDC-101	4/29/2002	-8													<0.25	<1.0	<1.0	2.2	<1.0	<1.0	<1.0									
BDC-101	6/3/2002	27													<0.25	1.0	<1.0	<1.0	<1.0	<1.0	<1.0									
BDC-101	7/1/2002	55													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0									
BDC-101	8/1/2002	86													<0.25	3.1	<1.0	2.4	<1.0	<1.0	<1.0									
BDC-101	12/2/2002	209													0.61	4.3	<1.0	21	27	6.4	33.4									
BDC-101	3/10/2003	307													<0.25	1.0	<1.0	4.5	3.2	<1.0	3.2									
BDC-101	6/3/2003	392													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0									
BDC-101	11/19/2003	561													0.42	13	<1.0	15	35	<1.0	35	0.36	1.1	0.010	0.2	16	240	120.3			
BDC-101	4/28/2004	722													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0									
BDC-101	10/18/2004	895													0.64	10	<1.0	15	43	<1.0	43									
BDC-101	5/10/2005	1,099													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0									
BDC-101	11/10/2005	1,283													0.25	7.6	<1.0	2.6	42	<1.0	42	0.96	4.4			34.3		259	2.05		
BDC-101	5/15/2006	1,469													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.78	17.8	0.059	0.0	64.1		80			
BDC-101	11/20/2006	1,658	-59												1.1	10	<1.0	15	72.0	<1.0	72	0.92	0.122	0.016	2.4	8.7		174			
BDC-101	2/20/2007	1,750	33												<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.39	15.0	0.047	0.2	50.0		277		6.63	
BDC-101	3/19/2007	1,777	60												<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.97	8.83	0.037	0.5	38.5		213		6.60	
BDC-101	4/24/2007	1,813	96												<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.09	9.59	0.041	0.5	34.1		136		6.46	
BDC-101	5/17/2007	1,836	119												<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.35	9.95	0.046	0.4	35.7		297		6.55	
BDC-101	11/26/2007	2,029	312												<0.25	<1.0	<1.0	2.1	6.5	<1.0	6.5	2.30	5.88	0.032	0.0	26.8		287			
BDC-101	2/18/2008	2,113	396	-8											<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.55	8.10	0.040	0.0	31.5		341		6.29	
BDC-101	3/27/2008	2,151	434	30											<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.19	9.3	<0.10	0.2	40.0		506			
BDC-101	5/15/2008	2,200	483	79	-40										<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.57	6.8	<0.10	0.0	24.6		176		6.44	
BDC-101	7/16/2008	2,262	545	141	22										<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.34	5.3	<0.10	0.0	21.8		-232		6.52	
BDC-101	9/15/2008	2,323	606	202	83	-45									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.22	5.33	0.023	0.0	28.7		153			
BDC-101	11/20/2008	2,389	672	268	149	21									0.44	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	1.45	2.9	0.1	0.8	17.1		-22		6.65	
BDC-101	1/16/2009	2,446	729	325	206	78									<0.25	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	0	4.40	0.042	0.4	29.5		-245		6.50	
BDC-101	2/11/2009	2,472	755	351	232	104									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.62	8.5	<0.1	0.4	39.6		-16		6.43	
BDC-101	3/9/2009	2,498	781	377	258	130									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.93	9.4	<0.1	0.0	46.8		54		6.54	
BDC-101	4/16/2009	2,536	819	415	296	168									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.69	9.0	<0.1	0.0	36.0		131		6.61	
BDC-101	5/14/2009	2,564	847	443	324	196	-34								<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.00	13.0	<0.1	0.0	44.4		68		6.81	
BDC-101	7/17/2009	2,628	911	507	388	260	30								<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.80	12.6	<0.1	0.0	49.0		19		7.17	
BDC-101	9/9/2009	2,682	965	561	442	314	84	-49							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.25	6.2	<0.1	0.0	31.7		179		6.90	
BDC-101	11/12/2009	2,746	1,029	625	506	378	148	15							0.35	1.8	<1.0	6.6	16	<1.0	16	1.37	11.3	<0.1	0-0.2	36.7		124		6.53	Very faint iron measurement
BDC-101	2/17/2010	2,843	1,126	722	603	475	245	112							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.86	13.9	<0.1	0.0	48.7		640		6.55	
BDC-101	5/17/2010	2,932	1,215	811	692	564	334	201							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.20	20.7	<1.0	0.0	58.7		372		6.86	
BDC-101	8/16/2010	3,023	1,306	902	783	655	425	292	-37						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.21	15.6	<0.1	0.0	56.9		76		7.21	
BDC-101	11/8/2010	3,107	1,390	986	867	739	509	376	47						<0.25	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.02	2.2	<0.1	0.4	14.7		145		6.97	
BDC-101	2/16/2011	3,207	1,490	1,086	967	839	609	476	147						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.46	23.9	<0.1	0.0	68.2		161		7.30	
BDC-101	5/3/2011	3,283	1,566	1,162	1,043	915	685	552	223						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.57	23.7	<0.1	0.0	66.2		208		6.99	
BDC-101	8/1/2011	3,373	1,656	1,252	1,133	1,005	775	642	313						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.50	17.9	<0.1	0.0	48.1		150		7.07	
BDC-101	11/1/2011	3,465	1,748	1,344	1,225	1,097	867	734	405	-105					<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.69	6.1	<0.1	0.0	24.8		40		7.23	
BDC-101	2/19/2012	3,575	1,858	1,454	1,335	1,207	977	844	515	5					<0.25	2.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.53	6.6		0.3	27.7		12		6.81	
BDC-101	5/3/2012	3,649	1,932	1,528	1,409	1,281	1,051	918	589	79					<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	3.75	15.9		0.0	51.2		263		6.60	
BDC-101	9/4/2012	3,773	2,056	1,652	1,533	1,405	1,175	1,042	713	203	-49				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.88	13.8	<0.10	0.0	36.0		154		6.97	
BDC-101	11/13/2012	3,843	2,126	1,722	1,603	1,475	1,245	1,112	783	273	21				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.41	10.3	<0.10	0.0	40.4		150		6.90	
BDC-101	2/20/2013	3,942	2,225	1,821	1,702	1,574	1,344	1,211	882	372	120				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	2.55	21.3	<0.10	0.2	68.0		73		6.83	
BDC-101	5/20/2013	4,031	2,314	1,910	1,791	1,663	1,433	1,300	971	461	209				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	3.35	17	<0.10	0.0	52.9		-190		6.72	
BDC-101	8/28/2013	4,131	2,414	2,010	1,891	1,763	1,533	1,400	1,071	561	309	-76			<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	1.99	10.5	<0.10	0.0	41.5		-277		6.46	
BDC-101	11/19/2013	4,214	2,497	2,093	1,974	1,846	1,616	1,483	1,154	644	392	7			<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	2.53	7.6	<0.10	0.0	28.3		-173		6.67	
BDC-101	2/11/2014	4,298	2,581	2,177	2,058	1,930	1,700	1,567	1,238	728	476	91			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.65	7.7	<0.10	0.0	29.1		-223		6.80	
BDC-101	5/6/2014	4,382	2,665	2,261	2,142	2,014	1,784	1,651	1,322	812	560	175			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.79	19.6	<0.10	0.0	64.2		-149		6.71	
BDC-101	8/7/2014	4,475	2,758	2,354	2,235	2,107	1,877	1,744	1,415	905	653	268			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.25	17.2	<0.10	0.0	51.4		71		7.22	
BDC-101	11/4/2014	4,564	2,847	2,443	2,324	2,196	1,966	1,833	1,504	994	742	357			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.22	7.8	<0.10	0.0	29.7		77		6.72	
BDC-101	1/21/2015	4,642	2,925	2,521	2,402	2,274	2,044	1,911	1,582	1,072	820	435			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.07	21.3	<0.10	0.0	44.6		97		6.29	
BDC-101	4/28/2015	4,739	3,022	2,618	2,499	2,371	2,141	2,008	1,679	1,169	917	532			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.55	19.1	<0.10	0.0	48.4		82		6.37	
BDC-101	7/20/2015	4,822	3,105	2,701	2,582	2,454	2,224	2,091	1,762	1,252	1,000	615			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.96	19.7	<0.10	0.2	57.2		96		6.30	
BDC-101	10/26/2015	4,920	3,203	2,799	2,680	2,552	2,322	2,189	1,860	1,350	1,098	713			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.63	8.8	<0.10	0.0	38.6		92		6.64	

Table 1
AOC-05 Clean-Up Action Data Summary
Boeing Developmental Center
Tukwila, Washington

		ORC Injection BDC-103	Pilot Injection BDC-103	Full Scale Injection 1 BDC-103/104	Full Scale Injection 2 BDC-103/104	Full Scale Injection 3 BDC-103/104	Full Scale Injection 4 BDC-103/104	Full Scale Injection 5 BDC-103/104	Full Scale Injection 6 BDC-103	Full Scale Injection 7 BDC-103	Full Scale Injection 8 BDC-103	Full Scale Injection 9 BDC-103	Full Scale Injection 10 BDC-103	Full Scale Injection 11 BDC-103	Volatile Organic Compounds							Aquifer Redox Conditions							Donor Indicators		
		Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	TPH-G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Nitrite-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	ORP (mV)	TOC (mg/L)	pH	
Proposed Groundwater Cleanup Levels (a)															**0.8**	**2.0**	**1294**	**1.7**	**NA**	**NA**	**1546**									
Well	Date																														Comments
BDC-101	1/27/2016	5,013	3,296	2,892	2,773	2,645	2,415	2,282	1,953	1,443	1,191	806	-56		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.37	12.3	<0.10	0.0	40.3		102		6.48	
BDC-101	4/13/2016	5,090	3,373	2,969	2,850	2,722	2,492	2,359	2,030	1,520	1,268	883	21		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.94	23.7	<0.10	0.0	65.4		68		6.94	
BDC-101	8/9/2016	5,208	3,491	3,087	2,968	2,840	2,610	2,477	2,148	1,638	1,386	1,001	139		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.90	16.1	<0.10		45.8		40.6		6.36	
BDC-101	11/1/2016	5,292	3,575	3,171	3,052	2,924	2,694	2,561	2,232	1,722	1,470	1,085	223	-35	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.70	2.3	<0.10		20.0		57.9		6.45	
BDC-101	2/7/2017	5,390	3,673	3,269	3,150	3,022	2,792	2,659	2,330	1,820	1,568	1,183	321	63	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.26	17.1	<0.10		54.3		57		6.58	
BDC-101	5/3/2017	5,475	3,758	3,354	3,235	3,107	2,877	2,744	2,415	1,905	1,653	1,268	406	148	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.85	24.5	<0.10		65.5		69.1		6.44	
BDC-101	8/1/2017	5,565	3,848	3,444	3,325	3,197	2,967	2,834	2,505	1,995	1,743	1,358	496	238	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.86	19.3	<0.10		58.3		119.6		6.16	
BDC-101	11/7/2017	5,663	3,946	3,542	3,423	3,295	3,065	2,932	2,603	2,093	1,841	1,456	594	336	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.78	12.3	<0.10		40.4		57.1		6.46	
BDC-101	2/5/2018	5,753	4,036	3,632	3,513	3,385	3,155	3,022	2,693	2,183	1,931	1,546	684	426	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	5.90	9.64	<0.10		28.9		59.2		6.64	
BDC-101	5/1/2018	5,838	4,121	3,717	3,598	3,470	3,240	3,107	2,778	2,268	2,016	1,631	769	511	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	4.48	15.9	<0.10		44.5		116.9		6.48	
BDC-101	8/6/2018	5,935	4,218	3,814	3,695	3,567	3,337	3,204	2,875	2,365	2,113	1,728	866	608	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	2.08	11.9	<0.10		36.4		145.3		6.29	
BDC-101	11/5/2018	6,026	4,309	3,905	3,786	3,658	3,428	3,295	2,966	2,456	2,204	1,819	957	699	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	1.29	6.90	<0.10		26.1		100.2		6.38	
BDC-101	2/6/2019	6,119	4,402	3,998	3,879	3,751	3,521	3,388	3,059	2,549	2,297	1,912	1,050	792	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	4.09	7.73	<0.10		30.6		51.8		6.57	
BDC-101	5/2/2019	6,204	4,487	4,083	3,964	3,836	3,606	3,473	3,144	2,634	2,382	1,997	1,135	877	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	2.71	11.2	<0.10		64.5		49.4		6.44	
BDC-101	11/5/2019	6,391	4,674	4,270	4,151	4,023	3,793	3,660	3,331	2,821	2,569	2,184	1,322	1,064	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	2.29	7.73	<0.1		28.5		57.9		6.26	
BDC-102	6/11/2001														0.55	5.33	<1.0	<1.0			<1.0										
BDC-102	9/4/2001														0.38	1.61	1.89	<1.0			1.87										
BDC-102	12/3/2001														1.6	3.7	<1.0	<1.0			3.49										
BDC-102	3/13/2002														0.50	1.3	<1.0	<1.0			<1.0										
BDC-102	4/29/2002	-8													0.33	2.6	<1.0	<1.0	1.1	<1.0	1.1										
BDC-102	6/3/2002	27													<0.25	4.4	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	7/1/2002	55													0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	8/1/2002	86													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	12/2/2002	209													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	3/10/2003	307													0.26	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	6/3/2003	392													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	11/19/2003	561													0.99	120	<1.0	8.5	<1.0	<1.0	<1.0	0.38	0.19	0.011	5.5	46	1100	122.2			
BDC-102	4/28/2004	722													0.40	10	<1.0	<1.0	3.0	<1.0	3.0										
BDC-102	10/18/2004	895													0.33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	5/10/2005	1,099													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0										
BDC-102	11/10/2005	1,283													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.82	4.4			34.0		122	18.4		
BDC-102	5/15/2006	1,469													<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.21	4.72	0.175	2.2	35.7		-11			
BDC-102	11/20/2006	1,658	-59												<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.25	<0.250	<0.250	2.2	9.2		163			
BDC-102	2/20/2007	1,750	33												<0.25	5.8	<1.0	<1.0	<1.0	<1.0	<1.0	0.47	0.749	0.027	3.0	25.3		-145		6.54	
BDC-102	3/19/2007	1,777	60												<0.25	18	<1.0	<1.0	32	<1.0	32	0.88	0.938	0.072	3.0	31.0		-98		6.67	
BDC-102	4/24/2007	1,813	96												0.53	6.1	<1.0	3.1	100	<1.0	100	1.20	1.94	0.051	2.8	40.4		-93		6.51	
BDC-102	5/17/2007	1,836	119												<0.25	1.8	<1.0	<1.0	7.4	<1.0	7.4	0.84	2.78	0.108	2.6	33.9		286		6.52	
BDC-102	11/26/2007	2,029	312												<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.29	1.03	0.247	3.0	55.7		46			
BDC-102	2/18/2008	2,113	396	-8											<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.51	3.91	0.054	2.8	42.8		431		5.97	
BDC-102	3/27/2008	2,151	434	30											<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.85	1.3	<0.10	2.5	17.9		233			
BDC-102	5/15/2008	2,200	483	79	-40										<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.40	3.0	<0.10	3.5	19.2		-115		6.56	
BDC-102	7/16/2008	2,262	545	141	22										<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.46	2.5	<0.10	3.2	13.7		-312		6.67	
BDC-102	9/15/2008	2,323	606	202	83	-45									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.22	4.28	0.056	3.0	31.6		191			
BDC-102	11/20/2008	2,389	672	268	149	21									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.70	0.40	<0.10	2.0	5.6		-70		6.69	
BDC-102	1/16/2009	2,446	729	325	206	78									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.00	<0.100	0.200	2.5	8.3		-235		6.70	
BDC-102	2/11/2009	2,472	755	351	232	104									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.65	2.4	<0.1	3.0	20.4		-70		6.61	
BDC-102	3/9/2009	2,498	781	377	258	130									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.00	0.9	<0.1	3.0	8.7		-46		6.65	
BDC-102	4/16/2009	2,536	819	415	296	168									<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.30	0.6	<0.1	3.0	8.3		-7		6.66	
BDC-102	5/14/2009	2,564	847	443	324	196	-34								<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.29	0.9	<0.1	3.4	9.8		-35		6.78	
BDC-102	7/17/2009	2,628	911	507	388	260	30								<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.66	4.9	<0.1	2.2	28.6		-11		6.46	
BDC-102	9/9/2009	2,682	965	561	442	314	84	-49							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.91	0.4	<0.1	2.7	5.5		2.8		6.66	
BDC-102	11/12/2009	2,746	1,029	625	506	378	148	15							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.93	0.2	<0.1	3.2	2.4		-42.0		6.49	
BDC-102	2/17/2010	2,843	1,126	722	603	475	245	112							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.90	3.4	0.2	2.8	17.2		892		6.56	
BDC-102	5/17/2010	2,932	1,215	811	692	564	334	201							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.35	8.4	<1.0	3.0	30.1		440		6.61	
BDC-102	8/16/2010	3,023	1,306	902	783	655	425	292	-37						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.61	8.9	<0.1	3.0	27.8		82		6.60	
BDC-102	11/8/2010	3,107	1,390	986	867	739	509	376	47						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.34	0.4	<0.1	2.0	6.9		45		7.09	
BDC-102	2/16/2011	3,207	1,490	1,086	967	839	609	476	147						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.68	3.5	<0.1	2.2	43.3		399		6.88	
BDC-102	5/3/2011	3,283	1,566	1,162	1,043	915	685	552	223						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.60	12.1	<0.1	2.0	32.4		40		6.70	
BDC-102	8/1/2011	3,373	1,656	1,252	1,133	1,005	775	642	313						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.01	13.6	<0.1	2.1	28.7		11		6.88	
BDC-102	11/1/2011	3,465	1,748	1,344	1,225	1,097	867	734	405	-105					<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.45	9.8	<0.1	1.5	30.9		-48		7.19	

Table 1
AOC-05 Clean-Up Action Data Summary
Boeing Developmental Center
Tukwila, Washington

		ORC Injection BDC-103	Pilot Injection BDC-103	Full Scale Injection 1 BDC-103/104	Full Scale Injection 2 BDC-103/104	Full Scale Injection 3 BDC-103/104	Full Scale Injection 4 BDC-103/104	Full Scale Injection 5 BDC-103/104	Full Scale Injection 6 BDC-103	Full Scale Injection 7 BDC-103	Full Scale Injection 8 BDC-103	Full Scale Injection 9 BDC-103	Full Scale Injection 10 BDC-103	Full Scale Injection 11 BDC-103	Volatile Organic Compounds							Aquifer Redox Conditions							Donor Indicators		
		Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	TPH-G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Nitrite-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	ORP (mV)	TOC (mg/L)	pH	
Proposed Groundwater Cleanup Levels (a)															**0.8**	**2.0**	**1294**	**1.7**	**NA**	**NA**	**1546**									
Well	Date																													Comments
BDC-102	2/19/2012	3,575	1,858	1,454	1,335	1,207	977	844	515	5					<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.25	2.4		1.0	15.4		21		6.60	
BDC-102	5/3/2012	3,649	1,932	1,528	1,409	1,281	1,051	918	589	79					<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.22	11.3		2.5	40.2		248		6.44	
BDC-102	9/4/2012	3,773	2,056	1,652	1,533	1,405	1,175	1,042	713	203	-49				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.20	13.2	<5.0	1.5	39.2		130		6.63	
BDC-102	11/13/2012	3,843	2,126	1,722	1,603	1,475	1,245	1,112	783	273	21				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.10	1.7	<0.10	1.6	27.7		48		6.77	
BDC-102	2/20/2013	3,942	2,225	1,821	1,702	1,574	1,344	1,211	882	372	120				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.17	18.4	<0.10	1.0	58.5		92		6.60	
BDC-102	5/20/2013	4,031	2,314	1,910	1,791	1,663	1,433	1,300	971	461	209				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.49	20	<0.10	1.5	62.2		-280		7.31	
BDC-102	8/28/2013	4,131	2,414	2,010	1,891	1,763	1,533	1,400	1,071	561	309	-76			<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	1.93	12.2	<0.10	1.0	39.1		-341		6.45	
BDC-102	11/19/2013	4,214	2,497	2,093	1,974	1,846	1,616	1,483	1,154	644	392	7			<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	3.89	10.6	<0.10	1.2	43.4		-254		6.54	
BDC-102	2/11/2014	4,298	2,581	2,177	2,058	1,930	1,700	1,567	1,238	728	476	91			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.16	19.6	<0.10	2.2	63.0		-246		6.67	
BDC-102	5/6/2014	4,382	2,665	2,261	2,142	2,014	1,784	1,651	1,322	812	560	175			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.65	14.8	<0.10	1.6	56.1		-275		6.54	
BDC-102	8/7/2014	4,475	2,758	2,354	2,235	2,107	1,877	1,744	1,415	905	653	268			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.07	26.7	<0.10	1.4	65.8		-65		7.01	
BDC-102	11/4/2014	4,564	2,847	2,443	2,324	2,196	1,966	1,833	1,504	994	742	357			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.11	22.4	<0.10	1.2	55.9		-15.3		6.47	
BDC-102	1/21/2015	4,642	2,925	2,521	2,402	2,274	2,044	1,911	1,582	1,072	820	435			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.20	12.9	<0.10	1.0	49.7		-22		6.14	
BDC-102	4/28/2015	4,739	3,022	2,618	2,499	2,371	2,141	2,008	1,679	1,169	917	532			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.22	23.1	<0.10	0.6	77.5		28		6.13	
BDC-102	7/20/2015	4,822	3,105	2,701	2,582	2,454	2,224	2,091	1,762	1,252	1,000	615			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.33	15.5	<0.10	1.0	63.3		-54		6.18	
BDC-102	10/26/2015	4,920	3,203	2,799	2,680	2,552	2,322	2,189	1,860	1,350	1,098	713			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.23	10.9	<0.10	1.0	47.5		-42		6.41	
BDC-102	1/27/2016	5,013	3,296	2,892	2,773	2,645	2,415	2,282	1,953	1,443	1,191	806	-56		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.35	0.62	<0.10	1.0	11.9		-124		6.61	
BDC-102	4/13/2016	5,090	3,373	2,969	2,850	2,722	2,492	2,359	2,030	1,520	1,268	883	21		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.70	12.8	<0.10	1.0	43.1		-48		6.61	
BDC-102	8/9/2016	5,208	3,491	3,087	2,968	2,840	2,610	2,477	2,148	1,638	1,386	1,001	139		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.32	14.0	<0.10		42.6		-79		6.2	
BDC-102	11/1/2016	5,292	3,575	3,171	3,052	2,924	2,694	2,561	2,232	1,722	1,470	1,085	223	-35	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.56	0.10	<0.10		1.4		-80.8		6.54	
BDC-102	2/7/2017	5,390	3,673	3,269	3,150	3,022	2,792	2,659	2,330	1,820	1,568	1,183	321	63	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.19	4.9	<0.10		23.8		12.3		7.78	
BDC-102	5/3/2017	5,475	3,758	3,354	3,235	3,107	2,877	2,744	2,415	1,905	1,653	1,268	406	148	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.52	25.5	<0.10		42.9		-11.4		6.29	
BDC-102	8/1/2017	5,565	3,848	3,444	3,325	3,197	2,967	2,834	2,505	1,995	1,743	1,358	496	238	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.86	37.1	<0.10		52.4		102.4		6.23	
BDC-102	11/7/2017	5,663	3,946	3,542	3,423	3,295	3,065	2,932	2,603	2,093	1,841	1,456	594	336	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.79	6.8	<0.10		28.3		67.6		6.32	
BDC-102	2/5/2018	5,753	4,036	3,632	3,513	3,385	3,155	3,022	2,693	2,183	1,931	1,546	684	426	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.82	0.718	0.170		8.15		-97.4		6.50	
BDC-102	5/1/2018	5,838	4,121	3,717	3,598	3,470	3,240	3,107	2,778	2,268	2,016	1,631	769	511	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.24	13.4	<0.10		29.5		172.4		6.36	
BDC-102	8/6/2018	5,935	4,218	3,814	3,695	3,567	3,337	3,204	2,875	2,365	2,113	1,728	866	608	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.39	15.7	<0.10		31.7		146.6		6.35	
BDC-102	11/5/2018	6,026	4,309	3,905	3,786	3,658	3,428	3,295	2,966	2,456	2,204	1,819	957	699	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.88	1.46	<0.10		16.4		-35.9		6.42	
BDC-102	2/6/2019	6,119	4,402	3,998	3,879	3,751	3,521	3,388	3,059	2,549	2,297	1,912	1,050	792	0.192	<0.20	<0.20	0.98	12.5	<0.20	12.6	0.27	1.53	0.154		15.2		-114.2		6.65	
BDC-102	5/2/2019	6,204	4,487	4,083	3,964	3,836	3,606	3,473	3,144	2,634	2,382	1,997	1,135	877	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.91	9.63	<0.10		47.7		55.5		6.31	
BDC-102	11/5/2019	6,391	4,674	4,270	4,151	4,023	3,793	3,660	3,331	2,821	2,569	2,184	1,322	1,064	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.59	8.12	<0.1		33.8		65.6		6.30	
BDC-103	6/11/2001														177	875	12,010	1,985			11,430										
BDC-103	9/4/2001														123	494	3,760	419			2,636										
BDC-103 (b)	12/3/2001														120	5,100	2,300,000	10,000			3,400,000										
BDC-103	3/13/2002														200	1,700	17,000	4,900			26,400										
BDC-103	4/29/2002	-8													200	980	16,000	5,400	20,000	7,000	27,000										
BDC-103	6/3/2002	27													200	960	17,000	5,100	20,000	7,100	27,100										
BDC-103	7/1/2002	55													240	1,300	16,000	5,200	20,000	6,800	26,800										
BDC-103	8/1/2002	86													270	4,600	18,000	5,200	19,000	6,600	25,600										
BDC-103	12/2/2002	209													250	1,400	15,000	5,000	22,000	6,900	28,900										
BDC-103	3/10/2003	307													180	780	13,000	5,200	20,000	6,700	26,700										
BDC-103	6/3/2003	392													220	900	10,000	5,000	20,000	6,600	26,600										
BDC-103	11/19/2003	561													180	850	8,300	4,500	18,000	5,500	23,500	0.38	0.012	0.011	5.5	53	630	-75.9			
BDC-103	4/28/2004	722													160	1,600	6,600	3,900	16,000	5,100	21,100										
BDC-103	10/18/2004	895													140	2,100	5,500	3,700	15,000	4,400	19,400										
BDC-103	5/10/2005	1,099													110	2,200	5,500	3,800	14,000	3,200	17,200										
BDC-103	11/10/2005	1,283													90	2,200	3,500	3,700	12,000	2,500	15,000	0.72	<1.0			11.9		147	15.4		
BDC-103	5/15/2006	1,469													84	1,600	3,800	3,100	10,000	2,200	12,000	0.92	<0.010	0.054	3.5	15.2		106			
BDC-103	11/20/2006	1,658	-59												51	2,000	730	2,200	3,900	1,000	4,900	1.23	<0.10	<0.10	2.4	28.3		202			
BDC-103	2/20/2007	1,750	33												26	460	420	140	3,600	1,600	5,200	0.31	60.8	11.1	0.5	99.2		109		6.54	
BDC-103	3/19/2007	1,777	60												30	490	88	130	3,500	1,700	5,200	0.63	27.9	8.28	0.4	141		4		6.79	
BDC-103	4/24/2007	1,813	96												36	820	440	220	3500	1800	5300	0.84	7.54	3.56	2.4	59.2		-14		6.70	
BDC-103	5/17/2007	1,836	119												77	1,400	4,300	1,100	8,300	3,200	11,500	0.61	0.138	0.079	3.6	169		244		6.82	
BDC-103	11/26/2007	2,029	312												190	3,300	21,000	4,000	11,000	4,900	15,900	3.37	0.063	0.049	3.6	49.1		-118			
BDC-103	2/18/2008	2,113	396	-8											66	1,100	2,600	700	7,500	1,900	9,400	2.06	7.75	0.134	2.8	163		552		5.97	
BDC-103	3/27/2008	2,151	434	30											84	1,500	1,900	1,100	9,700	3,000	12,700	1.60	54.1	18	4.0	115.0		182			
BDC-103	5/15/2008	2,200	483	79	-40										91	2,700	4,400	1,400	11,000	3,600	14,600	1.38	<0.10	<0.10	3.2	192		-138		7.11	
BDC-103	7/16/2008	2,262	545	141	22										79	1,800	440	490	10,000	3,100	13,100	1.61	56.1	16.6	2.8	149		-226		6.72	
BDC-103	9/15/2008	2,323	606	202	83	-45									110	2,300	7,600	1,500	10,000	3,600	13,600	0.48	0.330	0.218	3.2	218		189			
BDC-103	11/20/2008	2,389	672	268	149	21									47	1,200	260	110	7,000	2,100	9,100	0.21	152	12.5	2.0	120		-1.2		6.66	

Table 1
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Boeing Developmental Center
Tukwila, Washington

		ORC Injection BDC-103	Pilot Injection BDC-103	Full Scale Injection 1 BDC-103/104	Full Scale Injection 2 BDC-103/104	Full Scale Injection 3 BDC-103/104	Full Scale Injection 4 BDC-103/104	Full Scale Injection 5 BDC-103/104	Full Scale Injection 6 BDC-103	Full Scale Injection 7 BDC-103	Full Scale Injection 8 BDC-103	Full Scale Injection 9 BDC-103	Full Scale Injection 10 BDC-103	Full Scale Injection 11 BDC-103	Volatile Organic Compounds							Aquifer Redox Conditions							Donor Indicators		
		Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	TPH-G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Nitrite-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	ORP (mV)	TOC (mg/L)	pH	
Proposed Groundwater Cleanup Levels (a)															**0.8**	**2.0**	**1294**	**1.7**	**NA**	**NA**	**1546**									
Well	Date																													Comments
BDC-103	1/16/2009	2,446	729	325	206	78									11	190	220	12	1,000	480	1,480	0.24	193	2.32	0.6	62.5		-181		6.19	
BDC-103	2/11/2009	2,472	755	351	232	104									36	820	510	<100	2,900	1,500	4,400	1.66	82.0	6.7	0.8	178		-65		6.69	
BDC-103	3/9/2009	2,498	781	377	258	130									27	1100	440	18	2,400	1,200	3,600	0	47.3	2.4	0.4	192		17		6.80	
BDC-103	4/16/2009	2,536	819	415	296	168									30	710	310	<50	2,700	1,200	3,900	0.95	64.8	5.6	0.2-0.4	194		62		6.77	
BDC-103	5/14/2009	2,564	847	443	324	196	-34								30	680	320	20	2,400	1,500	3,900	0.48	49.8	4.8	0.8	222		20		6.85	
BDC-103	7/17/2009	2,628	911	507	388	260	30								19	410	280	32	630	1,000	1,630	2.60	26.6	2.0	1.0	104		29		6.98	
BDC-103	9/9/2009	2,682	965	561	442	314	84	-49							21	620	270	83	700	1200	1,900	0.88	<0.1	<0.1	2.5	134		2.8		7.01	
BDC-103	11/12/2009	2,746	1,029	625	506	378	148	15							24	340	140	27	1,800	1,200	3,000	1.42	94.1	7.7	0.4	71.7		117		6.11	
BDC-103	2/17/2010	2,843	1,126	722	603	475	245	112							0.73	10	<1.0	<1.0	3.1	22	25	1.45	123	1.1	0.0	60.3		939		6.22	
BDC-103	5/17/2010	2,932	1,215	811	692	564	334	201							3.1	79	44	5.2	60	86	146	1.56	67.9	2.6	0.4	71.6		436		6.63	
BDC-103	8/16/2010	3,023	1,306	902	783	655	425	292	-37						8.0	740	380	110	420	320	740	2.24	2.4	0.1	2.0	72.5		184		6.96	
BDC-103	11/8/2010	3,107	1,390	986	867	739	509	376	47						6.3	240	11	1.7	180	540	720	7.46	55.8	1.5	0.0	123		199		7.05	
BDC-103	2/16/2011	3,207	1,490	1,086	967	839	609	476	147						0.28	4.6	<1.0	<1.0	<1.0	5.4	5.4	5.18	133	0.6		74.6		508		6.52	
BDC-103	5/3/2011	3,283	1,566	1,162	1,043	915	685	552	223						<0.25	9.1	<1.0	<1.0	<1.0	2.2	2.2	2.15	140	0.2	0.0	74.4		393		6.35	
BDC-103	8/1/2011	3,373	1,656	1,252	1,133	1,005	775	642	313						0.30	76	<1.0	1.8	7.8	2.5	10.3	5.67	57.6	<0.1	0.2	63.2		168		7.09	
BDC-103	11/1/2011	3,465	1,748	1,344	1,225	1,097	867	734	405	-105					33	1300	2200	780	2300	1300	3,600	1.72	<0.1	<0.1	1.2	8.1		-226		7.38	
BDC-103	2/19/2012	3,575	1,858	1,454	1,335	1,207	977	844	515	5					2.2	5.1	31	19	260	69	329	0.21	143		0.3	57.1		36		6.41	
BDC-103	5/3/2012	3,649	1,932	1,528	1,409	1,281	1,051	918	589	79					<0.25	16	1.4	<1.0	3.6	14	17.6	0.11	149	0.83	0.0	56.2		239		6.49	
BDC-103	9/4/2012	3,773	2,056	1,652	1,533	1,405	1,175	1,042	713	203	-49				0.72	530	24.0	9.4	40	42	82	0.45	7.2	<0.10	0.4	66.9		146		6.80	
BDC-103	11/13/2012	3,843	2,126	1,722	1,603	1,475	1,245	1,112	783	273	21				4.5	120	9.5	3.7	210	380	590	1.02	165	2.8	0.4	93.6		108		6.50	
BDC-103	2/20/2013	3,942	2,225	1,821	1,702	1,574	1,344	1,211	882	372	120				<0.25	<1.0	<1.0	<1.0	<2.0	3.4	3.4	0.14	161	0.60	0.2	51.6		109		6.42	
BDC-103	5/20/2013	4,031	2,314	1,910	1,791	1,663	1,433	1,300	971	461	209				<0.25	9.3	<1.0	<1.0	4.4	1.8	6.2	0.29	161	<0.10	0.0	47.1		-281		7.47	
BDC-103	8/28/2013	4,131	2,414	2,010	1,891	1,763	1,533	1,400	1,071	561	309	-76			2	210	56	47	260	91	351	1.60	17.8	0.16	0.6	54.2		-290		6.83	
BDC-103	11/19/2013	4,214	2,497	2,093	1,974	1,846	1,616	1,483	1,154	644	392	7			5.9	22	37	31	590	350	940	4.42	154	2.6	0.0	51.0		-222		6.48	
BDC-103	2/11/2014	4,298	2,581	2,177	2,058	1,930	1,700	1,567	1,238	728	476	91			<0.25	<1.0	<1.0	<1.0	4.9	3.6	8.5	2.81	79.9	0.15	0.0	99.2		-254		6.77	
BDC-103	5/6/2014	4,382	2,665	2,261	2,142	2,014	1,784	1,651	1,322	812	560	175			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.19	215	<0.10	0.0	59.8		-233		6.21	
BDC-103	8/7/2014	4,475	2,758	2,354	2,235	2,107	1,877	1,744	1,415	905	653	268			<0.25	7.8	<1.0	<1.0	2.4	<1.0	2.4	2.67	111	<0.10	0.0	59.7		-46		7.14	
BDC-103	11/4/2014	4,564	2,847	2,443	2,324	2,196	1,966	1,833	1,504	994	742	357			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.27	151	0.68	0.0	66.7		121		6.31	
BDC-103	1/21/2015	4,642	2,925	2,521	2,402	2,274	2,044	1,911	1,582	1,072	820	435			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.20	137	0.27	0.0	69.1		118		6.05	
BDC-103	4/28/2015	4,739	3,022	2,618	2,499	2,371	2,141	2,008	1,679	1,169	917	532			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.16	74.8	<0.10	0.0	90.3		44		6.23	
BDC-103	7/20/2015	4,822	3,105	2,701	2,582	2,454	2,224	2,091	1,762	1,252	1,000	615			<0.25	54	1.0	3.7	8.3	2.6	10.9	0.18	8.1	<0.10	0.2	70.9		-22		6.48	
BDC-103	10/26/2015	4,920	3,203	2,799	2,680	2,552	2,322	2,189	1,860	1,350	1,098	713			19	480	740	600	1800	850	2,650	0.11	<0.10	<0.10	1.0	0.55		-85		6.61	
BDC-103	1/27/2016	5,013	3,296	2,892	2,773	2,645	2,415	2,282	1,953	1,443	1,191	806	-56		<0.25	3.9	1.2	3.3	12	7.0	19	0.22	32.5	<0.10	0.0	102		-10		6.56	
BDC-103	4/13/2016	5,090	3,373	2,969	2,850	2,722	2,492	2,359	2,030	1,520	1,268	883	21		<0.25	<1.0	<1.0	<1.0	<1.0	2.0	2.0	0.46	102	0.43	0.0	51.0		6.7		6.59	
BDC-103	8/9/2016	5,208	3,491	3,087	2,968	2,840	2,610	2,477	2,148	1,638	1,386	1,001	139		1.7	56	4.9	42	210	51	261	0.0	<0.10	<0.10		31.1		-98.6		6.90	
BDC-103	11/1/2016	5,292	3,575	3,171	3,052	2,924	2,694	2,561	2,232	1,722	1,470	1,085	223	-35	4.5	83	24	120	360	180	540	0.3	<0.10	<0.10		0.68		-182.9		6.70	
BDC-103	2/7/2017	5,390	3,673	3,269	3,150	3,022	2,792	2,659	2,330	1,820	1,568	1,183	321	63	<0.25	<1.0	<1.0	<1.0	<1.0	2.1	2.1	0.41	194	0.15		47.4		77.2		6.27	
BDC-103	5/3/2017	5,475	3,758	3,354	3,235	3,107	2,877	2,744	2,415	1,905	1,653	1,268	406	148	<0.25	<1.0	<1.0	<1.0	<1.0	1.7	1.7	0.78	215	0.40		49.4		67.1		6.25	
BDC-103	8/1/2017	5,565	3,848	3,444	3,325	3,197	2,967	2,834	2,505	1,995	1,743	1,358	496	238	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.72	172	<0.10		64.4		111.1		6.23	
BDC-103	11/7/2017	5,663	3,946	3,542	3,423	3,295	3,065	2,932	2,603	2,093	1,841	1,456	594	336	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.86	71	<0.10		73.2		58.2		6.54	
BDC-103	2/5/2018	5,753	4,036	3,632	3,513	3,385	3,155	3,022	2,693	2,183	1,931	1,546	684	426	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	1.27	128	0.319		51.7		144		5.93	
BDC-103	5/1/2018	5,838	4,121	3,717	3,598	3,470	3,240	3,107	2,778	2,268	2,016	1,631	769	511	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.27	104	<0.10		71.6		184.7		5.98	
BDC-103	8/6/2018	5,935	4,218	3,814	3,695	3,567	3,337	3,204	2,875	2,365	2,113	1,728	866	608	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.38	65.8	<0.10		70.0		166.9		6.44	
BDC-103	11/5/2018	6,026	4,309	3,905	3,786	3,658	3,428	3,295	2,966	2,456	2,204	1,819	957	699	0.113	1.82	<0.20	0.31	0.91	0.47	1.37	0.58	0.333	<0.10		63.1		34.1		6.74	
BDC-103	2/6/2019	6,119	4,402	3,998	3,879	3,751	3,521	3,388	3,059	2,549	2,297	1,912	1,050	792	<0.1	<0.20	<0.20	0.40	0.79	<0.20	0.79	0.31	112	0.180		219		67.8		6.88	
BDC-103	5/2/2019	6,204	4,487	4,083	3,964	3,836	3,606	3,473	3,144	2,634	2,382	1,997	1,135	877	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.35	113	<0.10		160		50.3		6.37	
BDC-103	11/5/2019	6,391	4,674	4,270	4,151	4,023	3,793	3,660	3,331	2,821	2,569	2,184	1,322	1,064	1.29	13.2	<0.20	24.8	58.3	0.99	59.3	0.11	0.397	<0.1		59.6		-29.8		6.92	
BDC-104	2/18/2008	2,113	396	-8											2.9	<1.0	<1.0	47	180	28	208	2.09	1.63	0.072	3.0	18.7		598			
BDC-104	3/27/2008	2,151	434	30											3.2	<1.0	<1.0	22	220	52	272	1.34	161	0.1	0.5	52.2		259			
BDC-104	5/15/2008	2,200	483	79	-40										1.0	<1.0	<1.0	7.0	26	22	48	1.24	28.7	0.7	0.4	26.6		94		6.69	
BDC-104	7/16/2008	2,262	545	141	22										2.3	<1.0	2.9	3.3	110	50	160	1.56	196	0.4	0.0	74.7		-221		7.17	
BDC-104	9/15/2008	2,323	606	202	83	-45									0.64	<1.0	2.6	<1.0	20	16	36	0.06	122	0.729	0.0	38.4		191			
BDC-104	11/20/2008	2,389	672	268	149	21									<0.25	<1.0	<1.0	<1.0	1.4	4.1	5.5	0.96	67.2	<0.10	0.2	24.3		-27		7.46	
BDC-104	1/16/2009	2,446	729	325	206	78									0.26	<1.0	<1.0	<1.0	<1.0	5.5	5.5	0.05	71.4	0.204	0.6	34.6		-164		6.86	
BDC-104	2/11/2009	2,472	755	351	232	104									<0.25	<1.0	<1.0	<1.0	1.3	1.1	2.4	1.78	95.4 J	0.1	0.2	20.1		-75		6.68	
BDC-104	3/9/2009	2,498	781	377	258	130									<0.25	<1.0	<1.0	<1.0	1.3	1.1	2.4	0	91.5	<0.1	0.0	19.2		20		6.67	
BDC-104	4/16/2009	2,536	819	415	296	168									<0.25	<1.0	<1.0	<1.0	<1.0	1.6	1.6	0.34	67.2	<0.1	0.0	21.6		67		6.63	
BDC-104	5/14/2009	2,564	847	443	324	196	-34								<0.25	<1.0	<1.0	<1.0	<1.0	1.4	1.4	0.51	63.4	<0.1	0.0	20.1		6		6.70	
BDC-104	7/17/2009	2,628	911	507	388	260	30								<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.41	21.0	0.5	1.0	30.8		-3		7.30	
BDC-104	9/9/2009	2,682	965	561	442	314	84	-49							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.63	39.8	0.1	0.8	41.6		61		7.20	
BDC-104	11/12/2009	2,746	1,029	625	506	378	148	15							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.99	115	1.4	0.0	24.1		68		6.49	

Table 1
AOC-05 Clean-Up Action Data Summary
Boeing Developmental Center
Tukwila, Washington

		ORC Injection BDC-103	Pilot Injection BDC-103	Full Scale Injection 1 BDC-103/104	Full Scale Injection 2 BDC-103/104	Full Scale Injection 3 BDC-103/104	Full Scale Injection 4 BDC-103/104	Full Scale Injection 5 BDC-103/104	Full Scale Injection 6 BDC-103	Full Scale Injection 7 BDC-103	Full Scale Injection 8 BDC-103	Full Scale Injection 9 BDC-103	Full Scale Injection 10 BDC-103	Full Scale Injection 11 BDC-103	Volatile Organic Compounds							Aquifer Redox Conditions							Donor Indicators		
		Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	Elapsed Time from Injection (days)	TPH-G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Nitrite-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (µg/L)	ORP (mV)	TOC (mg/L)	pH	
Proposed Groundwater Cleanup Levels (a)															**0.8**	**2.0**	**1294**	**1.7**	**NA**	**NA**	**1546**									
Well	Date																													Comments
BDC-104	2/17/2010	2,843	1,126	722	603	475	245	112							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.73	119	0.1	0.0	111		868		6.93	
BDC-104	5/17/2010	2,932	1,215	811	692	564	334	201							<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.98	47.4	<1.0	0.6	30.5		482		6.74	
BDC-104	8/16/2010	3,023	1,306	902	783	655	425	292	-37						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.59	38.4	0.2	2.5	23.6		76		6.92	
BDC-104	11/8/2010	3,107	1,390	986	867	739	509	376	47						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.87	32.5	<0.1	0.0	18.6		115		7.23	
BDC-104	2/16/2011	3,207	1,490	1,086	967	839	609	476	147						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.48	40.0	<0.1	0.4	24.1		423		6.71	
BDC-104	5/3/2011	3,283	1,566	1,162	1,043	915	685	552	223						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.19	31.3	<0.1	1.2	26.8		231		6.63	
BDC-104	8/1/2011	3,373	1,656	1,252	1,133	1,005	775	642	313						<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.10	11.7	<0.1	0.0	21.2		121		7.20	
BDC-104	11/1/2011	3,465	1,748	1,344	1,225	1,097	867	734	405	-105					<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.43	14.6	<0.1	0.0	18.7		-53		7.40	
BDC-104	2/19/2012	3,575	1,858	1,454	1,335	1,207	977	844	515	5					<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.26	21.6		0.0	29.2		66		6.23	
BDC-104	5/3/2012	3,649	1,932	1,528	1,409	1,281	1,051	918	589	79					<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.06	19.4		1.5	26.5		207		6.78	
BDC-104	9/4/2012	3,773	2,056	1,652	1,533	1,405	1,175	1,042	713	203	-49				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.68	12.3	<0.10	0.5	22.1		130		7.11	
BDC-104	11/13/2012	3,843	2,126	1,722	1,603	1,475	1,245	1,112	783	273	21				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.24	0.80	<0.10		5.1		64		7.19	
BDC-104	2/20/2013	3,942	2,225	1,821	1,702	1,574	1,344	1,211	882	372	120				0.28	<1.0	6.5	<1.0	17	3.3	20.3	0.44	2.5	<0.10	0.2	3.6		82		6.96	
BDC-104	5/20/2013	4,031	2,314	1,910	1,791	1,663	1,433	1,300	971	461	209				<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	2.01	20.0	<0.10	0.0	20.8		-230		7.16	
BDC-104	8/28/2013	4,131	2,414	2,010	1,891	1,763	1,533	1,400	1,071	561	309	-76			<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.52	16.4	<0.10	1.0	35.3		-322		6.82	
BDC-104	11/19/2013	4,214	2,497	2,093	1,974	1,846	1,616	1,483	1,154	644	392	7			<0.25	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	8.09	0.47	<0.10	0.0	3.1		-35		7.16	
BDC-104	2/11/2014	4,298	2,581	2,177	2,058	1,930	1,700	1,567	1,238	728	476	91			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.11	0.54	<0.10	0.0	3.4		-135		7.04	
BDC-104	5/6/2014	4,382	2,665	2,261	2,142	2,014	1,784	1,651	1,322	812	560	175			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.49	0.35	<0.10	0.0	4.2		-113		6.82	
BDC-104	8/7/2014	4,475	2,758	2,354	2,235	2,107	1,877	1,744	1,415	905	653	268			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.04	2.9	<0.10	0.0	4.4		64		7.44	
BDC-104	11/4/2014	4,564	2,847	2,443	2,324	2,196	1,966	1,833	1,504	994	742	357			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.66	2.1	<0.10	0.0	10.1		39		6.50	
BDC-104	1/21/2015	4,642	2,925	2,521	2,402	2,274	2,044	1,911	1,582	1,072	820	435			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.02	11.3	<0.10	0.0	36.3		135		5.87	
BDC-104	4/28/2015	4,739	3,022	2,618	2,499	2,371	2,141	2,008	1,679	1,169	917	532			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.37	11.3	<0.10	0.0	74.4		85		6.09	
BDC-104	7/20/2015	4,822	3,105	2,701	2,582	2,454	2,224	2,091	1,762	1,252	1,000	615			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.18	11.7	<0.10	0.2	74.4		-22		6.48	
BDC-104	10/26/2015	4,920	3,203	2,799	2,680	2,552	2,322	2,189	1,860	1,350	1,098	713			<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.20	14.1	<0.10	1.0	84.2		-2.0		6.72	
BDC-104	1/27/2016	5,013	3,296	2,892	2,773	2,645	2,415	2,282	1,953	1,443	1,191	806	-56		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.13	11.5	<0.10	0.0	69.1		16.0		6.67	
BDC-104	4/13/2016	5,090	3,373	2,969	2,850	2,722	2,492	2,359	2,030	1,520	1,268	883	21		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.65	20.2	<0.10	0.0	96.9		31		6.75	
BDC-104	8/9/2016	5,208	3,491	3,087	2,968	2,840	2,610	2,477	2,148	1,638	1,386	1,001	139		<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	8.1	<0.10		42.2		-27.2		6.30	
BDC-104	11/1/2016	5,292	3,575	3,171	3,052	2,924	2,694	2,561	2,232	1,722	1,470	1,085	223	-35	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.91	3.4	<0.10		22.3		-9.8		6.49	
BDC-104	2/7/2017	5,390	3,673	3,269	3,150	3,022	2,792	2,659	2,330	1,820	1,568	1,183	321	63	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.03	0.58	<0.10		5.2		69.2		5.93	
BDC-104	5/3/2017	5,475	3,758	3,354	3,235	3,107	2,877	2,744	2,415	1,905	1,653	1,268	406	148	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.06	23.6	<0.10		84.3		80.9		5.85	
BDC-104	8/1/2017	5,565	3,848	3,444	3,325	3,197	2,967	2,834	2,505	1,995	1,743	1,358	496	238	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.00	7.0	<0.10		29.1		125.9		5.83	
BDC-104	11/7/2017	5,663	3,946	3,542	3,423	3,295	3,065	2,932	2,603	2,093	1,841	1,456	594	336	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.82	0.17	<0.10		4.5		60.4		6.89	
BDC-104	2/5/2018	5,753	4,036	3,632	3,513	3,385	3,155	3,022	2,693	2,183	1,931	1,546	684	426	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	6.93	0.230	<0.10		4.76		90.6		6.18	
BDC-104	5/1/2018	5,838	4,121	3,717	3,598	3,470	3,240	3,107	2,778	2,268	2,016	1,631	769	511	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	4.25	1.22	<0.10		4.05		172.3		6.09	
BDC-104	8/6/2018	5,935	4,218	3,814	3,695	3,567	3,337	3,204	2,875	2,365	2,113	1,728	866	608	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	3.02	9.11	<0.10		36.5		149.8		6.28	
BDC-104	11/5/2018	6,026	4,309	3,905	3,786	3,658	3,428	3,295	2,966	2,456	2,204	1,819	957	699	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.73	6.97	<0.10		35.4		156.6		6.09	
BDC-104	2/6/2019	6,119	4,402	3,998	3,879	3,751	3,521	3,388	3,059	2,549	2,297	1,912	1,050	792	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	0.48	11.5	0.111		49.3		52.6		6.46	
BDC-104	5/2/2019	6,204	4,487	4,083	3,964	3,836	3,606	3,473	3,144	2,634	2,382	1,997	1,135	877	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	2.41	17.6	<0.10		44.6		66.2		6.34	
BDC-104	11/5/2019	6,391	4,674	4,270	4,151	4,023	3,793	3,660	3,331	2,821	2,569	2,184	1,322	1,064	<0.1	<0.20	<0.20	<0.20	<0.40	<0.20	<0.60	1.30	6.30	<0.1		29.5		61.7		6.48	

Abbreviations and Acronyms:

µg/L = micrograms per liter
DO = dissolved oxygen
mg/L = milligrams per liter
mV = millivolts
NA = not applicable, not available
ORP = oxidation reduction potential
TOC = total organic carbon
TPH-G = total petroleum hydrocarbon-gasoline

Notes:

(a) Proposed Cleanup Standards and Comparison to Site Data, Boeing Developmental Center, Tukwila,Washington (Landau Associates, 5/7/13).
(b) BTEX data questionable for this event. Concentrations inconsistent with TPH-G data for indicated event and BTEX data from other events.

= No sample collected or sample not analyzed for specified constituent.
Box = Exceedance of proposed cleanup level

Injection Dates	Months Since Prior Injection Event	
5/7/2002		ORC
1/18/2007	57	Pilot -scale nitrate
2/26/2008	13	1st full scale injection
6/24/2008	4	2nd full scale injection
10/30/2008	4	3rd full scale injection
6/17/2009	8	4th full scale injection (start ammonium phosphate, 1/3 ammonium nitrate dose to both wells)
10/28/2009	4	5th full scale injection (103 full dose, 104 half dose)
9/22/2010	11	6th full scale injection (103 only full dose)
2/14/2012	17	7th full scale injection (103 only full dose)
10/23/2012	8	8th full scale injection (103 only 1.5x volume dose)
11/12/2013	13	9th full scale injection (103 only 1.5x volume dose)
3/23/2016	29	10th full scale injection (103 only 1.5x volume, half concentration dose)
12/6/2016	9	11th full scale injection (103 only 1.5x volume dose)

Table 2
AOC-05 Nitrate Concentrations at Downgradient Monitoring Locations
Boeing Developmental Center
Tukwila, Washington

Area	Well	Date		Aquifer Redox Conditions					
				DO (mg/L)	**Nitrate-Nitrogen (mg/L)**	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)
SWMU-17	BDC-05-04	5/15/2006	Natural Redox Baseline		**12.3**	2.6	33.4		
SWMU-17	BDC-05-04	10/23/2008		2.45	**7.6**	0.1	31.0	0.29	73.5
SWMU-17	BDC-05-04	11/2/2008		0.59	**4.5**	0.8	25,2	0.05	-16
SWMU-17	BDC-05-04	12/16/2008		0.55	**5.5**	1.0	30.4	1.61	-98
SWMU-17	BDC-05-04	1/16/2009		0.06	**4.3**	1.0	21.8	1.48	-192
SWMU-17	BDC-05-04	2/11/2009		2.45	**5.9**	1.0	31.8	1.06	-54
SWMU-17	BDC-05-04	3/9/2009		0.27	**4.8**	1.5	30.1	0.20	35
SWMU-17	BDC-05-04	4/16/2009		1.48	**5.9**	1.4	33.6	<0.0007	68
SWMU-17	BDC-05-04	5/13/2009		0.33	**4.5**	1.6	26.6	0.37	49
SWMU-17	BDC-05-04	8/16/2009		0.86	**5.4**	2.2	30.6	<0.0007	93
SWMU-17	BDC-05-04	11/13/2009	Downgradient Monitoring Triggered	0.56	**2.2**	3.0	18.4	2.44	109
SWMU-17	BDC-05-04	2/16/2010		0.88	**<0.1**	3.3	24.6	1.49	899
SWMU-17	BDC-05-04	5/18/2010		0.75	**<0.1**	3.0	25.4	1.32	473
SWMU-17	BDC-05-04	8/17/2010		1.00	**<0.1**	2.8	17.1	3.53	108
SWMU-17	BDC-05-04	11/9/2010		2.21	**<0.1**	2.2	21.3	3.00	101
SWMU-17	BDC-05-04	2/15/2011		2.50	**<0.1**	2.4	19.4	4.46	93
SWMU-17	BDC-05-04	5/2/2011		1.69	**<0.1**	2.2	18.0	1.75	49
SWMU-17	BDC-05-04	11/2/2011		1.52	**<1.0**	1.2	<1.0		-3
SWMU-17	BDC-05-04	5/7/2012		0.16		2.0	21.5		98
SWMU-17	BDC-05-04	9/4/2012		0.21	**<0.10**		16.6		96
SWMU-17	BDC-05-04	11/13/2012		0.03	**<0.10**	1.8	16.9		64
SWMU-17	BDC-05-04	5/23/2013		0.49		1.5	13.7		-310
SWMU-17	BDC-05-04	11/19/2013		2.56	**<0.10**	1.0	13.2		-259
SWMU-17	BDC-05-04	5/6/2014		3.49	**0.40**		14.4		-299
SWMU-17	BDC-05-04	11/4/2014		0.05	**<0.10**	1.6	<1.0		-126
SWMU-17	BDC-05-04	4/28/2015		0.11	**5.0**	0.4	13.5		74
SWMU-17	BDC-05-04	10/26/2015		0.08	**<0.10**	1.5	<1.0		-101
SWMU-17	BDC-05-04	4/13/2016		0.57	**5.5**		13.9		46
SWMU-17	BDC-05-04	11/2/2016		0.39	**<0.10**		0.75		-140.5
SWMU-17	BDC-05-04	5/3/2017		0.42	**8.8**	0.6	12.0		73.8
SWMU-17	BDC-05-04	11/6/2017		0.93	**<0.050**	2.0	2.7		-28.3
SWMU-17	BDC-05-04	5/2/2018		4.25		4.7	<1.0		-107.0
SWMU-17	BDC-05-04	11/7/2018		0.97	**<0.10**	1.8	0.842	13.2	-24.8
SWMU-17	BDC-05-04	5/3/2019		0.78	**<0.10**	3.3	8.21	13.3	-106.2
SWMU-17	BDC-05-04	11/6/2019		0.02	**<0.10**	1.5	4.68	8.16	-85.5
SWMU-20	MW-17A	05/15/2006	Natural Redox Baseline		**1.37**	0.0	27.0		
SWMU-20	MW-17A	11/12/2009	Downgradient Monitoring Triggered		**0.9**				
SWMU-20	MW-17A	5/17/2010			**1.6**	0.2	21.0		
SWMU-20	MW-17A	11/8/2010			**0.1**	2.1	15.7		
SWMU-20	MW-17A	5/3/2011			**1.6**	0.0	19.8		
SWMU-20	MW-17A	8/1/2011			**0.5**	0.0	20.5		
SWMU-20	MW-17A	11/1/2011			**0.3**	0.0	23.2		
SWMU-20	MW-17A	5/3/2012			**4.4**	0.0			
SWMU-20	MW-17A	9/4/2012			**2.0**		26.8		
SWMU-20	MW-17A	11/13/2012			**0.59**	0.0	22.9		
SWMU-20	MW-17A	5/20/2013			**2.9**		26.8		
SWMU-20	MW-17A	11/19/2013			**1.3**	0.4	23.9		
SWMU-20	MW-17A	5/6/2014			**2.2**	0.0	23.7		
SWMU-20	MW-17A	11/4/2014			**0.16**	0.4	26.0		
SWMU-20	MW-17A	4/28/2015			**1.6**	0.0	26.3		
SWMU-20	MW-17A	10/26/2015		0.17	**0.91**	0.0	29.0		-11.1
SWMU-20	MW-17A	4/13/2016		0.31	**1.7**	1.8	0.90		-175
SWMU-20	MW-17A	11/1/2016		0.41	**<0.10**	1.4			-215.9
SWMU-20	MW-17A	5/3/2017		0.62	**<0.10**	2.2			-225
SWMU-20	MW-17A	11/7/2017		0.57	**<0.10**	1.8	<0.30		23.8
SWMU-20	MW-17A	5/1/2018		0.19	**<0.5**	2.4	<0.5		-127.4
SWMU-20	MW-17A	11/5/2018		0.41	**<1.0**	1.5	<0.2		-189.8
SWMU-20	MW-17A	5/1/2019		0.56	**<0.10**	1.0	0.732		-176.0
SWMU-20	MW-17A	11/5/2019		1.65	**0.741**	3.0	2.91		-89.1

Table 2
AOC-05 Nitrate Concentrations at Downgradient Monitoring Locations
Boeing Developmental Center
Tukwila, Washington

Area	Well	Date		Aquifer Redox Conditions					
				DO (mg/L)	**Nitrate-Nitrogen (mg/L)**	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)
SWMU-20	MW-18A	05/15/2006	Natural Redox Baseline		**0.154**	0.4	64.8		
SWMU-20	MW-18A	11/12/2009	Downgradient Monitoring Triggered		**0.8**				
SWMU-20	MW-18A	05/17/2010			**1.0**	0.4	32.2		
SWMU-20	MW-18A	11/08/2010			**0.1**	0.0	14.2		
SWMU-20	MW-18A	5/3/2011			**<0.1**	0.0	31.5		
SWMU-20	MW-18A	8/1/2011			**1.1**	0.0	42.2		
SWMU-20	MW-18A	11/1/2011			**0.7**	0.0	93.3		
SWMU-20	MW-18A	5/3/2012			**<0.10**	0.0			
SWMU-20	MW-18A	9/4/2012			**<0.10**		19.5		
SWMU-20	MW-18A	11/13/2012			**<0.10**	0.0	21.5		
SWMU-20	MW-18A	5/20/2013			**<0.10**		19.6		
SWMU-20	MW-18A	11/19/2013			**<0.10**	0.6	15.0		
SWMU-20	MW-18A	5/6/2014			**<0.10**	0.0	26.1		
SWMU-20	MW-18A	11/4/2014			**<0.10**	0.4	21.0		
SWMU-20	MW-18A	4/28/2015			**0.11**	0.0	19.1		
SWMU-20	MW-18A	10/26/2015		0.10	**<0.10**	0.6	23.4		-7.1
SWMU-20	MW-18A	4/13/2016		0.76	**0.10**	0.0	42.8		38
SWMU-20	MW-18A	11/1/2016		0.26	**<0.10**	0.4			-8.5
SWMU-20	MW-18A	5/3/2017		1.22	**0.26**	0.0			63.7
SWMU-20	MW-18A	11/7/2017		0.55	**<0.10**	0.0	14.2		7.0
SWMU-20	MW-18A	5/1/2018		0.83	**<0.10**	0.0	36.8		-15.6
SWMU-20	MW-18A	11/5/2018		0.49	**<0.10**	0.0	13.3		25.1
SWMU-20	MW-18A	5/1/2019		0.54	**<0.10**	0.0	17.6		45.8
SWMU-20	MW-18A	11/5/2019		0.29	**<0.10**	1.0	11.5		5.4
SWMU-20	MW-21A	05/15/2006	Natural Redox Baseline		**0.136**	0.4	54.9		
SWMU-20	MW-21A	11/12/2009	Downgradient Monitoring Triggered		**<0.1**				
SWMU-20	MW-21A	05/17/2010			**0.2**	0.0	11.9		
SWMU-20	MW-21A	11/08/2010			**<0.1**	0.0	5.9		
SWMU-20	MW-21A	5/3/2011			**0.2**	0.0	52.1		
SWMU-20	MW-21A	8/1/2011			**0.1**	0.0	26.7		
SWMU-20	MW-21A	11/1/2011			**<0.1**	0.0	9.3		
SWMU-20	MW-21A	5/3/2012			**0.17**	0.0			
SWMU-20	MW-21A	9/4/2012			**<0.10**		6.7		
SWMU-20	MW-21A	11/13/2012			**0.16**	0.0	18.5		
SWMU-20	MW-21A	5/20/2013			**0.10**	0.5	13.5		
SWMU-20	MW-21A	11/19/2013			**<0.10**	0.0	15.6		
SWMU-20	MW-21A	5/6/2014			**<0.10**	0.0	7.6		
SWMU-20	MW-21A	11/4/2014			**<0.10**	0.0	5.1		
SWMU-20	MW-21A	4/28/2015			**<0.10**	0.0	5.3		
SWMU-20	MW-21A	10/26/2015		0.33	**0.11**	0.0	3.9		10.3
SWMU-20	MW-21A	4/13/2016		2.08	**<0.10**	0.0	4.9		56
SWMU-20	MW-21A	11/1/2016		1.71	**0.10**	0.2			78
SWMU-20	MW-21A	5/3/2017		3.41	**0.19**	0.0			99.8
SWMU-20	MW-21A	11/7/2017		0.88	**<0.10**	0.0	11.0		44.2
SWMU-20	MW-21A	5/1/2018		3.49	**<0.10**	0.0	7.53		80.7
SWMU-20	MW-21A	11/5/2018		0.96	**<0.10**	0.0	4.88		141.9
SWMU-20	MW-21A	5/1/2019		1.92	**0.125**	0.0	11.4		93.7
SWMU-20	MW-21A	11/5/2019		6.22	**<0.10**	0.0	4.35		33.7

Abbreviations and Acronyms:
DO = dissolved oxygen
mg/L = milligrams per liter
mV = millivolts
ORP = oxidation-reduction potential

Notes:
Nitrate-nitrogen column **bolded** for emphasis of target compound. Other results included for aquifer redox evaluation.
= not analyzed

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH												
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																			
Well	Date																							PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
BDC-05-02	5/21/2007	-526			20	24	1.2	<1.0				0.003	0.002	0.004	<0.002									0.12	0.18	0.01	0.00			0.32		0.38	0.58	0.04	0.00	
(IW 2011, 2017)	11/26/2007	-337			12	14	1.3	<1.0				0.001	<0.001	<0.002	<0.002									0.07	0.11	0.01	0.00			0.19		0.38	0.55	0.07	0.00	
	5/22/2008	-159			14	20	1.2	<0.2				0.002	<0.001	0.004	<0.002									0.08	0.15	0.01	0.00			0.25		0.34	0.61	0.05	0.00	
BDC-05-02	10/23/2008	-5			31	62	2.9	<1.0	<1.1	<1.2	<1.1	0.003	0.003	0.006	<0.002	5.15	0.4	0.2	13.0	0.19	87.1	5.5	6.47	0.19	0.47	0.03	0.00	0.00	0.00	0.69	0.00	0.27	0.69	0.04	0.00	0.00
BDC-05-02	11/20/2008	23			5.1	4.2	0.7	<0.2	<1.1	<1.2	<1.1	0.017	0.011	0.008	<0.002	0.29	<0.1	1.8	64.8	3.3	-111	430	6.47	0.03	0.03	0.01	0.00	0.00	0.00	0.07	0.00	0.44	0.46	0.10	0.00	0.00
BDC-05-02	12/16/2008	49			6.6	7.3	1.3	<1.0	<1.1	<1.2	<1.1	0.024	0.017	0.030	0.003	1.28	<0.1	3.4	88.8	2.9	-225	610	6.41	0.04	0.06	0.01	0.00	0.00	0.00	0.11	0.00	0.37	0.51	0.12	0.00	0.00
BDC-05-02	1/16/2009	80			7.5	22	3.7	<1.0	<1.1	<1.2	<1.1	0.022	0.014	0.029	<0.002	0.09	<1.0	3.5	6.9	6.2	-304	732	6.10	0.05	0.17	0.04	0.00	0.00	0.00	0.25	0.00	0.18	0.67	0.15	0.00	0.00
BDC-05-02	2/11/2009	106			9.5	17	12	<1.0	<1.1	<1.2	<1.1	0.046	0.040	0.004	<0.002	2.36	<0.1	4.0	<0.1	13.2	-99	433	6.32	0.06	0.13	0.12	0.00	0.00	0.00	0.31	0.00	0.18	0.42	0.40	0.00	0.00
BDC-05-02	3/9/2009	132			9.1	8.1	25	<1.0	<1.1	<1.2	<1.1	0.041	0.036	0.004	<0.002	0.09	<1.0	3.5	<1.0	22.9	-102	317	6.43	0.05	0.06	0.26	0.00	0.00	0.00	0.37	0.00	0.15	0.16	0.69	0.00	0.00
BDC-05-02	4/16/2009	170			7.3	6.0	41	<1.0	<1.1	<1.2	<1.1	0.029	0.025	0.003	<0.002	1.78	<0.1	3.0	<0.5	26.3	-97	274	6.59	0.04	0.05	0.42	0.00	0.00	0.00	0.51	0.00	0.09	0.09	0.83	0.00	0.00
BDC-05-02	5/13/2009	197			4.4	4.6	35	1.4	<1.1	<1.2		0.024	0.019	0.004	<0.002	0.27	<0.1	5.2	<0.1	23.0	-63	215	6.61	0.03	0.04	0.36	0.02	0.00	0.00	0.44	0.00	0.06	0.08	0.81	0.05	0.00
BDC-05-02	8/16/2009	292			1.8	1.1	49	<1.0	<1.1	<1.2	<1.1	0.023	0.017	0.009	<0.002	1.58	<0.5	3.6	<0.5	22.6	-23	125	6.77	0.01	0.01	0.51	0.00	0.00	0.00	0.52	0.00	0.02	0.02	0.96	0.00	0.00
BDC-05-02	11/13/2009	381			1.0	<1.0	70	<1.0	<1.1	<1.2	<1.1	0.020	0.016	0.003	<0.002	1.07	<0.1	2.8	0.3	21.1	-26	44.1	6.05	0.01	0.00	0.72	0.00	0.00	0.00	0.73	0.00	0.01	0.00	0.99	0.00	0.00
BDC-05-02	2/16/2010	476			<1.0	<1.0	54	<1.0	<1.1	<1.2	<1.1	0.022	0.020	0.005	0.002	1.52	<0.5	2.0	0.5	22.5	763	86.7	6.87	0.00	0.00	0.56	0.00	0.00	0.00	0.56	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	5/18/2010	567			<1.0	1.0	32	<1.0	<1.1	<1.2	<1.1	0.013	0.012	<0.002	<0.002	1.83	<0.5	2.3	<0.5	18.4	515	20.6	6.69	0.00	0.01	0.33	0.00	0.00	0.00	0.34	0.00	0.00	0.02	0.98	0.00	0.00
BDC-05-02	8/17/2010	658			<1.0	<1.0	23	<1.0	<1.1	<1.2	<1.1	0.010	0.008	<0.002	<0.002	2.82	0.2	2.7	1.4	20.2	55	13.3	6.74	0.00	0.00	0.24	0.00	0.00	0.00	0.24	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	11/9/2010	742			<1.0	<1.0	14	<1.0	<1.1	<1.2	<1.1	0.006	0.005	<0.002	<0.002	2.77	<0.1	2.2	0.3	16.9	72	10.8	6.83	0.00	0.00	0.14	0.00	0.00	0.00	0.14	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	2/15/2011	840			<1.0	<1.0	13	<1.0	<1.1	<1.2	<1.1	0.007	0.006	0.003	<0.002	2.43	<0.1	3.0	0.7	17.8	114	13.2	6.80	0.00	0.00	0.13	0.00	0.00	0.00	0.13	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	5/2/2011	916			0.6	0.9	22	0.3	<1.1	<1.2	<1.1	0.008	0.007	<0.002	<0.002	2.09	<0.1	1.4	0.2	13.3	13	9.8	6.86	0.00	0.01	0.23	0.00	0.00	0.00	0.24	0.00	0.01	0.03	0.94	0.02	0.00
BDC-05-02	7/31/2011	1006	-18		<1.0	<1.0	10	<1.0	<1.1	<1.2	<1.1	0.006	0.005	<0.002	<0.002	1.97	<0.1	3.2	0.2	15.0	-35	8.7	6.82	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	11/2/2011	1100	76		8.4	4.8	150	1.6	<1.1	<1.2	<1.1	0.025	0.022	0.010	0.010	2.40	<0.1	3.5	1.4	9.0	-28	5360	5.43	0.05	0.04	1.55	0.03	0.00	0.00	1.66	0.00	0.03	0.02	0.93	0.02	0.00
BDC-05-02	2/19/2012	1209	185		<4.0	<4.0	220	<4.0	<1.0	<1.0	<1.0					1.37	<0.5	1.3	<1.5	8.5	-32	673	6.70	0.00	0.00	2.27	0.00	0.00	0.00	2.27	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	5/7/2012	1287	263		<2.0	<2.0	180	<2.0	<1.0	<1.0	<1.0	0.051	0.049	0.004	<0.002	0.60		2.2	0.8	19.0	35	412	6.71	0.00	0.00	1.86	0.00	0.00	0.00	1.86	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	9/5/2012	1408	384		<2.0	<2.0	57	<2.0	<1.0	<1.0	<1.0					0.11		1.8	<0.3	10.0	71	116	6.45	0.00	0.00	0.59	0.00	0.00	0.00	0.59	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-02	11/15/2012	1479	455		<2.0	<2.0	32	5.5	<1.0	<1.0	<1.0	0.014	0.013	<0.003	<0.002	0.03		1.2	<0.3	20.0	17	106	6.49	0.00	0.00	0.33	0.09	0.00	0.00	0.42	0.00	0.00	0.00	0.79	0.21	0.00
BDC-05-02	2/26/2013	1582	558		<1.0	<1.0	1.2	2.7	1.4	<1.0	<1.0					0.12		1.2	<0.30	17.0	45	32.2	6.66	0.00	0.00	0.01	0.04	0.05	0.00	0.06	0.05	0.00	0.00	0.12	0.41	0.47
BDC-05-02	5/22/2013	1667	643		0.3	0.5	0.7	0.6	<1.0	<1.0	<1.0	0.006	0.005	0.002	<0.002	0.21		1.0	0.57	15.0	-316	19.3	7.74	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.00	0.08	0.17	0.32	0.43	0.00
BDC-05-02	8/29/2013	1766	742		0.3	0.4	0.6	0.2	<1.0	<1.0	<1.0					1.96		1.4	<0.30	14.0	-303	15.7	6.34	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.13	0.21	0.43	0.22	0.00
BDC-05-02	11/13/2013	1842	818		0.4	0.5	0.9	0.6	<1.0	<1.0	<1.0	0.008	0.007	0.003	<0.002	2.52		1.8	<0.30	14.0	-272	26.8	6.42	0.00	0.00	0.01	0.01	0.00	0.00	0.03	0.00	0.10	0.15	0.37	0.38	0.00
BDC-05-02	2/11/2014	1932	908		0.8	<0.2	<0.2	<0.2	<1.0	<3.0	<1.0					4.01		2.8	<0.30	12.0	-235	7.1	6.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
BDC-05-02	5/13/2014	2023	999		0.8	1.1	1.5	2.4	5.1	<1.0	<1.0	0.023	0.019	0.003	<0.002	4.23		1.8	5.7	15.0	-380	66.5	6.62	0.00	0.01	0.02	0.04	0.18	0.00	0.07	0.18	0.02	0.03	0.06	0.15	0.73
BDC-05-02	8/6/2014	2108	1084		<1.0	<1.0	<1.0	4.1	40	11	<1.0					7.61		1.5	3.6	17.0	-215	93.4	7.20	0.00	0.00	0.00	0.07	1.43	0.37	0.07	1.79	0.00	0.00	0.00	0.04	0.96
BDC-05-02	11/11/2014	2205	1181		1.5	0.7	2.3	0.6	<1.0	12	<1.0	0.039	0.032	0.003	<0.002	0.05		1.0	1.2	13.0	-80	38.2	6.22	0.01	0.01	0.02	0.01	0.00	0.40	0.05	0.40	0.02	0.01	0.05	0.02	0.89
BDC-05-02	1/21/2015	2276	1252		1.2	0.6	1.7	1.7	<1.0	4.7	<1.0					0.16		0.6	8.9	12.0	-135	40	6.36	0.01	0.00	0.02	0.03	0.00	0.16	0.06	0.16	0.03	0.02	0.08	0.13	0.73
BDC-05-02	4/27/2015	2372	1348		2.7	1.1	1.2	3.4	3.0	6.4	<1.0	0.018	0.011	0.004	<0.002	0.07		2.0	14.3	9.8	-63	15.9	6.39	0.02	0.01	0.01	0.05	0.11	0.21	0.09	0.32	0.04	0.02	0.03	0.13	0.78
BDC-05-02	7/20/2015	2456	1432		1.8	1.4	0.7	0.7	<1.0	11	<1.0					0.15		1.9	9.5	8.0	-67	15.3	6.36	0.01	0.01	0.01	0.01	0.00	0.37	0.04	0.37	0.03	0.03	0.02	0.03	0.90
BDC-05-02	10/28/2015	2556	1532		0.8	<0.2	0.6	0.4	<1.0	<1.0	<1.0	0.002	0.002	0.006	<0.002	0.21		0.8	0.70	9.2	-5.7	3.8	6.29	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.00	0.28	0.00	0.36	0.37	0.00
BDC-05-02	1/26/2016	2646	1622		4.9	1.7	1.4	1.8	2.1	5.5	<1.0					0.22		1.4	23.7	10.0	-28	20.9	6.40	0.03	0.01	0.01	0.03	0.07	0.18	0.09	0.26	0.09	0.04	0.04	0.08	0.75
BDC-05-02	4/20/2016	2731	1707		4.2	1.4	0.8	0.6	<1.0	4.4	<1.0	0.005	0.002	0.008	0.004	0.09		1.8	14.5	8.8	-9.8	13.6	6.26	0.03	0.01	0.01	0.01	0.00	0.15	0.05	0.15	0.13	0.05	0.04	0.05	0.73
BDC-05-02	8/9/2016	2842	1818		1.6	1.6	0.3	<0.2	<1.0	4.9	<1.0	0.021	0.011	<0.002	<0.002	0.50		1.4	3.8	12.0	-101.3	14.4	6.28	0.01	0.01	0.00	0.00	0.00	0.16	0.02	0.16	0.05	0.06	0.02	0.00	0.87
BDC-05-02	11/2/2016	2927	1903		1.7	<0.2	<0.2	<0.2	<1.0	<1.0	<1.0	0.003	0.002	<0.002	<0.002	0.50		0.6	<0.30	10.0	-83.5	6.0	6.42	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	1.00	0.00	0.00	0.00	0.00
BDC-05-02	2/7/2017	3024	2000		2.1	1.6	0.5	0.5	1.2	5.4	<1.0	0.004	0.002	0.002	<0.002	0.40		2.4	18.8	9.6	-72.5	10.7	6.65	0.01	0.01	0.01	0.01	0.04	0.18	0.04	0.22	0.05	0.05	0.02	0.03	0.85
BDC-05-02	5/4/2017	3110	2086		4.2	2.0	0.4	0.4	<1.0	3.6	<1.0	0.002	0.001	0.007	0.004	0.48		0.8	23.2	5.0	27.5	15.6	6.34	0.03	0.02	0.00	0.01	0.00	0.12	0.05	0.12	0.15	0.09	0.02	0.04	0.70
BDC-05-02	8/1/2017	3199	2175		3.9	2.5	0.3	<0.2	<1.0	8.2	<1.0	0.012	0.009	<0.002	<0.002	0.13		1.6	18.4	8.0	-14.1	12.3	6.07	0.02	0.02	0.00	0.00	0.00	0.27	0.05	0.27	0.07	0.06	0.01	0.00	0.86
BDC-05-02	11/6/2017	3296	2272	-4	1.3	3.6	0.3	<0.2	<1.0	3.5	<1.0	0.013	0.011	<0.002	<0.002	1.12		1.8	13.0	10.0	-5.0	10.5	6.53	0.01	0.03	0.00	0.00	0.00	0.12	0.04	0.12	0.05	0.18	0.02	0.00	0.75
BDC-05-02	5/2/2018	3473	2449	173	3.7	3.75	15.4	1.83	<1.14	<1.23	<1.06	0.039	0.035	<0.050	<0.050	0.66		8.6	135	10.2	3.2	9629	5.16	0.02	0.03	0.16	0.03	0.00	0.00	0.24	0.00	0.09	0.12	0.66	0.12	0.00
BDC-05-02	11/6/2018	3661	2637	361	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	<1.06	0.044	0.033	0.035	<0.010	2.08		1.2	<1.0	9.3	-179.4	1723	6.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-02	5/3/2019	3839	2815	539	0.41	0.21	1.10	<0.2	<1.14	<1.23	<1.06	0.041	0.036	0.018	<0.010	1.09			6.21	15.7	-156.7	1360	6.64	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.16	0.10	0.74	0.00	0.00
BDC-05-02	11/6/2019	4026	3002	726	<0.2	<0.2	0.70	<0.2	<1.14	<1.23	<1.06	0.025	0.025	0.016	<0.010	1.29		0.0	1.52	4.35	-48.1	1233	6.71	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-03	5/21/2007	-526			3.5	8.1	11	<1.0				0.003	<0.001	0.004	<0.002									0.02	0.06	0.11	0.00			0.20		0.11	0.31	0.58	0.00	
(IW 2017)	11/26/2007	-337			2.3	4.4	7.2	<1.0				0.002	<0.001	0.003	<0.002									0.01	0.03	0.07	0.00			0.12		0.11	0.28	0.61	0.00	
	5/22/2008	-159			3.8	8.5	13	<0.2				0.002	<0.001	0.003	<0.002									0.02	0.06	0.13	0.00			0.22		0.10	0.29	0.60	0.00	
BDC-05-03	10/23/2008	-5			4.2	8.2	17	<0.2	<1.1	<1.2	<1.1	0.004	0.002	0.004	0.002	0.37	<0.1	0.1	4.9	2.1	48.9	4.9	6.23	0.03	0.06	0.18	0.00	0.00	0.00	0.26	0.00	0.10	0.24	0.67	0.00	0.00
BDC-05-03	11/20/2008	23			1.8	2.1	2.7	<0.2	<1.1	<1.2	<1.1	0.003	0.001	0.004	<0.002	2.07	0.9	1.6	8.5	3.6	-8	7.0	6.23	0.01	0.02	0.03	0.00	0.00	0.00	0.05	0.00	0.20	0.29	0.51	0.00	0.00
BDC-05-03	12/16/2008	49			2.2	4.1	5.8	<1.0	<1.1	<1.2	<1.1	0.001	<0.001	0.002	<0.002	1.20	0.4	2.4	20.1	4.7	-67	5.4	6.44	0.01	0.03	0.06	0.00	0.00	0.00	0.10	0.00	0.13	0.30	0.57	0.00	0.00
BDC-05-03	1/16/2009	80			1.5	1.2	<1.0	<1.0	<1.1	<1.2	<1.1	0.001	<0.001	0.002	<0.002	0.71	1.7	0.4	10.3	1.5 J	-144	3.2	6.17	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.50	0.50	0.00	0.00	0.00
BDC-05-03	2/11/2009	106			1.8	3.2	4.4	<1.0	<1.1	<1.2	<1.1	0.002	<0.001	0.002	<0.002	2.43	0.9	2.4	6.2	5.4	-60	5.4	6.59	0.01	0.02	0.05	0.00	0.00	0.00	0.08	0.00	0.13	0.30	0.56	0.00	0.00
BDC-05-03	3/9/2009	132			1.3	1.7	1.4	<1.0	<1.1	<1.2	<1.1	<0.001	<0.001	<0.002	<0.002	0.86	1.0	1.0	6.6	4.3	39	4.8	6.48	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.00	0.22	0.37	0.41	0.00	0.00
BDC-05-03	4/16/2009	170			1.5	2.2	2.8	<1.0	<1.1	<1.2	<1.1	0.001	0.002	<0.002	<0.002	1.42	1.0	1.4	4.8	3.3	14	5.4	6.69	0.01	0.02	0.03	0.00	0.00	0.00	0.05	0.00	0.17	0.31	0.53	0.00	0.00
BDC-05-03	5/13/2009	197			1.2	2.1	3.4	<1.0	<1.1	<1.2		0.001	0.0004	0.004	0.002	1.06	1.0	3.0	4.8	6.9	31	5.5	6.75	0.01	0.02	0.04	0.00	0.00	0.00	0.06	0.00	0.12	0.27	0.60	0.00	0.00
BDC-05-03	8/16/2009	292			2.2	4.3	8.1	<1.0	<1.1	<1.2	<1.1	0.001	0.001	<0.002	<0.002	0.85	0.1	3.0	3.0	8.3	-42	6.5	7.11	0.01	0.03	0.08	0.00	0.00	0.00	0.13	0.00	0.10	0.25	0.64	0.00	0.00
BDC-05-03	11/13/2009	381			1.2	1.2	<1.0	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.003	<0.002	1.66	0.2	3.0	5.6	5.0	57	4.3	6.37	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.44	0.56	0.00	0.00	0.00
BDC-05-03	2/16/2010	476			1.4	1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.002	<0.001	0.005	0.005	1.25	2.5	0.0	8.6	<0.0007	663	3.5	6.30	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.53	0.47	0.00	0.00	0.00
BDC-05-03	5/18/2010	567			1.2	1.8	2.7	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.004	0.003	0.88	1.5	2.0	4.9	2.4	346	4.7	6.42	0.01	0.01	0.03	0.00	0.00	0.00	0.05	0.00	0.15	0.28	0.57	0.00	0.00
BDC-05-03	8/17/2010	658			2.3	5.2	14	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.003	<0.002	2.10	0.2	2.7	2.8	7.1	73	7.6	6.79	0.01	0.04	0.14	0.00	0.00	0.00	0.20	0.00	0.07	0.20	0.73	0.00	0.00
BDC-05-03	11/9/2010	742			1.4	1.7	3.7	<1.0	<1.1	<1.2	<1.1	0.001	0.001	0.003	<0.002	3.20	0.5	2.2	5.3	3.0	133	4.7	7.61	0.01	0.01	0.04	0.00	0.00	0.00	0.06	0.00	0.14	0.22	0.64	0.00	0.00
BDC-05-03	2/15/2011	840			1.3	<1.0	2.3	<1.0	<1.1	<1.2	<1.1	0.001	0.0003	0.005	0.003	2.86	0.7	0.0	6.2	4.6	166	5.4	7.01	0.01	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.25	0.00	0.75	0.00	0.00
BDC-05-03	5/2/2011	916	-108		1.7	1.0	0.2	<0.2	<1.1	<1.2	<1.1	0.002	0.0004	0.005	0.003	3.31	0.8	0.0	5.5	0.3	203	4.1	6.91	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.51	0.38	0.10	0.00	0.00

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-03	11/2/2011	1100	76		1.4	1.6	20	2.0				0.018	0.017	0.004	0.002	1.20	<0.1	1.6	<1.0		-60	70.0	6.72	0.01	0.01	0.21	0.03			0.26		0.03	0.05	0.80	0.12	
BDC-05-03	5/6/2012	1286	262		0.6	1.3	<0.2	0.3				0.002	0.004	0.003	0.010	0.02		1.2	10.3		82	4.9	6.26	0.00	0.01	0.00	0.00			0.02		0.20	0.54	0.00	0.26	
BDC-05-03	11/13/2012	1477	453		<0.5	<0.5	<0.5	0.7				0.008	0.007	0.003	<0.002	0.01		0.3	1.2		13	8.3	6.79	0.00	0.00	0.00	0.01			0.01		0.00	0.00	0.00	1.00	
BDC-05-03	5/22/2013	1667	643		0.4	0.5	0.4	1.1				0.004	0.003	<0.002	<0.002	0.23		0.8	2.7		-264	6.6	7.57	0.00	0.00	0.00	0.02			0.03		0.09	0.14	0.15	0.63	
BDC-05-03	11/13/2013	1842	818		1.3	1.2	0.2	<0.2	<1.0	<1.0	<1.0	0.008	0.001	0.003	<0.002	3.19		1.6	10.5	0.45	-272	4.3	6.24	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.41	0.48	0.11	0.00	0.00
BDC-05-03	5/13/2014	2023	999		1.5	0.7	<0.2	<0.2	<1.0	1.1	<1.0	0.003	<0.001	0.002	<0.002	4.08		1.4	9.6	1.00	-206	5.4	6.30	0.01	0.01	0.00	0.00	0.00	0.04	0.01	0.04	0.18	0.10	0.00	0.00	0.72
BDC-05-03	11/10/2014	2204	1180		2.1	0.6	<0.2	<0.2	<1.0	<1.0	<1.0	0.002	0.001	0.003	<0.002	0.07		0.8	5.6	0.07	81	1.1	5.72	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.73	0.27	0.00	0.00	0.00
BDC-05-03	4/27/2015	2372	1348		1.5	0.4	<0.2	0.4	<1.0	<1.0	<1.0	0.002	0.003	0.004	<0.002	0.93		0.6	4.1	0.74	43	1.7	5.85	0.01	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.49	0.16	0.00	0.35	0.00
BDC-05-03	10/28/2015	2556	1532		0.6	0.4	<0.2	0.3	<1.0	1.1	<1.0	0.012	0.006	0.009	0.002	0.09		1.0	1.2	5.9	-13	6.5	6.40	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.04	0.08	0.06	0.00	0.10	0.76
BDC-05-03	4/20/2016	2731	1707		1.2	0.2	<0.2	<0.2	<1.0	<1.0	<1.0	0.002	0.002	0.003	<0.002	0.58			6.5	2.8	41	1.4	5.97	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.83	0.17	0.00	0.00	0.00
BDC-05-03	11/3/2016	2928	1904		1.4	0.3	<0.2	<0.2	<1.0	<1.0	<1.0	0.007	0.006	<0.002	<0.002	0.77		3.0	7.7	0.31	5.4	2.3	5.91	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.79	0.21	0.00	0.00	0.00
BDC-05-03	5/4/2017	3110	2086		1.4	0.3	<0.2	<0.2	<1.0	<1.0	<1.0	0.003	<0.0004	0.003	<0.002	1.95		0.0	7.2	<3.0	72.5	2.8	5.63	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.79	0.21	0.00	0.00	0.00
BDC-05-03	11/6/2017	3296	2272	-4	0.2	<0.2	<0.2	0.3	<1.0	3.4	<1.0	0.012	0.009	0.005	<0.002	0.22		3.6	<0.30	10.0	20.3	7.3	6.28	0.00	0.00	0.00	0.00	0.00	0.11	0.01	0.11	0.01	0.00	0.00	0.04	0.95
BDC-05-03	5/2/2018	3473	2449	173	<2.0	<2.0	2.49	<2.0	<1.14	<1.23	<1.06	0.027	0.019	<0.050	<0.050	0.65		7.8	<1.0	9.07	1.2	4463	5.45	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-03	11/6/2018	3661	2637	361	<2.0	<2.0	5.27	<2.0	<1.14	<1.23	<1.06	0.029	0.018	0.046	0.004	1.30		1.2	0.616	10.5	-162	940.8	6.70	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-03	5/2/2019	3838	2814	538	<0.2	0.22	4.08	1.86	<1.14	<1.23	<1.06	0.034	0.026	0.045	0.008	0.28		7.0	<0.50	10.1	-136.4	573.5	6.32	0.00	0.00	0.04	0.03	0.00	0.00	0.07	0.00	0.00	0.02	0.57	0.40	0.00
BDC-05-03	11/6/2019	4026	3002	726	<0.2	<0.2	0.87	2.56	<1.14	<1.23	<1.06	0.016	0.010	0.039	0.004	0.49		3.0	0.361	10.6	-5.1	432.6	6.58	0.00	0.00	0.01	0.04	0.00	0.00	0.05	0.00	0.00	0.00	0.18	0.82	0.00
BDC-05-04	5/21/2007	-526			<1.0	<1.0	1.4	<1.0				0.018	<0.001	<0.002	<0.002									0.00	0.00	0.01	0.00			0.01		0.00	0.00	1.00	0.00	
(IW 2017)	11/26/2007	-337			<1.0	<1.0	1.6	<1.0				0.009	<0.001	<0.002	<0.002									0.00	0.00	0.02	0.00			0.02		0.00	0.00	1.00	0.00	
	5/22/2008	-159			1.5	0.9	1.2	<0.2				0.018	<0.001	<0.002	<0.002									0.01	0.01	0.01	0.00			0.03		0.32	0.24	0.44	0.00	
BDC-05-04	10/23/2008	-5			1.1	0.8	2.1	<0.2	<1.1	<1.2	<1.1	0.009	<0.001	<0.002	<0.002	2.45	7.6	0.1	31.0	0.3	73.5	3.8	6.33	0.01	0.01	0.02	0.00	0.00	0.00	0.03	0.00	0.19	0.18	0.63	0.00	0.00
BDC-05-04	11/20/2008	23			1.1	0.7	3.6	<0.2	<1.1	<1.2	<1.1	0.019	<0.001	<0.002	<0.002	0.59	4.5	0.8	25,2	0.05	-16	5.1	6.25	0.01	0.01	0.04	0.00	0.00	0.00	0.05	0.00	0.14	0.11	0.76	0.00	0.00
BDC-05-04	12/16/2008	49			<1.0	<1.0	2.4	<1.0	<1.1	<1.2	<1.1	0.019	0.002	0.003	<0.002	0.55	5.5	1.0	30.4	1.6	-98	6.9	6.24	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	1/16/2009	80			<1.0	<1.0	2.0	<1.0	<1.1	<1.2	<1.1	0.017	<0.001	<0.002	<0.002	0.06	4.3	1.0	21.8	1.5	-192	5.1	6.23	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	2/11/2009	106			1.0	<1.0	1.5	<1.0	<1.1	<1.2	<1.1	0.020	<0.001	<0.002	<0.002	2.45	5.9	1.0	31.8	1.1	-54	6.8	6.17	0.01	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.28	0.00	0.72	0.00	0.00
BDC-05-04	3/9/2009	132			1.0	<1.0	1.3	<1.0	<1.1	<1.2	<1.1	0.014	0.001	0.002	<0.002	0.27	4.8	1.5	30.1	0.2	35	5.2	6.22	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.31	0.00	0.69	0.00	0.00
BDC-05-04	4/16/2009	170			1.2	<1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.011	0.001	<0.002	<0.002	1.48	5.9	1.4	33.6	<0.0007	68	5.7	6.29	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	1.00	0.00	0.00	0.00	0.00
BDC-05-04	5/13/2009	197			<1.0	<1.0	1.0	<1.0	<1.1	<1.2		0.007	0.001	0.002	0.002	0.33	4.5	1.6	26.6	0.4	49	5.2	6.37	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	8/16/2009	292			1.3	<1.0	<1.0	<1.0	<1.1	<1.2	<1.1	0.012	0.001	0.002	<0.002	0.86	5.4	2.2	30.6	<0.0007	93	5.0	6.97	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	1.00	0.00	0.00	0.00	0.00
BDC-05-04	11/13/2009	381			<1.0	<1.0	1.2	<1.0	<1.1	<1.2	<1.1	0.005	0.001	<0.002	<0.002	0.56	2.2	3.0	18.4	2.4	109	4.4	5.86	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	2/16/2010	476			<1.0	<1.0	1.1	<1.0	<1.1	<1.2	<1.1	0.004	0.002	0.012	0.002	0.88	<0.1	3.3	24.6	1.5	899	8.9	6.24	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	5/18/2010	567			1.1	<1.0	1.2	<1.0	<1.1	<1.2	<1.1	0.014	0.001	0.005	<0.002	0.75	<0.1	3.0	25.4	1.3	473	7.1	6.19	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.35	0.00	0.65	0.00	0.00
BDC-05-04	8/17/2010	658			<1.0	<1.0	3.0	<1.0	<1.1	<1.2	<1.1	0.012	0.002	0.006	<0.002	1.00	<0.1	2.8	17.7	3.5	108	8.7	6.48	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	11/9/2010	742			<1.0	<1.0	4.3	<1.0	<1.1	<1.2	<1.1	0.008	0.004	<0.002	<0.002	2.21	<0.1	2.2	21.3	3.0	101	7.2	6.84	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	2/15/2011	840			<1.0	<1.0	2.9	<1.0	<1.1	<1.2	<1.1	0.007	0.004	<0.002	<0.002	2.50	<0.1	2.4	19.4	4.5	93	6.9	6.85	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-04	5/2/2011	916	-108		0.4	0.5	3.1	<0.2	<1.1	<1.2	<1.1	0.008	0.004	<0.002	<0.002	1.69	<0.1	2.2	18.0	1.8	49	6.8	6.76	0.00	0.00	0.03	0.00	0.00	0.00	0.04	0.00	0.06	0.10	0.84	0.00	0.00
BDC-05-04	11/2/2011	1100	76		<1.0	<1.0	4.2	<1.0				0.007	0.006	<0.002	<0.002	1.52	<1.0	1.2	<1.0		-3	6.6	7.17	0.00	0.00	0.04	0.00			0.04		0.00	0.00	1.00	0.00	
BDC-05-04	5/7/2012	1287	263		0.4	0.6	3.6	<0.2				0.017	0.016	<0.002	<0.002	0.16		2.0	21.5		98	8.6	6.39	0.00	0.00	0.04	0.00			0.04		0.05	0.10	0.84	0.00	
BDC-05-04	11/13/2012	1477	453		<0.5	<0.5	3.3	<0.5				0.012	0.010	0.002	<0.002	0.02		1.2	14.3		27	6.5	6.65	0.00	0.00	0.03	0.00			0.03		0.00	0.00	1.00	0.00	
BDC-05-04	5/23/2013	1668	644		<0.2	<0.2	2.1	<0.2				0.026	0.027	<0.002	<0.002	0.49		1.5	13.7		-310	12.7	7.78	0.00	0.00	0.02	0.00			0.02		0.00	0.00	1.00	0.00	
BDC-05-04	11/13/2013	1842	818		<0.2	0.3	3.6	<0.2				0.016	0.015	0.002	<0.002	2.05		1.8	14.4		-262	8.1	6.48	0.00	0.00	0.04	0.00			0.04		0.00	0.06	0.94	0.00	
BDC-05-04	5/13/2014	2023	999		0.6	0.3	0.8	<0.2				0.002	0.002	0.005	0.002	3.86		0.6	14.1		-177	8.2	6.28	0.00	0.00	0.01	0.00			0.01		0.26	0.16	0.58	0.00	
BDC-05-04	11/11/2014	2205	1181		0.3	0.2	2.8	0.4				0.006	0.004	<0.002	<0.002	0.38		1.6	6.2		-58	4.8	6.25	0.00	0.00	0.03	0.01			0.04		0.05	0.04	0.75	0.17	
BDC-05-04	4/27/2015	2372	1348		1.0	0.4	1.0	<0.2				0.004	0.001	0.005	0.003	0.09		0.4	16.3		48	2.7	5.92	0.01	0.00	0.01	0.00			0.02		0.31	0.16	0.53	0.00	
BDC-05-04	10/28/2015	2556	1532		<0.2	<0.2	3.6	0.7				0.008	0.007	<0.002	<0.002	0.43		1.4	1.3		-26	6.1	6.44	0.00	0.00	0.04	0.01			0.05		0.00	0.00	0.77	0.23	
BDC-05-04	4/21/2016	2732	1708		1.0	0.3	0.4	<0.2				0.002	0.001	0.004	0.003	0.25		0.8	12.2		35	2.4	6.05	0.01	0.00	0.00	0.00			0.01		0.48	0.18	0.33	0.00	
BDC-05-04	11/2/2016	2927	1903		<0.2	<0.2	1.5	<0.2				0.008	0.008	<0.002	<0.002	0.39	<0.10	1.4	0.75		-140.5	7.4	6.51	0.00	0.00	0.02	0.00			0.02		0.00	0.00	1.00	0.00	
BDC-05-04	5/3/2017	3109	2085		1.2	0.4	0.3	<0.2				0.001	0.001	0.003	0.003	0.42	8.8	0.6	12.0		73.8	3.3	5.71	0.01	0.00	0.00	0.00			0.01		0.54	0.23	0.23	0.00	
BDC-05-04	11/6/2017	3296	2272	-4	0.3	0.3	1.1	<0.2	<1.0	<1.0	<1.0	0.012	0.010	<0.002	<0.002	0.93	<0.05	2.0	2.7	5.9	-28.3	9.2	6.71	0.00	0.00	0.01	0.00			0.02		0.12	0.15	0.73	0.00	
BDC-05-04	5/2/2018	3473	2449	173	<2.0	<2.0	4.1	<2.0	<1.14	<1.23	<1.06	0.012	0.007	<0.010	<0.010	4.25		4.7	<1.0	14	-107	1246	5.68	0.00	0.00	0.04	0.00			0.04		0.00	0.00	1.00	0.00	
BDC-05-04	11/7/2018	3662	2638	362	<0.2	<0.2	5.31	<0.2	<1.14	<1.23	<1.06	0.014	0.011	0.003	<0.001	0.97	<0.10	1.8	0.842	13.2	-24.8	119.3	6.21	0.00	0.00	0.05	0.00			0.05		0.00	0.00	1.00	0.00	
BDC-05-04	5/3/2019	3839	2815	539	<0.2	0.21	2.02	<0.2	<1.14	<1.23	<1.06	0.015	0.012	0.006	<0.001	0.78	<0.10	3.3	8.21	13.3	-106.2	101.0	6.47	0.00	0.00	0.02	0.00			0.02		0.00	0.07	0.93	0.00	
BDC-05-04	11/6/2019	4026	3002	726	<0.2	<0.2	2.08	0.48	<1.14	<1.23	<1.06	0.017	0.012	0.004	<0.001	0.02	<0.10	1.5	4.68	8.16	-85.5	48.80	6.23	0.00	0.00	0.02	0.01			0.03		0.00	0.00	0.74	0.26	

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-05	5/21/2007	-526			<1.0	<1.0	<1.0	<1.0				0.002	<0.001	0.003	<0.002								0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
(MW UG)	11/26/2007	-337			<1.0	<1.0	<1.0	<1.0				<0.001	<0.001	<0.002	<0.002								0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
	5/22/2008	-159			0.3	0.8	<0.2	<0.2				0.002	<0.001	0.003	<0.002								0.00	0.01	0.00	0.00			0.01		0.23	0.77	0.00	0.00	
BDC-05-05	10/23/2008	-5																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	11/20/2008	23			0.3	0.7	<0.2	<0.2				0.005	0.001	0.005	0.003	4.61					52		6.25	0.00	0.01	0.00	0.00			0.01		0.25	0.75	0.00	0.00	
BDC-05-05	12/16/2008	49																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	1/16/2009	80																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	2/11/2009	106																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	3/9/2009	132																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	4/16/2009	170																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	5/13/2009	197			<1.0	<1.0	<1.0	<1.0				0.003	<0.001	0.006	0.002	3.24					68		6.72	0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	8/16/2009	292																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	11/13/2009	381			<1.0	<1.0	<1.0	<1.0				0.001	<0.001	<0.002	<0.002	2.85	1.2	0.0	8.7		166		5.84	0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	2/16/2010	476																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	5/18/2010	567			<1.0	<1.0	<1.0	<1.0				0.002	0.0004	0.002	<0.002	3.47		0.0			494		6.74	0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	8/17/2010	658																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	11/9/2010	742			<1.0	1.1	<1.0	<1.0				0.001	0.0004	0.003	<0.002	3.20					135		6.90	0.00	0.01	0.00	0.00			0.01		0.00	1.00	0.00	0.00	
BDC-05-05	2/15/2011	840																					0.00	0.00	0.00	0.00			0.00		0.00	0.00	0.00	0.00	
BDC-05-05	5/2/2011	916	-108		0.3	0.8	<0.2	<0.2				0.001	0.0003	0.003	<0.002	3.40					158		6.98	0.00	0.01	0.00	0.00			0.01		0.23	0.77	0.00	0.00	
BDC-05-05	11/2/2011	1100	76		<1.0	1.2	<1.0	<1.0				0.001	0.0003	0.002	0.003	2.84	<0.1	0.0	7.5		85	1.7	7.66	0.00	0.01	0.00	0.00			0.01		0.00	1.00	0.00	0.00	
BDC-05-05	5/6/2012	1286	262		0.4	0.9	<0.2	<0.2				<0.001	<0.001	0.003	<0.002	3.23		0.0	22.1		219	1.1	6.42	0.00	0.01	0.00	0.00			0.01		0.26	0.74	0.00	0.00	
BDC-05-05	11/13/2012	1477	453		<0.5	1.1	<0.5	<0.5	<1.0	<1.0	<1.0	0.001	0.0005	0.003	<0.002	1.76		0.2	20.6	<0.003	27	<1.0	6.82	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	1.00	0.00	0.00	0.00
BDC-05-05	5/23/2013	1668	644		0.3	0.9	<0.2	<0.2				0.001	0.001	<0.002	<0.002	4.69		0.7	11.7		-165	1.5	7.35	0.00	0.01	0.00	0.00			0.01		0.21	0.79	0.00	0.00	
BDC-05-05	11/14/2013	1843	819		0.5	1.1	<0.2	<0.2				<0.001	<0.001	0.003	<0.002	1.95		0.0	21.8		-219	<1.0	6.70	0.00	0.01	0.00	0.00			0.01		0.26	0.74	0.00	0.00	
BDC-05-05	5/13/2014	2023	999		0.4	0.9	<0.2	<0.2				<0.001	<0.001	<0.002	<0.002	4.35		0.0	18.6		-108	3.6	6.60	0.00	0.01	0.00	0.00			0.01		0.26	0.74	0.00	0.00	
BDC-05-05	11/11/2014	2205	1181		0.3	0.8	<0.2	<0.2				0.001	0.001	<0.002	<0.002	2.50		0.0	12.5		92	<1.0	6.25	0.00	0.01	0.00	0.00			0.01		0.23	0.77	0.00	0.00	
BDC-05-05	4/27/2015	2372	1348		0.4	1.0	<0.2	<0.2				0.001	0.001	0.003	<0.002	3.14		0.0	16.1		31	<1.0	6.25	0.00	0.01	0.00	0.00			0.01		0.24	0.76	0.00	0.00	
BDC-05-05	10/28/2015	2556	1532		0.4	0.9	<0.2	<0.2				0.001	<0.0004	<0.002	<0.002	0.81		0.3	13.2		0	<1.0	6.39	0.00	0.01	0.00	0.00			0.01		0.26	0.74	0.00	0.00	
BDC-05-05	4/21/2016	2732	1708		0.3	0.6	<0.2	<0.2				0.001	<0.0004	<0.002	<0.002	4.00		0.0	13.4		14.5	<1.0	6.37	0.00	0.00	0.00	0.00			0.01		0.28	0.72	0.00	0.00	
BDC-05-05	11/2/2016	2927	1903		0.8	1.5	<0.2	<0.2				0.001	0.0004	0.003	0.003	0.29		0.2	35.7		6.6	3.2	6.54	0.00	0.01	0.00	0.00			0.02		0.30	0.70	0.00	0.00	
BDC-05-05	5/3/2017	3109	2085		0.4	0.7	<0.2	<0.2				0.001	<0.0004	0.003	<0.002	4.43		0.0	21.3		74.9	1.9	6.29	0.00	0.01	0.00	0.00			0.01		0.31	0.69	0.00	0.00	
BDC-05-05	11/6/2017	3296	2272	-4	0.5	1.0	<0.2	<0.2				0.001	<0.0004	0.004	0.002	0.87		0.0	39.0		-29.2	2.7	6.63	0.00	0.01	0.00	0.00			0.01		0.28	0.72	0.00	0.00	
BDC-05-05	5/2/2018	3473	2449	173	0.32	0.54	<0.2	<0.2				0.001	0.0003	0.002	0.002	4.03		0.0	24.6		191.6	1.9	6.25	0.00	0.00	0.00	0.00			0.01		0.32	0.68	0.00	0.00	
BDC-05-05	11/7/2018	3662	2638	362	0.69	1.17	<0.2	<0.2				0.001	0.0004	0.003	0.003	0.66		0.0	37.5		127.8	2.38	6.33	0.00	0.01	0.00	0.00			0.01		0.32	0.68	0.00	0.00	
BDC-05-05	5/3/2019	3839	2815	539	0.41	0.70	<0.2	<0.2				0.001	0.0003	0.003	0.002	4.89		0.4	36.3		6.1	1.85	6.57	0.00	0.01	0.00	0.00			0.01		0.32	0.68	0.00	0.00	
BDC-05-05	11/5/2019	4025	3001	725	0.66	1.04	<0.2	<0.2				0.001	0.0004	0.003	0.003	0.11		0.0	33.6		33.4	2.52	6.62	0.00	0.01	0.00	0.00			0.01		0.33	0.67	0.00	0.00	
BDC-05-07	5/21/2007	-526			30	22	10	<1.0				0.003	<0.001	0.014	0.009									0.18	0.17	0.10	0.00			0.45		0.40	0.37	0.23	0.00	
(IW 2011, 2017)	11/26/2007	-337			28	25	11	<1.0				<0.001	<0.001	0.011	0.002									0.17	0.19	0.11	0.00			0.47		0.36	0.40	0.24	0.00	
	5/22/2008	-159			33	32	9.2	<0.2				0.002	<0.001	0.012	0.006									0.20	0.24	0.09	0.00			0.54		0.37	0.45	0.18	0.00	
BDC-05-07	10/23/2008	-5			22	24	14	<0.2	<1.1	<1.2	<1.1	0.004	0.002	0.022	0.013	9.71	9.6	0.0	33.4	0.6	86.0	7.8	6.47	0.13	0.18	0.14	0.00	0.00	0.00	0.46	0.00	0.29	0.40	0.31	0.00	0.00
BDC-05-07	11/20/2008	23			17	17	4.9	<0.2	<1.1	<1.2	<1.1	0.003	<0.001	0.016	0.010	0.60	2.2	0.4	15.8	0.2	-27	4.6	6.46	0.10	0.13	0.05	0.00	0.00	0.00	0.28	0.00	0.36	0.46	0.18	0.00	0.00
BDC-05-07	12/16/2008	49			16	25	7.2	<1.0	<1.1	<1.2	<1.1	0.003	0.001	0.016	0.012	1.20	4.8	0.0	29.4	0.6	-107	6.1	6.49	0.10	0.19	0.07	0.00	0.00	0.00	0.36	0.00	0.27	0.53	0.21	0.00	0.00
BDC-05-07	1/16/2009	80			20	23	6.4	<1.0	<1.1	<1.2	<1.1	0.002	<0.001	0.013	0.008	0.00	8.4	0.0	32.6	0.03	-182	6.3	6.38	0.12	0.18	0.07	0.00	0.00	0.00	0.36	0.00	0.33	0.48	0.18	0.00	0.00
BDC-05-07	2/11/2009	106			23	28	9.9	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.017	0.012	2.05	11.2	0.0	37.5	1.5	-68	9.3	6.37	0.14	0.21	0.10	0.00	0.00	0.00	0.45	0.00	0.31	0.47	0.22	0.00	0.00
BDC-05-07	3/9/2009	132			20	21	8.4	<1.0	<1.1	<1.2	<1.1	<0.002	<0.001	0.013	0.009	0.00	8.8	0.3	35.3	5.5	-23	6.8	6.37	0.12	0.16	0.09	0.00	0.00	0.00	0.37	0.00	0.33	0.44	0.24	0.00	0.00
BDC-05-07	4/16/2009	170			20	21	11	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.015	0.008	0.27	8.2	0.0	31.2	5.1	35	8.1	6.43	0.12	0.16	0.11	0.00	0.00	0.00	0.39	0.00	0.31	0.41	0.29	0.00	0.00
BDC-05-07	5/13/2009	197			11	13	7.5	<1.0	<1.1	<1.2		0.002	0.001	0.016	0.008	0.29	6.8	0.4	27.2	7.9	34	7.3	6.47	0.07	0.10	0.08	0.00	0.00	0.00	0.24	0.00	0.27	0.41	0.32	0.00	0.00
BDC-05-07	8/16/2009	292			11	12	13	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.010	<0.002	0.74	2.3	2.0	23.2	6.8	67	8.2	6.73	0.07	0.09	0.13	0.00	0.00	0.00	0.29	0.00	0.23	0.31	0.46	0.00	0.00
BDC-05-07	11/13/2009	381			6.5	5.3	5.6	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.004	<0.002	0.50	<0.1	2.8	5.7	4.7	16	9.1	6.48	0.04	0.04	0.06	0.00	0.00	0.00	0.14	0.00	0.29	0.29	0.42	0.00	0.00
BDC-05-07	2/16/2010	476			6.4	6.9	28	<1.0	<1.1	<1.2	<1.1	0.004	0.003	0.017	0.006	1.04	<0.1	2.5	20.4	5.2	839	14.7	6.88	0.04	0.05	0.29	0.00	0.00	0.00	0.38	0.00	0.10	0.14	0.76	0.00	0.00
BDC-05-07	5/18/2010	567			5.8	9.2	41	1.2	<1.1	<1.2	<1.1	0.009	0.003	0.009	<0.002	1.06	<0.5	2.0	16.4	6.0	525	14.8	6.77	0.03	0.07	0.42	0.02	0.00	0.00	0.55	0.00	0.06	0.13	0.77	0.04	0.00
BDC-05-07	8/17/2010	658			2.8	7.8	19	<1.0	<1.1	<1.2	<1.1	0.006	0.003	0.008	<0.002	2.30	<0.1	2.5	8.6	7.1	-15	18.8	7.34	0.02	0.06	0.20	0.00	0.00	0.00	0.27	0.00	0.06	0.22	0.72	0.00	0.00
BDC-05-07	11/9/2010	742			<1.0	9.4	20	<1.0	<1.1	<1.2	<1.1	0.008	0.005	0.009	<0.002	2.42	<0.1	2.2	15.2	5.1	13	15.2	7.35	0.00	0.07	0.21	0.00	0.00	0.00	0.28	0.00	0.00	0.26	0.74	0.00	0.00
BDC-05-07	2/15/2011	840			<1.0	8.7	20	<1.0	<1.1	<1.2	<1.1	0.013	0.010	0.012	0.002	3.02	<0.1	2.8	11.8	5.1	21	14.0	7.16	0.00	0.07	0.21	0.00	0.00	0.00	0.27	0.00	0.00	0.24	0.76	0.00	0.00
BDC-05-07	5/2/2011	916	-108		5.2	11	17	<0.2	<1.1	<1.2	<1.1	0.017	0.004	0.014	0.003	2.14	0.1	2.6	15.6	3.2	33	16.8	6.90	0.03	0.08	0.18	0.00	0.00	0.00	0.29	0.00	0.11	0.29	0.60	0.00	0.00
BDC-05-07	11/2/2011	1100	76		11	6.9	39	<1.0	<1.1	<1.2	<1.1	0.042	0.035	0.010	0.006	2.06	<0.1	2.4	<1.0	16.1	-51	1780	6.31	0.07	0.05	0.40	0.00	0.00	0.00	0.52	0.00	0.13	0.10	0.77	0.00	0.00
BDC-05-07	5/7/2012	1287	263		0.8	<0.2	23	0.9	<1.0	<1.0	<1.0	0.026	0.024	0.003	<0.002	0.17		1.6	0.4	27.0	100	48.5	6.34	0.00	0.00	0.24	0.01	0.00	0.00	0.26	0.00	0.02	0.00	0.93	0.06	0.00
BDC-05-07	11/15/2012	1479	455		<0.2	0.4	24	0.8	<1.0	<1.0	<1.0	0.016	0.017	<0.002	<0.002	0.01		1.6	<0.3	23.0	3.0	26	6.60	0.00	0.00	0.25	0.01	0.00	0.00	0.26	0.00	0.00	0.01	0.94	0.05	0.00
BDC-05-07	5/22/2013	1667	643		<0.2	0.3	8.6	0.5	<1.0	<1.0	<1.0	0.006	0.007	<0.002	<0.002	0.17		1.4	0.45	11.0	-372	10.5	8.09	0.00	0.00	0.09	0.01	0.00	0.00	0.10	0.00	0.00	0.02	0.90	0.08	0.00
BDC-05-07	11/13/2013	1842	818		<0.2	<0.2	3.4	1.6	<1.0	1.3	<1.0	0.006	0.007	<0.002	<0.002	2.12		1.2	<0.30	8.5	-276	8.8	6.70	0.00	0.00	0.04	0.03	0.00	0.04	0.06	0.04	0.00	0.00	0.34	0.25	0.42
BDC-05-07	5/13/2014	2023	999		<0.2	0.2	2.5	1.4	<1.0	<1.0	<1.0	0.004	0.004	<0.002	<0.002	3.65		2.0	1.8	3.7	-368	9.1	6.55	0.00	0.00	0.03	0.02	0.00	0.00	0.05	0.00	0.00	0.03	0.52	0.45	0.00
BDC-05-07	11/11/2014	2205	1181		<0.2	<0.2	4.1	13	26	3.0	<1.0	0.006	0.005	<0.002	<0.002	0.21		2.6	0.72	14.0	-74	17.7	6.37	0.00	0.00	0.04	0.21	0.93	0.10	0.25	1.03	0.00	0.00	0.03	0.16	0.80
BDC-05-07	4/27/2015	2372	1348		<0.2	<0.2	0.6	5.3	1.6	<1.0	<1.0	0.004	0.005	<0.002	<0.002	0.06		2.0	<0.30	3.5	-50	5.5	6.27	0.00	0.00	0.01	0.08	0.06	0.00	0.09	0.06	0.00	0.00	0.04	0.57	0.39
BDC-05-07	10/28/2015	2556	1532		0.4	<0.2	1.0	1.9	1.8	1.2	<1.0	0.004	0.004	0.002	<0.002	0.17		1.0	0.41	3.7	-9.9	5.4	6.30	0.00	0.00	0.01	0.03	0.06	0.04	0.04	0.10	0.02	0.00	0.07	0.21	0.71
BDC-05-07	4/20/2016	2731	1707		0.5	<0.2	0.2	3.2	1.3	<1.0	<1.0	0.003	0.003	<0.002	<0.002	0.11		2.0	2.0	5.4	-23	3.8	6.35	0.00	0.00	0.00	0.05	0.05	0.00	0.06	0.05	0.03	0.00	0.02	0.50	0.45
BDC-05-07	11/2/2016	2927	1903		0.8	<0.2	0.2	0.3	<1.0	1.6	<1.0	0.002	0.002	<0.002	<0.002	0.14		0.6	<0.30	8.4	-103	5.5	6.44	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.05	0.07	0.00	0.03	0.07	0.82
BDC-05-07	5/4/2017	3110	2086		1.2	0.3	0.2	0.3	<1.0	<1.0	<1.0	0.001	<0.0004	<0.002	<0.002	0.37		1.0	3.3	3.1	31.4	3.6	6.25	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.44	0.14	0.13	0.29	0.00
BDC-05-07	11/6/2017	3296	2272	-4	0.7	<0.2	<0.2	0.2	<1.0	1.9	<1.0	0.006	0.005	<0.002	<0.002	1.30		1.8	1.5	6.9	-15.8	33.3	7.06	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.06	0.06	0.00	0.00	0.05	0.89

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-07	5/2/2018	3473	2449	173	<2.0	<2.0	3.3	<2.0	<1.14	<1.23	<1.06	0.007	0.006	0.022	<0.010	3.63		7.4	<0.5	16.1	-224.6	626.6	6.57	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-07	11/6/2018	3661	2637	361	<2.0	<2.0	2.01	<2.0	<1.14	<1.23	<1.06	0.004	0.003	0.022	0.003	1.83		2.8	0.335	16.3	-45.8	207.7	6.41	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-07	5/3/2019	3839	2815	539	<0.2	<0.2	1.90	0.93	<1.14	<1.23	<1.06	0.003	0.002	0.005	0.001	2.14		4.5	0.261	21.7	-76.2	158.6	6.40	0.00	0.00	0.02	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.57	0.43	0.00
BDC-05-07	11/6/2019	4026	3002	726	<0.2	<0.2	1.88	0.47	<1.14	<1.23	<1.06	0.002	0.002	0.007	<0.003	0.65		3.0	0.657	12.2	7.1	94.54	6.39	0.00	0.00	0.02	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.72	0.28	0.00
BDC-05-08	10/23/2008	-5			1.1	3.7	3.5	<0.2	<1.1	<1.2	<1.1	0.007	<0.001	0.004	<0.002	1.90	0.3	0.0	8.9	4.7	-12.0	5.1	6.65	0.01	0.03	0.04	0.00	0.00	0.00	0.07	0.00	0.09	0.40	0.51	0.00	0.00
(MW 24 ft XG)	11/20/2008	23			1.1	3.4	4.2	<0.2	<1.1	<1.2	<1.1	0.035	0.004	0.036	<0.002	0.80	0.7	2.2	7.2	5.5	-43	5.9	6.63	0.01	0.03	0.04	0.00	0.00	0.00	0.08	0.00	0.09	0.34	0.57	0.00	0.00
	12/16/2008	49			1.2	4.3	4.3	<1.0	<1.1	<1.2	<1.1	0.008	0.001	0.006	<0.002	0.50	0.9	4.6	21.8	3.6	-99	5.4	6.61	0.01	0.03	0.04	0.00	0.00	0.00	0.08	0.00	0.09	0.39	0.53	0.00	0.00
BDC-05-08	1/16/2009	80			1.3	4.2	3.6	<1.0	<1.1	<1.2	<1.1	0.008	0.002	0.007	<0.002	0.25	1.7	3.0	7.0	6.9	-185	5.8	6.59	0.01	0.03	0.04	0.00	0.00	0.00	0.08	0.00	0.10	0.42	0.48	0.00	0.00
BDC-05-08	2/11/2009	106			<1.0	3.2	3.9	<1.0	<1.1	<1.2	<1.1	0.019	0.001	0.010	<0.002	2.38	0.3	4.4	4.7	4.4	-78	7.0	6.69	0.00	0.02	0.04	0.00	0.00	0.00	0.06	0.00	0.00	0.38	0.62	0.00	0.00
BDC-05-08	3/9/2009	132			<1.0	2.7	3.5	<1.0	<1.1	<1.2	<1.1	0.009	0.003	0.007	<0.002	0.07	<0.1	3.6	3.8	4.9	-4	6.7	6.65	0.00	0.02	0.04	0.00	0.00	0.00	0.06	0.00	0.00	0.36	0.64	0.00	0.00
BDC-05-08	4/16/2009	170			<1.0	2.3	4.4	<1.0	<1.1	<1.2	<1.1	0.007	0.003	0.006	<0.002	0.42	<0.1	2.0	1.7	6.7	-8	6.8	6.80	0.00	0.02	0.05	0.00	0.00	0.00	0.06	0.00	0.00	0.28	0.72	0.00	0.00
BDC-05-08	5/13/2009	197			<1.0	1.6	3.0	<1.0	<1.1	<1.2		0.009	0.003	0.007	0.002	1.77	<0.1	4.0	0.8	11.4	-13	6.0	6.87	0.00	0.01	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.28	0.72	0.00	0.00
BDC-05-08	8/16/2009	292			<1.0	2.1	3.5	<1.0	<1.1	<1.2	<1.1	0.012	0.008	<0.002	<0.002	0.87	<0.1	2.8	5.3	13.2	-20	6.1	7.15	0.00	0.02	0.04	0.00	0.00	0.00	0.05	0.00	0.00	0.31	0.69	0.00	0.00
BDC-05-08	11/13/2009	381			<1.0	1.2	3.1	<1.0	<1.1	<1.2	<1.1	0.011	0.008	0.007	<0.002	0.73	<0.1	2.8	3.3	17.4	0.8	8.4	6.44	0.00	0.01	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.22	0.78	0.00	0.00
BDC-05-08	2/16/2010	476			<1.0	<1.0	2.3	<1.0	<1.1	<1.2	<1.1	0.024	0.009	0.024	<0.002	0.63	<0.1	3.0	0.8	13.1	841	8.3	6.76	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-08	5/18/2010	567			<1.0	<1.0	2.4	<1.0	<1.1	<1.2	<1.1	0.031	0.011	0.027	<0.002	0.96	<0.1	3.0	0.8	14.9	451	7.3	6.92	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-08	8/17/2010	658			<1.0	<1.0	2.3	<1.0	<1.1	<1.2	<1.1	0.014	0.009	0.013	<0.002	2.57	<0.1	3.2	0.5	10.1	-30	7.2	7.30	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-08	11/9/2010	742			<1.0	<1.0	3.5	<1.0	<1.1	<1.2	<1.1	0.031	0.012	0.031	<0.002	2.74	<0.1	2.4	0.3	14.2	59	7.6	7.17	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-08	2/15/2011	840			<1.0	<1.0	2.1	<1.0	<1.1	<1.2	<1.1	0.021	0.010	0.016	<0.002	2.36	<0.1	5.0	0.3	14.1	66	8.7	7.08	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-08	5/2/2011	916	-108		<0.2	<0.2	2.2	<0.2	<1.1	<1.2	<1.1	0.029	0.010	0.024	<0.002	2.15	<0.1	2.4	0.7	7.8	-28	8.0	7.17	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-08	11/2/2011	1100	76		<1.0	<1.0	2.4	<1.0				0.014	0.010	0.012	0.003	1.15	<0.1	1.2	0.8		-53	7.3	6.88	0.00	0.00	0.02	0.00			0.02		0.00	0.00	1.00	0.00	
BDC-05-08	5/6/2012	1286	262		<0.2	<0.2	2.7	<0.2				0.021	0.020	0.007	0.002	0.01		2.5	0.4		42	12.4	6.77	0.00	0.00	0.03	0.00			0.03		0.00	0.00	1.00	0.00	
BDC-05-08	11/16/2012	1480	456		<0.5	<0.5	1.3	<0.5				0.014	0.010	0.005	<0.002	0.01		1.0	<0.3		5	8.1	6.91	0.00	0.00	0.01	0.00			0.01		0.00	0.00	1.00	0.00	
BDC-05-08	5/23/2013	1668	644		<0.2	<0.2	0.4	<0.2				0.008	0.007	0.002	<0.002	0.39		1.3	<0.3		-249	5.7	7.68	0.00	0.00	0.00	0.00			0.00		0.00	0.00	1.00	0.00	
BDC-05-08	11/13/2013	1842	818		<0.2	<0.2	4.3	0.8				0.012	0.010	0.003	<0.002	2.02		1.4	<0.30		-275	15.0	6.73	0.00	0.00	0.04	0.01			0.06		0.00	0.00	0.78	0.22	
BDC-05-08	5/13/2014	2023	999		<0.2	<0.2	2.9	1.8	<1.0	<1.0	<1.0	0.015	0.011	0.004	<0.002	2.02		1.4	0.31	7.7	-255	9.5	6.87	0.00	0.00	0.03	0.03	0.00	0.00	0.06	0.00	0.00	0.00	0.51	0.49	0.00
BDC-05-08	11/10/2014	2204	1180		<0.2	<0.2	3.8	16				0.017	0.015	0.003	<0.002	0.04		1.4	0.65		-104	21.6	6.26	0.00	0.00	0.04	0.26			0.30		0.00	0.00	0.13	0.87	
BDC-05-08	4/27/2015	2372	1348		<0.2	<0.2	0.8	2.3				0.019	0.011	0.004	<0.002	0.05		0.6	<0.30		-90	9.4	6.36	0.00	0.00	0.01	0.04			0.05		0.00	0.00	0.18	0.82	
BDC-05-08	10/28/2015	2556	1532		<0.2	<0.2	0.3	0.5				0.011	0.008	0.002	<0.002	0.06		1.0	<0.30		-31	8.6	6.47	0.00	0.00	0.00	0.01			0.01		0.00	0.00	0.28	0.72	
BDC-05-08	4/21/2016	2732	1708		<0.2	<0.2	0.2	1.2				0.014	0.012	0.007	<0.002	0.22			<0.30		-38	3.8	6.53	0.00	0.00	0.00	0.02			0.02		0.00	0.00	0.10	0.90	
BDC-05-08	11/3/2016	2928	1904		<0.2	<0.2	0.2	0.5								0.19		1.6	<0.30		-109.8	4.7	6.22	0.00	0.00	0.00	0.01			0.01		0.00	0.00	0.21	0.79	
BDC-05-08	5/4/2017	3110	2086		<0.2	<0.2	<0.2	0.5								0.62		1.6	0.41		-107.5	5.7	6.36	0.00	0.00	0.00	0.01			0.01		0.00	0.00	0.00	1.00	
BDC-05-08	11/6/2017	3296	2272	-4	<0.2	<0.2	<0.2	0.5				0.009	0.008	<0.002	0.004	0.50		2.2	0.90		-19.7	5.1	6.50	0.00	0.00	0.00	0.01			0.01		0.00	0.00	0.00	1.00	
BDC-05-08	5/2/2018	3473	2449	173	<0.2	<0.2	<0.2	<0.2				0.012	0.008	0.005	<0.001	1.44		3.4	0.137		-117.4	6.0	6.46	0.00	0.00	0.00	0.00			0.00		NA	NA	NA	NA	
BDC-05-08	11/6/2018	3661	2637	361	<0.2	<0.2	<0.2	<0.2				0.009	0.006	0.003	<0.001	0.55		3.6	<0.100		-57.6	8.35	6.39	0.00	0.00	0.00	0.00			0.00		NA	NA	NA	NA	
BDC-05-08	5/2/2019	3838	2814	538	<0.2	<0.2	<0.2	<0.2				0.018	0.008	0.010	<0.001	0.17		4.5	0.211		-54.6	5.29	6.31	0.00	0.00	0.00	0.00			0.00		NA	NA	NA	NA	
BDC-05-08	11/6/2019	4026	3002	726	<0.2	<0.2	<0.2	<0.2				0.016	0.006	0.011	0.001	0.08		3.0	0.495		37.0	9.31	6.55	0.00	0.00	0.00	0.00			0.00		NA	NA	NA	NA	
BDC-05-09	7/31/2011	-18			30	20	22	<1.0	<1.1	<1.2	<1.1	0.007	0.007	<0.002	<0.002	1.37	<0.1	2.5	12.1	1.4	15	5.5	6.89	0.18	0.15	0.23	0.00	0.00	0.00	0.56	0.00	0.32	0.27	0.41	0.00	0.00
(IW 2011)	11/2/2011	76			37	56	44	1.3	<1.1	<1.2	<1.1	0.042	0.040	0.009	0.006	2.80	<0.1	3.0	7.6	4.3	80	4360	5.24	0.22	0.43	0.45	0.02	0.00	0.00	1.12	0.00	0.20	0.38	0.40	0.02	0.00
	5/7/2012	263			3.0	1.1	250	3.9	<1.0	<1.0	<1.0	0.059	0.052	0.011	<0.002	0.69		2.2	0.5	18.0	85	531	6.33	0.02	0.01	2.58	0.06	0.00	0.00	2.67	0.00	0.01	0.00	0.97	0.02	0.00
BDC-05-09	11/15/2012	455			<2.0	<2.0	24	20	69	<1.0	<1.0	0.074	0.070	0.006	<0.002	0.01		1.2	<0.3	27.0	-10	266	6.71	0.00	0.00	0.25	0.32	2.46	0.00	0.57	2.46	0.00	0.00	0.08	0.11	0.81
BDC-05-09	5/22/2013	643			<0.2	<0.2	1.0	3.7	23	3.4	<1.0	0.026	0.025	0.003	<0.002	0.18		1.5	<0.3	17.0	-300	40.6	7.83	0.00	0.00	0.01	0.06	0.82	0.11	0.07	0.93	0.00	0.00	0.01	0.06	0.93
BDC-05-09	11/13/2013	818			<0.2	<0.2	3.2	14	8.6	8.3	<1.0	0.022	0.022	<0.002	<0.002	2.80		1.4	0.9	11.0	-263	36.8	6.61	0.00	0.00	0.03	0.22	0.31	0.28	0.26	0.58	0.00	0.00	0.04	0.27	0.69
BDC-05-09	5/13/2014	999			<0.2	<0.2	0.7	1.0	1.6	8.5	<1.0	0.010	0.010	<0.002	<0.002	3.66		1.5	1.9	8.0	-356	13.1	6.53	0.00	0.00	0.01	0.02	0.06	0.28	0.02	0.34	0.00	0.00	0.02	0.04	0.94
BDC-05-09	11/11/2014	1181			<0.2	<0.2	1.1	3.5	1.2	6.4	<1.0	0.018	0.017	<0.002	<0.002	0.08		2.3	0.72	8.5	-47	6.9	6.19	0.00	0.00	0.01	0.06	0.04	0.21	0.07	0.26	0.00	0.00	0.04	0.17	0.79
BDC-05-09	4/27/2015	1348			<0.2	<0.2	0.4	8.3	5.0	4.3	<1.0	0.007	0.009	<0.002	<0.002	0.04		1.4	0.68	7.5	-53	4.0	6.27	0.00	0.00	0.00	0.13	0.18	0.14	0.14	0.32	0.00	0.00	0.01	0.29	0.70
BDC-05-09	10/28/2015	1532			<0.2	<0.2	0.3	2.1	<1.0	2.0	<1.0	0.008	0.008	<0.002	<0.002	0.15		1.0	<0.30	5.3	-5.3	2.5	6.36	0.00	0.00	0.00	0.03	0.00	0.07	0.04	0.07	0.00	0.00	0.03	0.33	0.64
BDC-05-09	4/20/2016	1707			<0.2	<0.2	<0.2	2.8	1.9	8.4	<1.0	0.007	0.009	<0.002	<0.002	0.08		3.0	<0.30	6.6	-30	2.8	6.36	0.00	0.00	0.00	0.04	0.07	0.28	0.04	0.35	0.00	0.00	0.00	0.11	0.89
BDC-05-09	11/2/2016	1903			<0.2	<0.2	<0.2	1.3	1.0	9.2	<1.0	0.009	0.009	<0.002	<0.002	0.41		1.6	2.8	7.6	-82.3	5.2	6.36	0.00	0.00	0.00	0.02	0.04	0.31	0.02	0.34	0.00	0.00	0.00	0.06	0.94
BDC-05-09	5/4/2017	2086			<0.2	<0.2	0.4	2.8	1.0	9.0	<1.0	0.006	0.006	<0.002	<0.002	0.26		2.0	4.3	5.3	-83.9	4.3	6.32	0.00	0.00	0.00	0.04	0.04	0.30	0.05	0.33	0.00	0.00	0.01	0.12	0.87
BDC-05-09	11/6/2017	2272	-4		<0.2	<0.2	<0.2	1.2	<1.0	8.7	<1.0	0.005	0.005	<0.002	<0.002	0.72		2.2	0.65	4.4	-17.5	3.6	6.51	0.00	0.00	0.00	0.02	0.00	0.29	0.02	0.29	0.00	0.00	0.00	0.06	0.94
BDC-05-09	5/2/2018	2449	173		<0.2	0.33	0.9	3.32	<1.14	<1.23	<1.06	0.008	0.007	<0.001	<0.001	0.46		2.0	0.195	15.3	-2.3	38.8	6.15	0.00	0.00	0.01	0.05	0.00	0.00	0.06	0.00	0.00	0.04	0.14	0.82	0.00
BDC-05-09	11/6/2018	2637	361		<0.2	<0.2	<0.2	0.98	<1.14	3.91	<1.06	0.009	0.009	<0.001	<0.001	1.30		3.6	<0.100	15.6	-24.3	39.0	6.23	0.00	0.00	0.00	0.02	0.00	0.13	0.02	0.13	0.00	0.00	0.00	0.11	0.89
BDC-05-09	5/2/2019	2814	538		<0.2	0.21	0.37	2.35	<1.14	4.35	<1.06	0.007	0.007	<0.001	<0.001	0.29		3.5	7.19	8.63	-32.6	26.23	6.18	0.00	0.00	0.00	0.04	0.00	0.14	0.04	0.14	0.00	0.01	0.02	0.20	0.77
BDC-05-09	11/6/2019	3002	726		<0.2	<0.2	0.21	1.62	<1.14	<1.23	<1.06	0.006	0.006	<0.001	<0.001	0.46		4.0	2.59	7.45	15.0	30.69	6.46	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.08	0.92	0.00

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-10	7/31/2011		-18		39	26	12	<1.0	<1.1	<1.2	<1.1	0.002	0.002	<0.002	<0.002	1.41	<0.1	2.0	19.7	0.3	76	4.5	6.84	0.24	0.20	0.12	0.00	0.00	0.00	0.56	0.00	0.42	0.36	0.22	0.00	0.00
(IW 2011, 2017)	11/2/2011		76		22	27	1.0	<1.0	1.6	1.7	<1.1	0.038	0.037	0.008	0.004	2.43	<0.1	2.2	10.9	0.1	-38	2030	5.72	0.13	0.21	0.01	0.00	0.06	0.06	0.35	0.11	0.29	0.44	0.02	0.00	0.25
	5/6/2012		262		<1.0	<1.0	120	5.4	1.1	<1.0	<1.0	0.052	0.048	0.012	<0.002	0.02		1.7	0.4	19.0	58	270	6.48	0.00	0.00	1.24	0.09	0.04	0.00	1.32	0.04	0.00	0.00	0.91	0.06	0.03
BDC-05-10	11/15/2012		455		<1.0	<1.0	4.4	49	8.5	<1.0	<1.0	0.069	0.060	0.003	<0.002	0.02		1.0	<0.3	24.0	-11	122	6.63	0.00	0.00	0.05	0.78	0.30	0.00	0.83	0.30	0.00	0.00	0.04	0.69	0.27
BDC-05-10	5/22/2013		643		<0.2	<0.2	0.3	11	14	<3.0	<1.0	0.056	0.053	0.003	<0.002	0.25		1.2	0.49	20.0	-308	50.8	7.84	0.00	0.00	0.00	0.18	0.50	0.00	0.18	0.50	0.00	0.00	0.00	0.26	0.74
BDC-05-10	11/13/2013		818		<0.2	<0.2	0.6	15	17	<1.0	<1.0	0.058	0.052	<0.002	<0.002	3.33		1.8	<0.30	23.0	-263	54.1	6.55	0.00	0.00	0.01	0.24	0.61	0.00	0.25	0.61	0.00	0.00	0.01	0.28	0.71
BDC-05-10	5/13/2014		999		<0.2	<0.2	<0.2	5.1	29	<1.0	<1.0	0.037	0.034	<0.002	<0.002	3.87		1.6	<0.30	21.0	-196	27.6	6.53	0.00	0.00	0.00	0.08	1.03	0.00	0.08	1.03	0.00	0.00	0.00	0.07	0.93
BDC-05-10	11/10/2014		1180		<0.2	<0.2	0.2	3.9	3.4	<1.0	<1.0	0.040	0.038	<0.002	<0.002	0.03		1.0	<0.30	16.0	-86	19.3	6.25	0.00	0.00	0.00	0.06	0.12	0.00	0.06	0.12	0.00	0.00	0.01	0.34	0.65
BDC-05-10	4/27/2015		1348		<0.2	<0.2	<0.2	2.9	7.2	8.3	<1.0	0.026	0.024	0.003	<0.002	0.04		0.8	<0.30	14.0	-68	10.3	6.24	0.00	0.00	0.00	0.05	0.26	0.28	0.05	0.53	0.00	0.00	0.00	0.08	0.92
BDC-05-10	10/28/2015		1532		<0.2	<0.2	<0.2	0.7	<1.0	3.2	<1.0	0.021	0.019	<0.002	<0.002	0.17		1.0	<0.30	7.4	-14	7.8	6.42	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.11	0.00	0.00	0.00	0.10	0.90
BDC-05-10	4/20/2016		1707		<0.2	<0.2	<0.2	1.8	3.9	11	<1.0	0.015	0.016	<0.002	<0.002	0.22		1.1	0.65	5.8	-17	5.0	6.22	0.00	0.00	0.00	0.03	0.14	0.37	0.03	0.50	0.00	0.00	0.00	0.05	0.95
BDC-05-10	11/2/2016		1903		<0.2	<0.2	<0.2	0.8	<1.0	19	<1.0	0.022	0.021	<0.002	<0.002	0.15		0.6	<0.30	6.1	-109	7.5	6.34	0.00	0.00	0.00	0.01	0.00	0.63	0.01	0.63	0.00	0.00	0.00	0.02	0.98
BDC-05-10	5/4/2017		2086		<0.2	<0.2	0.3	1.8	1.0	15	<1.0	0.015	0.014	<0.002	<0.002	0.23		2.0	1.7	4.0	-89.7	6.0	6.38	0.00	0.00	0.00	0.03	0.04	0.50	0.03	0.53	0.00	0.00	0.01	0.05	0.94
BDC-05-10	11/6/2017		2272	-4	<0.2	<0.2	<0.2	0.6	<1.0	12	<1.0	0.014	0.011	<0.002	<0.002	0.32		2.0	1.3	6.2	8.90	5.3	6.37	0.00	0.00	0.00	0.01	0.00	0.40	0.01	0.40	0.00	0.00	0.00	0.02	0.98
BDC-05-10	5/2/2018		2449	173	<2.0	<2.0	7.43	<2.0	<1.14	<1.23	<1.06	0.036	0.022	0.063	<0.050	0.41		4.2	<1.0	13.8	-79.8	1453	6.44	0.00	0.00	0.08	0.00	0.00	0.00	0.08	0.00	0.00	0.00	1.00	0.00	0.00
BDC-05-10	11/6/2018		2637	361	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	<1.06	0.017	0.012	0.024	0.004	1.09		1.8	<0.100	18.4	-93.2	303.1	6.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-10	5/2/2019		2814	538	<0.2	<0.2	1.16	2.01	<1.14	2.68	<1.06	0.013	0.009	0.048	0.001	0.34		3.0	1.85	19.3	-54.7	105.1	6.22	0.00	0.00	0.01	0.03	0.00	0.09	0.04	0.09	0.00	0.00	0.09	0.24	0.67
BDC-05-10	11/6/2019		3002	726	<0.2	<0.2	0.58	0.92	<1.14	<1.23	<1.06	0.010	0.009	0.022	<0.001	0.48		2.5	0.403	6.68	16.9	53.47	6.40	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.29	0.71	0.00
BDC-05-11	7/31/2011		-18		16	19	5.8	<1.0	<1.1	<1.2	<1.1	0.005	0.005	<0.002	<0.002	1.41	<0.1	2.0	4.0	1.4	65	3.9	6.93	0.10	0.14	0.06	0.00	0.00	0.00	0.30	0.00	0.32	0.48	0.20	0.00	0.00
(IW 2011)	11/2/2011		76		9.6	20	12	<1.0	<1.1	<1.2	<1.1	0.039	0.037	0.013	0.004	2.16	<0.1	1.8	<1.0	1.0	-38	1330	5.72	0.06	0.15	0.12	0.00	0.00	0.00	0.33	0.00	0.17	0.46	0.37	0.00	0.00
	5/6/2012		262		0.2	0.5	44	7.2	1.6	<1.0	<1.0	0.038	0.034	0.009	0.002	0.01		1.4	0.5	18.0	70	284	6.42	0.00	0.00	0.45	0.12	0.06	0.00	0.57	0.06	0.00	0.01	0.72	0.18	0.09
BDC-05-11	11/15/2012		455		<1.0	<1.0	6.1	5.7	7.6	<1.0	<1.0	0.043	0.038	0.003	<0.002	0.02		1.3	<0.3	26.0	-15	73.8	6.76	0.00	0.00	0.06	0.09	0.27	0.00	0.15	0.27	0.00	0.00	0.15	0.21	0.64
BDC-05-11	5/22/2013		643		<0.2	<0.2	0.3	2.9	16	3.7	<1.0	0.035	0.032	<0.002	<0.002	0.25		1.6	0.43	23.0	-299	42.1	7.71	0.00	0.00	0.00	0.05	0.57	0.12	0.05	0.69	0.00	0.00	0.00	0.06	0.93
BDC-05-11	11/13/2013		818		<0.2	<0.2	0.2	3.9	17	4.6	<1.0	0.038	0.035	0.002	<0.002	3.81		2.0	0.36	24.0	-264	48.4	6.5	0.00	0.00	0.00	0.06	0.61	0.15	0.06	0.76	0.00	0.00	0.00	0.08	0.92
BDC-05-11	5/13/2014		999		<0.2	<0.2	<0.2	2.0	9.0	7.2	<1.0	0.038	0.036	<0.002	<0.002	4.13		1.8	<0.30	24.0	-185	38.1	6.49	0.00	0.00	0.00	0.03	0.32	0.24	0.03	0.56	0.00	0.00	0.00	0.05	0.95
BDC-05-11	11/10/2014		1180		<0.2	<0.2	<0.2	2.5	1.7	1.9	<1.0	0.030	0.030	<0.002	<0.002	0.01		1.8	<0.30	8.0	-88	11.1	6.30	0.00	0.00	0.00	0.04	0.06	0.06	0.04	0.12	0.00	0.00	0.00	0.24	0.76
BDC-05-11	4/27/2015		1348		<0.2	<0.2	<0.2	3.5	2.1	<1.0	<1.0	0.019	0.017	<0.002	<0.002	0.07		0.8	0.81	6.2	-77	7.6	6.22	0.00	0.00	0.00	0.06	0.07	0.00	0.06	0.07	0.00	0.00	0.00	0.43	0.57
BDC-05-11	10/28/2015		1532		<0.2	<0.2	<0.2	1.5	1.8	2.1	<1.0	0.018	0.017	<0.002	<0.002	0.11		0.6	<0.30	15.0	-16	7.4	6.52	0.00	0.00	0.00	0.02	0.06	0.07	0.02	0.13	0.00	0.00	0.00	0.15	0.85
BDC-05-11	4/20/2016		1707		<0.2	<0.2	<0.2	1.4	3.3	2.6	<1.0	0.020	0.020	<0.002	<0.002	0.08		0.8	<0.30	13.0	-15.4	6.5	6.33	0.00	0.00	0.00	0.02	0.12	0.09	0.02	0.20	0.00	0.00	0.00	0.10	0.90
BDC-05-11	11/2/2016		1903		<0.2	<0.2	<0.2	0.4	1.8	5.8	<1.0	0.017	0.015	<0.002	<0.002	0.11		2.8	<0.30	13.0	-118.1	9.0	6.27	0.00	0.00	0.00	0.01	0.06	0.19	0.01	0.26	0.00	0.00	0.00	0.02	0.98
BDC-05-11	5/4/2017		2086		<0.2	<0.2	<0.2	0.8	2.5	6.8	<1.0	0.018	0.018	<0.002	<0.002	0.24		2.0	<0.30	9.0	-101.7	9.2	6.37	0.00	0.00	0.00	0.01	0.09	0.23	0.01	0.32	0.00	0.00	0.00	0.04	0.96
BDC-05-11	11/6/2017		2272	-4	<0.2	<0.2	<0.2	0.3	<1.0	5.1	<1.0	0.012	0.011	<0.002	<0.002	0.54		3.8	<0.30	10.0	-15.5	7.4	6.37	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.17	0.00	0.00	0.00	0.03	0.97
BDC-05-11	5/2/2018		2449	173	<0.2	<0.2	<0.2	1.12	<1.14	<1.23	<1.06	0.014	0.013	0.001	<0.001	0.15		2.4	0.107	14.8	-5	40.8	6.27	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-11	11/7/2018		2638	362	<0.2	<0.2	<0.2	0.43	<1.14	1.35	<1.06	0.014	0.015	<0.001	<0.001	0.37		4.8	<0.100	20.7	-13.1	43.4	6.25	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.04	0.00	0.00	0.00	0.13	0.87
BDC-05-11	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.41	<1.14	2.02	<1.06	0.014	0.012	0.001	<0.001	0.29		2.5	0.652	18.9	-50.0	22.9	6.08	0.00	0.00	0.00	0.01	0.00	0.07	0.01	0.07	0.00	0.00	0.00	0.09	0.91
BDC-05-11	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.29	<1.14	<1.23	<1.06	0.008	0.008	0.001	0.001	0.19			0.226	16.4	32.2	13.05	6.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-12	7/31/2011		-18		15	18	16	<1.0	<1.1	<1.2	<1.1	0.002	0.002	0.002	<0.002	1.60	0.1	2.4	8.4	4.0	26	7.0	7.02	0.09	0.14	0.17	0.00	0.00	0.00	0.39	0.00	0.23	0.35	0.42	0.00	0.00
(IW 2011)	11/2/2011		76		11	17	11	<1.0	<1.1	<1.2	<1.1	0.041	0.031	0.012	0.009	2.60	<0.1	3.5	5.6	1.0	-77	2960	5.83	0.07	0.13	0.11	0.00	0.00	0.00	0.31	0.00	0.21	0.42	0.37	0.00	0.00
	2/19/2012		185		<0.4	<0.4	53	1.8	<1.0	<1.0	<1.0					1.7	<0.5	2.0	<1.5	17.0	-2	279	6.59	0.00	0.00	0.55	0.03	0.00	0.00	0.58	0.00	0.00	0.00	0.95	0.05	0.00
BDC-05-12	5/6/2012		262		<0.2	<0.2	39	3.4	<1.0	<1.0	<1.0	0.082	0.071	0.005	<0.002	0.03		2.5	0.8	21.0	65	83.2	6.45	0.00	0.00	0.40	0.05	0.00	0.00	0.46	0.00	0.00	0.00	0.88	0.12	0.00
BDC-05-12	9/5/2012		384		<0.2	<0.2	6.5	3.3	1.0	<1.0	<1.0					0.13		1.8	<0.3	22.0	80	50.4	6.48	0.00	0.00	0.07	0.05	0.04	0.00	0.12	0.04	0.00	0.00	0.43	0.34	0.23
BDC-05-12	11/15/2012		455		<1.0	<1.0	7.9	5.4	1.1	<1.0	<1.0	0.037	0.036	0.002	<0.002	0.03		1.3	<0.3	27.0	7	52.9	6.56	0.00	0.00	0.08	0.09	0.04	0.00	0.17	0.04	0.00	0.00	0.39	0.42	0.19
BDC-05-12	2/25/2013		557		<1.0	<1.0	1.7	4.4	3.8	<1.0	<1.0					0.18		2.0	<0.3	26.0	54	27.5	6.68	0.00	0.00	0.02	0.07	0.14	0.00	0.09	0.14	0.00	0.00	0.08	0.32	0.61
BDC-05-12	5/22/2013		643		<0.2	<0.2	0.8	5.0	12	<3.0	<1.0	0.022	0.022	<0.002	<0.002	0.29		1.4	<0.3	24.0	-366	35.4	8.08	0.00	0.00	0.01	0.08	0.43	0.00	0.09	0.43	0.00	0.00	0.02	0.16	0.83
BDC-05-12	8/29/2013		742		<2.0	<2.0	<2.0	<2.0	5.5	2.8	<1.0					5.25		1.6	<0.30	22.0	-320	32.6	6.53	0.00	0.00	0.00	0.00	0.20	0.09	0.00	0.29	0.00	0.00	0.00	0.00	1.00
BDC-05-12	11/13/2013		818		<2.0	<2.0	<2.0	<2.0	2.2	3.4	<1.0	0.010	0.012	<0.002	<0.002	2.61		2.6	0.39	26.0	-268	26.9	6.66	0.00	0.00	0.00	0.00	0.08	0.11	0.00	0.19	0.00	0.00	0.00	0.00	1.00
BDC-05-12	2/11/2014		908		<1.0	<1.0	<1.0	<1.0	1.1	<6.0	<1.0					4.83		2.2	0.37	23.0	-239	19.7	6.57	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.00	0.00	0.00	0.00	1.00
BDC-05-12	5/13/2014		999		<1.0	<1.0	<1.0	<1.0	1.0	5.6	<1.0	0.007	0.006	<0.002	<0.002	3.01		2.0	0.49	25.0	-299	21.5	6.60	0.00	0.00	0.00	0.00	0.04	0.19	0.00	0.22	0.00	0.00	0.00	0.00	1.00
BDC-05-12	8/6/2014		1084		<1.0	<1.0	<1.0	1.1	1.8	4.5	<1.0					7.00		1.5	<0.30	21.0	-146	43.1	7.05	0.00	0.00	0.00	0.02	0.06	0.15	0.02	0.21	0.00	0.00	0.00	0.08	0.92
BDC-05-12	11/10/2014		1180		<1.0	<1.0	<1.0	1.7	2.5	8.9	<1.0	0.017	0.018	<0.002	<0.002	0.03		0.8	<0.30	25.0	-83	30.3	6.23	0.00	0.00	0.00	0.03	0.09	0.30	0.03	0.39	0.00	0.00	0.00	0.07	0.93
BDC-05-12	1/21/2015		1252		<0.2	<0.2	<0.2	2.8	1.5	5.0	<1.0					0.12		2.2	0.45	17.0	-115	22.6	6.25	0.00	0.00	0.00	0.04	0.05	0.17	0.04	0.22	0.00	0.00	0.00	0.17	0.83
BDC-05-12	4/27/2015		1348		<0.2	<0.2	<0.2	1.4	1.2	2.2	<1.0	0.017	0.017	<0.002	<0.002	0.07		1.1	<0.30	21.0	-84	13.2	6.29	0.00	0.00	0.00	0.02	0.04	0.07	0.02	0.12	0.00	0.00	0.00	0.16	0.84
BDC-05-12	7/21/2015		1433		<0.2	<0.2	<0.2	0.7	<1.0	3.1	<1.0					0.12		1.4	<0.30	18.0	-41	15.2	6.25	0.00	0.00	0.00	0.01	0.00	0.10	0.01	0.10	0.00	0.00	0.00	0.10	0.90
BDC-05-12	10/28/2015		1532		<0.2	<0.2	<0.2	0.9	<1.0	2.6	<1.0	0.034	0.033	0.003	<0.002	0.08		1.4	<0.30	14.0	-28	29.0	6.40	0.00	0.00	0.00	0.01	0.00	0.09	0.01	0.09	0.00	0.00	0.00	0.14	0.86
BDC-05-12	1/26/2016		1622		<0.2	<0.2	<0.2	0.8	1.3	4.3	<1.0					0.11		1.1	<0.30	19.0	-129	32.7	6.52	0.00	0.00	0.00	0.01	0.05	0.14	0.01	0.19	0.00	0.00	0.00	0.06	0.94
BDC-05-12	4/20/2016		1707		<0.2	<0.2	<0.2	0.4	<1.0	4.3	<1.0	0.016	0.017	<0.002	<0.002	0.10		1.1	<0.30	16.0	-44	14.3	6.45	0.00	0.00	0.00	0.01	0.00	0.14	0.01	0.14	0.00	0.00	0.00	0.04	0.96
BDC-05-12	8/9/2016		1818		<0.2	<0.2	<0.2	0.4	<1.0	2.7	<1.0	0.004	0.008	<0.002	<0.002	0.35		2.5	<0.30	13.0	-106.8	9.4	6.11	0.00	0.00	0.00	0.01	0.00	0.09	0.01	0.09	0.00	0.00	0.00	0.07	0.93
BDC-05-12	11/3/2016		1904		<0.2	<0.2	<0.2	<0.2	<1.0	2.8	<1.0	0.016	0.014	<0.002	<0.002	0.13		3.0	<0.30	12.0	-129.0	10.6	6.44	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	1.00
BDC-05-12	2/8/2017		2001		<0.2	<0.2	<0.2	0.4	<1.0	1.9	<1.0	0.006	0.007	<0.002	<0.002	0.28		2.4	<0.30	12.0	-25.1	8.6	6.52	0.00	0.00	0.00	0.01	0.00	0.06	0.01	0.06	0.00	0.00	0.00	0.09	0.91
BDC-05-12	5/4/2017		2086		<0.2	<0.2	<0.2	0.3	<1.0	2.4	<1.0	0.010	0.009	<0.002	<0.002	0.22		2.2	<0.30	11.0	-94.4	8.1	6.33	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.06	0.94
BDC-05-12	8/1/2017		2175		<0.2	<0.2	<0.2	<0.2	<1.0	8.0	<1.0	0.011	0.009	<0.002	<0.002	0.08		2.3	<0.30	9.5	-85.0	7.6	6.08	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.27	0.00	0.00	0.00	0.00	1.00
BDC-05-12	11/6/2017		2272	-4	<0.2	<0.2	<0.2	0.2	<1.0	1.6	<1.0	0.005	0.005	<0.002	<0.002	0.66		3.0	<0.30	12.0	-18.5	7.0	6.41	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.06	0.94
BDC-05-12	5/2/2018		2449	173	<0.2	<0.2	<0.2	0.46	<1.14	<1.23	<1.06	0.006	0.008	<0.001	<0.001	0.20		4.6	0.104	14.2	-12.5	19.4	6.29	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-12	11/6/2018		2637	361	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.006	0.007	<0.001	<0.001	0.56		3.8	<0.100	24.5	-64.4	23.33	6.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-12	5/2/2019		2814	538	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.009	0.009	<0.001	<0.001	0.29		4.5	0.107	20.7	-62.6	17.66	6.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-12	11/6/2019		3002	726	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.005	0.005	0.001	0.0005	0.48		3.0	0.726	17.4	30.4	13.49	6.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-13	7/31/2011		-18		5.2	6.6	2.6	<1.0	<1.1	<1.2	<1.1	0.003	0.002	0.002	<0.002	1.73	<0.1	2.0	2.3	5.0	-1	6.0	7.06	0.03	0.05	0.03	0.00	0.00	0.00	0.11	0.00	0.29	0.46	0.25	0.00	0.00
(IW 2011)	11/1/2011		75		<1.0	1.2	39	<1.0	<1.1	<1.2	<1.1	0.068	0.064	0.017	0.003	1.82	<1.0	1.5	<1.0	2.2	-70	550	6.65	0.00	0.01	0.40	0.00	0.00	0.00	0.41	0.00	0.00	0.02	0.98	0.00	0.00
	5/6/2012		262		<0.2	<0.2	13	3.9	1.7	<1.0	<1.0	0.051	0.046	0.003	<0.002	0.03		3.0	0.4	19.0	78	34.2	6.40	0.00	0.00	0.13	0.06	0.06	0.00	0.20	0.06	0.00	0.00	0.52	0.24	0.24
BDC-05-13	11/15/2012		455		<1.0	<1.0	<1.0	2.3	3.7	<1.0	<1.0	0.060	0.055	<0.002	<0.002	0.04		2.2	<0.3	22.0	-9	30.2	6.75	0.00	0.00	0.00	0.04	0.13	0.00	0.04	0.13	0.00	0.00	0.00	0.22	0.78
BDC-05-13	5/22/2013		643		<0.2	<0.2	0.3	1.2	3.8	3.9	<1.0	0.019	0.019	<0.002	<0.002	0.29		1.8	0.43	23.0	-296	21.4	7.76	0.00	0.00	0.00	0.02	0.14	0.13	0.02	0.27	0.00	0.00	0.01	0.07	0.92
BDC-05-13	11/13/2013		818		<0.2	<0.2	0.3	2.1	3.6	6.4	<1.0	0.031	0.027	<0.002	<0.002	3.20		1.6	0.31	19.0	-241	24.7	6.59	0.00	0.00	0.00	0.03	0.13	0.21	0.04	0.34	0.00	0.00	0.01	0.09	0.90
BDC-05-13	5/12/2014		998		<0.2	<0.2	<0.2	2.6	4.3	6.8	<1.0	0.032	0.032	<0.002	<0.002	4.73		2.4	<0.30	19.0	-238	23.4	6.69	0.00	0.00	0.00	0.04	0.15	0.23	0.04	0.38	0.00	0.00	0.00	0.10	0.90
BDC-05-13	11/10/2014		1180		<0.2	<0.2	0.2	2.5	2.1	2.2	<1.0	0.020	0.019	<0.002	<0.002	0.02		1.0	0.33	7.1	-123	15.1	6.41	0.00	0.00	0.00	0.04	0.07	0.07	0.04	0.15	0.00	0.00	0.01	0.21	0.78
BDC-05-13	4/27/2015		1348		<0.2	<0.2	<0.2	1.9	2.5	1.6	<1.0	0.019	0.018	<0.002	<0.002	0.09		0.8	<0.30	12.0	-102	8.9	6.45	0.00	0.00	0.00	0.03	0.09	0.05	0.03	0.14	0.00	0.00	0.00	0.18	0.82
BDC-05-13	10/28/2015		1532		<0.2	<0.2	<0.2	1.1	<1.0	1.0	<1.0	0.020	0.019	<0.002	<0.002	0.20		1.2	<0.30	6.1	-32	10.8	6.54	0.00	0.00	0.00	0.02	0.00	0.03	0.02	0.03	0.00	0.00	0.00	0.35	0.65
BDC-05-13	4/20/2016		1707		<0.2	<0.2	<0.2	2.0	1.9	2.0	<1.0	0.026	0.024	<0.002	<0.002	0.10		1.0	<0.30	10.0	-36	7.6	6.60	0.00	0.00	0.00	0.03	0.07	0.07	0.03	0.13	0.00	0.00	0.00	0.19	0.81
BDC-05-13	11/3/2016		1904		<0.2	<0.2	<0.2	1.0	<1.0	2.3	<1.0	0.023	0.020	<0.002	<0.002	0.08		1.0	<0.30	15.0	-140.9	12.2	6.32	0.00	0.00	0.00	0.02	0.00	0.08	0.02	0.08	0.00	0.00	0.00	0.17	0.83
BDC-05-13	5/4/2017		2086		<0.2	<0.2	<0.2	1.1	1.4	12	<1.0	0.027	0.027	<0.002	<0.002	0.17		2.4	<0.30	14.0	-123.1	11.6	6.42	0.00	0.00	0.00	0.02	0.05	0.40	0.02	0.45	0.00	0.00	0.00	0.04	0.96
BDC-05-13	11/6/2017		2272	-4	<0.2	<0.2	<0.2	1.1	<1.0	7.0	<1.0	0.030	0.030	<0.002	<0.002	0.36		1.8	<0.30	14.0	-28.5	18.5	6.53	0.00	0.00	0.00	0.02	0.00	0.23	0.02	0.23	0.00	0.00	0.00	0.07	0.93
BDC-05-13	5/2/2018		2449	173	<0.2	<0.2	<0.2	0.6	<1.14	<1.23	<1.06	0.029	0.026	0.0005	<0.001	0.98		1.6	0.112	16.0	-80.4	21.5	6.43	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-13	11/6/2018		2637	361	<0.2	<0.2	<0.2	0.62	<1.14	3.82	<1.06	0.034	0.032	0.0005	<0.001	0.26		2.4	<0.100	14.7	-108.6	20.12	6.52	0.00	0.00	0.00	0.01	0.00	0.13	0.01	0.13	0.00	0.00	0.00	0.07	0.93
BDC-05-13	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.41	<1.14	<1.23	<1.06	0.023	0.023	0.0004	<0.001	0.45		3.5	0.254	19.6	-93.9	23.23	6.46	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-13	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.41	<1.14	<1.23	<1.06	0.023	0.025	<0.001	0.002	0.35		3.5	0.122	9.98	24.8	19.70	6.54	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-14	7/31/2011		-18		2.8	6.8	2.8	<1.0	<1.1	<1.2	<1.1	0.004	0.004	0.004	<0.002	1.76	<0.1	2.0	10.1	6.5	-15	8.6	7.00	0.02	0.05	0.03	0.00	0.00	0.00	0.10	0.00	0.17	0.53	0.30	0.00	0.00
(IW 2011)	11/1/2011		75		2.5	6.7	13	<1.0	<1.1	<1.2	<1.1	0.083	0.074	0.022	0.002	1.87	<1.0	2.3	<1.0	4.0	-124	725	6.13	0.02	0.05	0.13	0.00	0.00	0.00	0.20	0.00	0.08	0.25	0.67	0.00	0.00
	5/6/2012		262		<0.2	0.4	3.0	1.1	<1.0	<1.0	<1.0	0.012	0.009	<0.002	<0.002	0.08		1.7	0.6	23.0	99	41.5	6.33	0.00	0.00	0.03	0.02	0.00	0.00	0.05	0.00	0.00	0.06	0.60	0.34	0.00
BDC-05-14	11/15/2012		455		<0.2	<0.2	1.1	2.0	1.4	<1.0	<1.0	0.022	0.019	<0.002	<0.002	0.11		2.2	<0.3	24.0	-1.4	39.9	6.66	0.00	0.00	0.01	0.03	0.05	0.00	0.04	0.05	0.00	0.00	0.12	0.34	0.54
BDC-05-14	5/22/2013		643		<0.2	<0.2	0.2	1.3	1.3	<3.0	<1.0	0.012	0.012	<0.002	<0.002	0.40		1.8	<0.3	26.0	-311	26.3	7.69	0.00	0.00	0.00	0.02	0.05	0.00	0.02	0.05	0.00	0.00	0.03	0.30	0.67
BDC-05-14	11/13/2013		818		<0.2	<0.2	0.2	1.2	1.3	2.5	<1.0	0.017	0.015	<0.002	<0.002	3.80		1.5	<0.30	24.0	-219	29.5	6.44	0.00	0.00	0.00	0.02	0.05	0.08	0.02	0.13	0.00	0.00	0.01	0.13	0.86
BDC-05-14	5/12/2014		998		<0.2	<0.2	0.2	1.5	2.2	5.0	<1.0	0.018	0.021	<0.002	<0.002	5.21		2.0	<0.30	22.0	-233	30.2	6.55	0.00	0.00	0.00	0.02	0.08	0.17	0.03	0.24	0.00	0.00	0.01	0.09	0.90
BDC-05-14	11/10/2014		1180		<0.2	<0.2	0.4	5.1	4.3	6.4	<1.0	0.017	0.017	<0.002	<0.002	0.15		1.2	2.3	19.0	-97	21.3	6.35	0.00	0.00	0.00	0.08	0.15	0.21	0.09	0.37	0.00	0.00	0.01	0.18	0.81
BDC-05-14	4/27/2015		1348		<0.2	<0.2	0.4	1.6	<1.0	1.1	<1.0	0.018	0.015	<0.002	<0.002	0.11		1.4	1.8	11.0	-88	18.9	6.25	0.00	0.00	0.00	0.03	0.00	0.04	0.03	0.04	0.00	0.00	0.06	0.39	0.55
BDC-05-14	10/28/2015		1532		<0.2	<0.2	0.3	1.4	1.1	2.4	<1.0	0.015	0.013	<0.002	<0.002	0.11		1.0	0.46	12.0	-28	21.0	6.47	0.00	0.00	0.00	0.02	0.04	0.08	0.03	0.12	0.00	0.00	0.02	0.15	0.82
BDC-05-14	4/20/2016		1707		<0.2	<0.2	0.3	0.9	<1.0	1.7	<1.0	0.016	0.016	<0.002	<0.002	0.11		2.0	3.1	11.0	-42	22.3	6.71	0.00	0.00	0.00	0.01	0.00	0.06	0.02	0.06	0.00	0.00	0.04	0.19	0.76
BDC-05-14	11/3/2016		1904		<0.2	<0.2	<0.2	<0.2	<1.0	<1.0	<1.0	0.007	0.007	<0.002	<0.002	0.32		2.6	<0.30	17.0	-111	16.0	6.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BDC-05-14	5/4/2017		2086		<0.2	<0.2	0.3	1	<2.0	8.9	<1.0	0.023	0.021	<0.002	<0.002	0.17		2.2	3.8	12.0	-125.1	21.8	6.45	0.00	0.00	0.00	0.02	0.00	0.30	0.02	0.30	0.00	0.00	0.01	0.05	0.94
BDC-05-14	11/6/2017		2272	-4	<0.2	<0.2	<0.2	0.7	<1.0	3.6	<1.0	0.020	0.020	<0.002	<0.002	0.31		2.8	3.8	14.0	-27.6	19.2	6.48	0.00	0.00	0.00	0.01	0.00	0.12	0.01	0.12	0.00	0.00	0.00	0.09	0.91
BDC-05-14	5/2/2018		2449	173	<0.2	<0.2	<0.2	0.33	<1.14	<1.23	<1.06	0.025	0.025	<0.001	<0.001	0.92		2.8	10.4	10.1	-98.5	20.6	6.46	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-14	11/6/2018		2637	361	<0.2	<0.2	<0.2	0.42	<1.14	<1.23	<1.06	0.029	0.031	<0.001	<0.001	0.34		4.0	9.23	23.8	-94.3	22.28	6.48	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-14	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.30	<1.14	<1.23	<1.06	0.030	0.031	<0.001	<0.001	0.76		4.9	2.82	20.3	-97.7	18.43	6.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-14	11/5/2019		3001	725	<0.2	<0.2	<0.2	0.29	<1.14	<1.23	<1.06	0.029	0.029	<0.001	<0.001	0.02		3.2	3.30	14.6	-134.1	19.80	6.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-15	7/31/2011		-18		9.6	28	58	<1.0	<1.1	<1.2	<1.1	0.019	0.019	<0.002	<0.002	1.91	<0.1	1.3	18.6	0.8	-0.9	10.3	7.00	0.06	0.21	0.60	0.00	0.00	0.00	0.87	0.00	0.07	0.25	0.69	0.00	0.00
(IW 2011)	11/1/2011		75		4.8	9.8	15	<1.0	<1.1	<1.2	<1.1	0.061	0.058	0.010	0.009	2.38	<0.1	3.0	11.3	3.5	-0.1	4420	5.67	0.03	0.07	0.15	0.00	0.00	0.00	0.26	0.00	0.11	0.29	0.60	0.00	0.00
	5/6/2012		262		<2.0	<2.0	49	6.3	<1.0	<1.0	<1.0	0.057	0.047	0.009	0.004	0.07		1.8	<0.3	21.0	93	423	6.36	0.00	0.00	0.51	0.10	0.00	0.00	0.61	0.00	0.00	0.00	0.83	0.17	0.00
BDC-05-15	11/15/2012		455		<1.0	<1.0	1.5	7.5	1.8	<1.0	<1.0	0.054	0.049	<0.002	<0.002	0.02		0.8	<0.3	27.0	8	71.2	6.61	0.00	0.00	0.02	0.12	0.06	0.00	0.14	0.06	0.00	0.00	0.08	0.60	0.32
BDC-05-15	5/22/2013		643		<0.2	<0.2	0.3	16	11	<3.0	<1.0	0.065	0.061	<0.002	<0.002	0.22		1.0	0.3	25.0	-317	42.9	7.82	0.00	0.00	0.00	0.26	0.39	0.00	0.26	0.39	0.00	0.00	0.00	0.39	0.60
BDC-05-15	11/13/2013		818		<0.2	<0.2	0.2	4.9	7.2	2.5	<1.0	0.066	0.059	<0.002	<0.002	2.11		2.6	<0.30	23.0	-265	45.5	6.60	0.00	0.00	0.00	0.08	0.26	0.08	0.08	0.34	0.00	0.00	0.00	0.19	0.81
BDC-05-15	5/13/2014		999		<0.2	<0.2	<0.2	8.6	9.4	<1.0	<1.0	0.065	0.061	<0.002	<0.002	2.92		1.7	<0.30	26.0	-230	37.5	6.69	0.00	0.00	0.00	0.14	0.34	0.00	0.14	0.34	0.00	0.00	0.00	0.29	0.71
BDC-05-15	11/10/2014		1180		<0.2	<0.2	<0.2	1.3	4.6	8.6	<1.0	0.072	0.066	<0.002	<0.002	0.33		1.4	<0.30	25.0	-126	37.5	6.37	0.00	0.00	0.00	0.02	0.16	0.29	0.02	0.45	0.00	0.00	0.00	0.04	0.96
BDC-05-15	4/27/2015		1348		<0.2	<0.2	<0.2	1.9	3.2	5.1	<1.0	0.056	0.052	<0.002	<0.002	0.06		0.8	<0.30	18.0	-115	25.6	6.37	0.00	0.00	0.00	0.03	0.11	0.17	0.03	0.28	0.00	0.00	0.00	0.10	0.90
BDC-05-15	10/28/2015		1532		<0.2	<0.2	<0.2	0.7	1.2	6.0	<1.0	0.053	0.041	<0.002	<0.002	0.16		1.2	<0.30	17.0	-41	22.2	6.64	0.00	0.00	0.00	0.01	0.04	0.20	0.01	0.24	0.00	0.00	0.00	0.04	0.96
BDC-05-15	4/20/2016		1707		<0.2	<0.2	<0.2	1.1	<1.0	12	<1.0	0.057	0.051	<0.002	<0.002	0.13		0.6	<0.30	18.0	-67	27.6	6.78	0.00	0.00	0.00	0.02	0.00	0.40	0.02	0.40	0.00	0.00	0.00	0.04	0.96
BDC-05-15	11/3/2016		1904		<0.2	<0.2	<0.2	<0.2	<1.0	9.4	<1.0	0.047	0.044	<0.002	0.002	0.31		1.0	<0.30	15.0	-135.7	22.5	6.44	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.31	0.00	0.00	0.00	0.00	1.00
BDC-05-15	5/4/2017		2086		<0.2	<0.2	<0.2	0.7	<1.0	17	<1.0	0.048	0.049	<0.002	0.002	0.19		1.8	0.41	10.0	-141.5	23.9	6.57	0.00	0.00	0.00	0.01	0.00	0.57	0.01	0.57	0.00	0.00	0.00	0.02	0.98
BDC-05-15	11/7/2017		2273	-3	<0.2	<0.2	<0.2	0.3	<1.0	11	<1.0	0.053	0.053	<0.002	<0.002	0.16		1.8	<0.30	8.7	-29.1	25.1	6.69	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.37	0.00	0.00	0.00	0.01	0.99
BDC-05-15	5/2/2018		2449	173	<0.2	<0.2	<0.2	0.2	<1.14	<1.23	<1.06	0.044	0.044	0.0004	<0.001	0.88		1.8	0.108	11.3	-131.3	19.6	6.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-15	11/7/2018		2638	362	<0.2	<0.2	<0.2	0.22	<1.14	<1.23	<1.06	0.042	0.043	<0.001	<0.001	0.31		2.0	<0.100	19.3	-51.8	15.31	6.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-15	5/3/2019		2815	539	<0.2	<0.2	<0.2	0.21	<1.14	<1.23	<1.06	0.046	0.045	0.001	<0.001	0.62		1.8	0.164	26.0	-82.6	23.15	6.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-15	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.25	<1.14	<1.23	<1.06	0.049	0.050	0.0003	0.001	0.28		3.5	0.269	19.4	23.5	24.89	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-16	7/31/2011		-18		9.5	17	20	<1.0	<1.1	<1.2	<1.1	0.006	0.006	0.002	<0.002	1.91	<0.1	1.5	8.9	3.1	-8	7.8	7.06	0.06	0.13	0.21	0.00	0.00	0.00	0.39	0.00	0.15	0.33	0.52	0.00	0.00
(IW 2011)	11/1/2011		75		2.6	2.8	37	<1.0	<1.1	<1.2	<1.1	0.079	0.074	0.005	0.002	2.30	<1.0	2.5	2.8	3.1	7	2250	5.51	0.02	0.02	0.38	0.00	0.00	0.00	0.42	0.00	0.04	0.05	0.91	0.00	0.00
	2/19/2012		185		<2.0	<2.0	46	7.4	<1.0	<1.0	<1.0					1.59	<0.5	2.2	<1.5	18.0	128	1270	5.12	0.00	0.00	0.47	0.12	0.00	0.00	0.59	0.00	0.00	0.00	0.80	0.20	0.00
BDC-05-16	5/6/2012		262		<0.2	0.3	6.7	24	2.5	<1.0	<1.0	0.042	0.039	0.003	<0.002	0.06		2.5	<0.3	25.0	121	207	6.28	0.00	0.00	0.07	0.38	0.09	0.00	0.46	0.09	0.00	0.00	0.13	0.71	0.16
BDC-05-16	9/5/2012		384		<0.4	<0.4	0.9	8.1	6.0	<1.0	<1.0					0.12		2.0	<0.3	22.0	64	40.6	6.67	0.00	0.00	0.01	0.13	0.21	0.00	0.14	0.21	0.00	0.00	0.03	0.37	0.61
BDC-05-16	11/15/2012		455		<1.0	<1.0	<1.0	4.9	4.0	<1.0	<1.0	0.041	0.037	<0.002	<0.002	0.02		1.0	<0.3	28.0	7	32.3	6.68	0.00	0.00	0.00	0.08	0.14	0.00	0.08	0.14	0.00	0.00	0.00	0.35	0.65
BDC-05-16	2/25/2013		557		<1.0	<1.0	<1.0	13	4.7	2.7	<1.0					0.41		2.0	<0.30	28.0	68	34.6	6.77	0.00	0.00	0.00	0.21	0.17	0.09	0.21	0.26	0.00	0.00	0.00	0.45	0.55
BDC-05-16	5/22/2013		643		<0.2	<0.2	0.2	7.7	3.9	<3.0	<1.0	0.043	0.048	<0.002	<0.002	0.19		1.0	0.38	26.0	-291	33.1	7.70	0.00	0.00	0.00	0.12	0.14	0.00	0.13	0.14	0.00	0.00	0.01	0.47	0.53
BDC-05-16	8/28/2013		741		<1.0	<1.0	<1.0	4.0	4.2	<3.0	<1.0					1.77		1.4	<0.30	26.0	-316	31.6	6.57	0.00	0.00	0.00	0.06	0.15	0.00	0.06	0.15	0.00	0.00	0.00	0.30	0.70
BDC-05-16	11/13/2013		818		<1.0	<1.0	<1.0	4.3	3.2	<1.0	<1.0	0.048	0.046	<0.002	<0.002	2.04		2.2	<0.30	24.0	-263	36.0	6.64	0.00	0.00	0.00	0.07	0.11	0.00	0.07	0.11	0.00	0.00	0.00	0.38	0.62
BDC-05-16	2/11/2014		908		<1.0	<1.0	<1.0	2.1	2.0	<7.0	<1.0					4.05		2.0	<0.30	25.0	-236	28.9	6.67	0.00	0.00	0.00	0.03	0.07	0.00	0.03	0.07	0.00	0.00	0.00	0.32	0.68
BDC-05-16	5/12/2014		998		<1.0	1.3	<1.0	4.9	4.9	<1.0	<1.0	0.044	0.041	<0.002	<0.002	3.67		1.3	<0.30	28.0	-229	28.7	6.67	0.00	0.01	0.00	0.08	0.17	0.00	0.09	0.17	0.00	0.04	0.00	0.30	0.66
BDC-05-16	8/6/2014		1084		<1.0	<1.0	<1.0	2.4	1.9	<1.0	<1.0					5.07		1.4	<0.30	23.0	-176	27.8	7.27	0.00	0.00	0.00	0.04	0.07	0.00	0.04	0.07	0.00	0.00	0.00	0.36	0.64
BDC-05-16	11/11/2014		1181		<1.0	<1.0	<1.0	4.6	3.9	5.4	<1.0	0.056	0.055	<0.002	<0.002	0.08		1.2	0.82	26.0	-104	38.7	6.24	0.00	0.00	0.00	0.07	0.14	0.18	0.07	0.32	0.00	0.00	0.00	0.19	0.81
BDC-05-16	1/21/2015		1252		<0.2	<0.2	<0.2	2.9	5.7	6.1	<1.0					0.18		1.3	0.70	21.0	-135	33.6	6.31	0.00	0.00	0.00	0.05	0.20	0.20	0.05	0.41	0.00	0.00	0.00	0.10	0.90
BDC-05-16	4/26/2015		1347		<0.2	<0.2	<0.2	2.3	2.4	5.7	<1.0	0.048	0.046	0.002	<0.002	0.11		1.4	<0.30	22.0	-118	23.8	6.40	0.00	0.00	0.00	0.04	0.09	0.19	0.04	0.28	0.00	0.00	0.00	0.12	0.88
BDC-05-16	7/21/2015		1433		<0.2	<0.2	<0.2	1.7	1.4	6.3	<1.0					0.26		2.0	<0.30	22.0	-67	28.9	6.30	0.00	0.00	0.00	0.03	0.05	0.21	0.03	0.26	0.00	0.00	0.00	0.09	0.91
BDC-05-16	10/27/2015		1531		<0.2	<0.2	<0.2	2.8	1.0	5.5	<1.0	0.047	0.044	<0.002	<0.002	0.06		1.2	<0.30	19.0	-45	28.9	6.41	0.00	0.00	0.00	0.04	0.04	0.18	0.04	0.22	0.00	0.00	0.00	0.17	0.83
BDC-05-16	1/26/2016		1622		<0.2	<0.2	<0.2	1.7	<1.0	8	<1.0					0.41			<0.30	21.0	-126	23.7	6.51	0.00	0.00	0.00	0.03	0.00	0.27	0.03	0.27	0.00	0.00	0.00	0.09	0.91
BDC-05-16	4/20/2016		1707		<0.2	<0.2	<0.2	1.3	1.4	9.0	<1.0	0.042	0.039	0.006	<0.002	0.51		1.0	<0.30	17.0	-33	17.7	6.78	0.00	0.00	0.00	0.02	0.05	0.30	0.02	0.35	0.00	0.00	0.00	0.06	0.94
BDC-05-16	8/9/2016		1818		<0.2	<0.2	<0.2	0.9	1.0	12	<1.0	0.033	0.033	<0.002	<0.002	-0.02		1.6	<0.30	15.0	-75.1	16.9	6.57	0.00	0.00	0.00	0.01	0.04	0.40	0.01	0.43	0.00	0.00	0.00	0.03	0.97
BDC-05-16	11/3/2016		1904		<0.2	<0.2	<0.2	0.6	<1.0	6.9	<1.0	0.022	0.021	<0.002	<0.002	0.32		1.6	<0.30	13.0	-90.8	13.0	6.13	0.00	0.00	0.00	0.01	0.00	0.23	0.01	0.23	0.00	0.00	0.00	0.04	0.96
BDC-05-16	2/8/2017		2001		<0.2	<0.2	<0.2	0.8	<1.0	6.7	<1.0	0.033	0.032	<0.002	<0.002	0.29		2.4	<0.30	10.0	-51.1	17.7	6.62	0.00	0.00	0.00	0.01	0.00	0.22	0.01	0.22	0.00	0.00	0.00	0.05	0.95
BDC-05-16	5/4/2017		2086		<0.2	<0.2	<0.2	1.3	1.6	12	<1.0	0.029	0.027	<0.002	<0.002	0.15		2.0	<0.30	9.1	-95.8	17.0	6.34	0.00	0.00	0.00	0.02	0.06	0.40	0.02	0.46	0.00	0.00	0.00	0.04	0.96
BDC-05-16	8/1/2017		2175		<0.2	<0.2	<0.2	0.5	<1.0	9.9	<1.0	0.031	0.029	0.003	<0.002	0.05		2.0	<0.30	7.4	-104	12.7	6.12	0.00	0.00	0.00	0.01	0.00	0.33	0.01	0.33	0.00	0.00	0.00	0.02	0.98
BDC-05-16	11/7/2017		2273	-3	<0.2	<0.2	<0.2	0.7	<1.0	4.0	<1.0	0.021	0.020	<0.002	<0.002	0.41		2.8	<0.30	9.5	-5.0	11.6	6.48	0.00	0.00	0.00	0.01	0.00	0.13	0.01	0.13	0.00	0.00	0.00	0.08	0.92
BDC-05-16	5/2/2018		2449	173	<0.2	<0.2	<0.2	0.44	<1.14	<1.23	<1.06	0.027	0.026	<0.001	0.0010	0.10		3.2	<0.1	12.2	-4.4	13.1	6.45	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-16	11/6/2018		2637	361	<0.2	<0.2	<0.2	0.54	<1.14	<1.23	<1.06	0.022	0.022	<0.001	0.0010	0.45		3.5	<0.100	16.7	-93.6	14.17	6.47	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-16	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.49	<1.14	<1.23	<1.06	0.027	0.026	0.0004	0.0010	0.78		5.8	0.103	22.6	-96.6	16.15	6.49	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-16	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.51	<1.14	<1.23	<1.06	0.027	0.027	0.001	0.001	1.58		1.5	0.285	19.9	-142.6	20.08	6.56	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-17	7/31/2011		-18		11	22	34	<1.0	<1.1	<1.2	<1.1	0.004	0.004	0.003	0.002	2.03	0.6	1.5	16.0	0.30	59	10.2	6.95	0.07	0.17	0.35	0.00	0.00	0.00	0.58	0.00	0.11	0.29	0.60	0.00	0.00
(IW 2011)	11/1/2011		75		3.2	4.8	5.1	<1.0	<1.1	<1.2	<1.1	0.053	0.047	0.005	<0.002	2.61	<1.0	2.4	23.9	2.8	-50	3500	5.74	0.02	0.04	0.05	0.00	0.00	0.00	0.11	0.00	0.18	0.34	0.49	0.00	0.00
	5/6/2012		262		<2.0	<2.0	9.3	5.6	<1.0	<1.0	<1.0	0.058	0.026	0.003	<0.002	0.24		2.0	0.7	15.0	182	839	6.08	0.00	0.00	0.10	0.09	0.00	0.00	0.19	0.00	0.00	0.00	0.52	0.48	0.00
BDC-05-17	11/15/2012		455		<5.0	<5.0	<5.0	5.4	2.0	<1.0	<1.0	0.081	0.062	<0.002	<0.002	0.02		1.0	<0.3	23.0	13	73.5	6.62	0.00	0.00	0.00	0.09	0.07	0.00	0.09	0.07	0.00	0.00	0.00	0.55	0.45
BDC-05-17	5/23/2013		644		<0.2	<0.2	0.7	5.1	4.3	<3.0	<1.0	0.142	0.062	<0.002	<0.002	0.44		1.2	<0.3	26.0	-259	45.8	7.54	0.00	0.00	0.01	0.08	0.15	0.00	0.09	0.15	0.00	0.00	0.03	0.34	0.63
BDC-05-17	11/13/2013		818		<0.2	<0.2	0.5	4.0	3.0	2.2	<1.0	0.057	0.037	<0.002	<0.002	2.21		2.0	<0.30	26.0	-266	49.8	6.57	0.00	0.00	0.01	0.06	0.11	0.07	0.07	0.18	0.00	0.00	0.02	0.26	0.72
BDC-05-17	5/12/2014		998		<0.2	<0.2	0.4	3.2	2.5	6.0	<1.0	0.038	0.033	<0.002	<0.002	4.60		1.8	<0.30	25.0	-368	44.1	6.64	0.00	0.00	0.00	0.05	0.09	0.20	0.06	0.29	0.00	0.00	0.01	0.15	0.84
BDC-05-17	11/11/2014		1181		<0.2	<0.2	0.3	2.7	3.9	5.9	<1.0	0.038	0.036	<0.002	<0.002	0.06		2.0	0.74	26.0	-123	52.0	6.35	0.00	0.00	0.00	0.04	0.14	0.20	0.05	0.34	0.00	0.00	0.01	0.11	0.88
BDC-05-17	4/26/2015		1347		<0.2	<0.2	0.2	1.5	2.7	3.0	<1.0	0.039	0.032	0.004	<0.002	0.25		1.4	<0.30	21.0	-127	29.0	6.44	0.00	0.00	0.00	0.02	0.10	0.10	0.03	0.20	0.00	0.00	0.01	0.11	0.88
BDC-05-17	10/27/2015		1531		<0.2	<0.2	0.2	1.6	1.0	4.5	<1.0	0.037	0.036	<0.002	<0.002	0.12		1.5	<0.30	21.0	-47	32.0	6.38	0.00	0.00	0.00	0.03	0.04	0.15	0.03	0.19	0.00	0.00	0.01	0.12	0.87
BDC-05-17	4/20/2016		1707		<0.2	<0.2	<0.2	1	1.1	6.6	<1.0	0.042	0.036	0.003	<0.002	0.44		0.8	<0.30	19.0	-77	29.0	6.84	0.00	0.00	0.00	0.02	0.04	0.22	0.02	0.26	0.00	0.00	0.00	0.06	0.94
BDC-05-17	11/3/2016		1904		<0.2	<0.2	<0.2	0.9	<1.0	7.6	<1.0	0.041	0.035	<0.002	<0.002	0.45		1.0	<0.30	19.0	-118.8	19.9	6.23	0.00	0.00	0.00	0.01	0.00	0.25	0.01	0.25	0.00	0.00	0.00	0.05	0.95
BDC-05-17	5/4/2017		2086		<0.2	<0.2	<0.2	0.9	<2.0	13	<1.0	0.044	0.037	<0.002	<0.002	0.14		1.0	<0.30	11.0	-110.4	19.2	6.29	0.00	0.00	0.00	0.01	0.00	0.43	0.01	0.43	0.00	0.00	0.00	0.03	0.97
BDC-05-17	11/7/2017		2273	-3	<0.2	<0.2	<0.2	0.8	<1.0	7.6	<1.0	0.033	0.033	<0.002	<0.002	0.47		1.8	<0.30	11.0	-2.7	15.8	6.52	0.00	0.00	0.00	0.01	0.00	0.25	0.01	0.25	0.00	0.00	0.00	0.05	0.95
BDC-05-17	5/2/2018		2449	173	<0.2	<0.2	<0.2	0.59	<1.14	<1.23	<1.06	0.032	0.032	<0.001	<0.001	0.13		2.8	<0.1	10.0	4.7	14.9	6.48	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-17	11/6/2018		2637	361	<0.2	<0.2	<0.2	0.64	<1.14	2.09	<1.06	0.029	0.030	<0.001	<0.001	0.33		3.2	<0.100	13.6	-94.4	11.21	6.51	0.00	0.00	0.00	0.01	0.00	0.07	0.01	0.07	0.00	0.00	0.00	0.13	0.87
BDC-05-17	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.58	<1.14	1.26	<1.06	0.032	0.031	0.001	<0.001	0.30		5.4	0.986	16.7	-98.5	17.81	6.56	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.04	0.00	0.00	0.00	0.18	0.82
BDC-05-17	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.54	<1.14	<1.23	<1.06	0.030	0.032	0.001	<0.001	0.09		2.4	0.213	16.2	-152.2	20.00	6.57	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-18	7/31/2011		-18		3.6	5.0	6.6	<1.0	<1.1	<1.2	<1.1	0.019	0.020	<0.002	<0.002	1.57	<0.1	2.4	4.5	3.9	-19	3.2	7.13	0.02	0.04	0.07	0.00	0.00	0.00	0.13	0.00	0.17	0.30	0.53	0.00	0.00
(MW 12 ft XG)	11/1/2011		75		2.8	4.0	7.6	<1.0	<1.1	<1.2	<1.1	0.019	0.020	0.003	0.003	1.37	<0.1	1.2	1.2	4.3	-106	21.7	6.88	0.02	0.03	0.08	0.00	0.00	0.00	0.13	0.00	0.13	0.24	0.62	0.00	0.00
	2/19/2012		185		1.8	3.7	12	<0.2	<1.0	<1.0	<1.0					0.19	<0.5	2.2	<1.5	11.0	9	2.7	6.66	0.01	0.03	0.12	0.00	0.00	0.00	0.16	0.00	0.07	0.17	0.76	0.00	0.00
BDC-05-18	5/6/2012		262		2.0	4.0	9.6	<0.2	<1.0	<1.0	<1.0	0.013	0.013	<0.002	<0.002	0.21		2.5	2.1	7.5	132	2.5	6.39	0.01	0.03	0.10	0.00	0.00	0.00	0.14	0.00	0.09	0.22	0.70	0.00	0.00
BDC-05-18	9/5/2012		384		1.5	3.1	11	0.2	<1.0	<1.0	<1.0					0.13		1.5	2.0	7.9	58	1.8	6.91	0.01	0.02	0.11	0.00	0.00	0.00	0.15	0.00	0.06	0.16	0.76	0.02	0.00
BDC-05-18	11/15/2012		455		1.0	4.3	16	<0.5	<1.0	<1.0	<1.0	0.015	0.014	<0.002	<0.002	0.48		1.4	2.4	8.3	25	1.7	6.62	0.01	0.03	0.17	0.00	0.00	0.00	0.20	0.00	0.03	0.16	0.81	0.00	0.00
BDC-05-18	2/25/2013		557		2.0	4.6	5.7	<0.2	<1.0	<1.0	<1.0					0.25		2.0	9.2	1.3	72	2.0	6.53	0.01	0.04	0.06	0.00	0.00	0.00	0.11	0.00	0.11	0.33	0.56	0.00	0.00
BDC-05-18	5/23/2013		644		3.1	5.2	4.1	<0.2	<1.0	<1.0	<1.0	0.014	0.014	<0.002	<0.002	0.30		1.5	7.0	1.0	-262	1.3	7.24	0.02	0.04	0.04	0.00	0.00	0.00	0.10	0.00	0.19	0.39	0.42	0.00	0.00
BDC-05-18	8/28/2013		741		2.2	3.7	7.4	<0.2	<1.0	<1.0	<1.0					0.76		1.6	4.1	1.5	-309	2.2	6.25	0.01	0.03	0.08	0.00	0.00	0.00	0.12	0.00	0.11	0.24	0.65	0.00	0.00
BDC-05-18	11/14/2013		819		1.2	1.8	1.4	0.2	<1.0	<1.0	<1.0	0.006	0.002	<0.002	<0.002	2.53		1.0	4.7	0.68	-164	<1.0	7.03	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.00	0.19	0.36	0.37	0.08	0.00
BDC-05-18	2/11/2014		908		1.7	2.1	5.4	0.3	<1.0	<1.0	<1.0					2.53		1.2	3.2	3.70	-224	1.4	6.68	0.01	0.02	0.06	0.00	0.00	0.00	0.09	0.00	0.12	0.18	0.64	0.06	0.00
BDC-05-18	5/13/2014		999		2.0	2.4	4.4	0.3	<1.0	<1.0	<1.0	0.001	0.002	<0.002	<0.002	3.54		1.5	6.7	3.2	-208	2.6	6.44	0.01	0.02	0.05	0.00	0.00	0.00	0.08	0.00	0.15	0.23	0.56	0.06	0.00
BDC-05-18	8/6/2014		1084		0.7	0.9	0.5	<0.2	<1.0	<1.0	<1.0					4.21		0.4	2.9	0.012	-49	1.4	8.05	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.26	0.42	0.32	0.00	0.00
BDC-05-18	11/10/2014		1180		0.4	1.1	1.2	<0.2	<1.0	<1.0	<1.0	0.006	0.002	<0.002	<0.002	0.78		0.5	3.0	0.058	3.2	<1.0	6.56	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.10	0.36	0.53	0.00	0.00
BDC-05-18	1/21/2015		1252		0.9	1.1	1.5	<0.2	<1.0	<1.0	<1.0					0.21		1.0	2.0	1.8	11.6	1.2	6.32	0.01	0.01	0.02	0.00	0.00	0.00	0.03	0.00	0.19	0.29	0.53	0.00	0.00
BDC-05-18	4/26/2015		1347		0.8	2.0	1.0	0.3	<1.0	<1.0	<1.0	0.027	0.004	0.003	<0.002	0.28		1.0	3.6	0.95	33	4.1	6.11	0.00	0.02	0.01	0.00	0.00	0.00	0.04	0.00	0.14	0.43	0.29	0.14	0.00
BDC-05-18	7/20/2015		1432		0.4	1.0	1.4	<0.2	<1.0	<1.0	<1.0					0.45		0.6	2.8	0.29	26	<1.0	6.30	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.10	0.31	0.59	0.00	0.00
BDC-05-18	10/27/2015		1531		0.7	1.3	2.4	<0.2	<1.0	<1.0	<1.0	0.014	0.001	0.006	<0.002	0.73		0.2	3.1	1.7	22	<1.0	6.43	0.00	0.01	0.02	0.00	0.00	0.00	0.04	0.00	0.11	0.25	0.64	0.00	0.00
BDC-05-18	1/26/2016		1622		2.2	2.9	1.3	<0.2	<1.0	<1.0	<1.0					1.03			5.4	0.17	-127	1.8	6.30	0.01	0.02	0.01	0.00	0.00	0.00	0.05	0.00	0.27	0.45	0.28	0.00	0.00
BDC-05-18	4/20/2016		1707		2.3	3.0	1	<0.2	<1.0	<1.0	<1.0	0.003	0.001	<0.002	<0.002	0.26		0.8	8.5	0.32	10.1	<1.0	6.51	0.01	0.02	0.01	0.00	0.00	0.00	0.05	0.00	0.29	0.49	0.22	0.00	0.00
BDC-05-18	8/9/2016		1818		1.8	2.9	2.6	<0.2	<1.0	<1.0	<1.0	0.003	0.002	<0.002	<0.002	0.42		2.8	2.5	0.74	-5.7	<1.0	6.45	0.01	0.02	0.03	0.00	0.00	0.00	0.06	0.00	0.18	0.37	0.45	0.00	0.00
BDC-05-18	11/2/2016		1903		1.2	1.6	4.1	0.4	<1.0	<1.0	<1.0	0.005	0.004	<0.002	<0.002	0.34		1.0	2.6	3.3	-11.8	2.0	6.21	0.01	0.01	0.04	0.01	0.00	0.00	0.07	0.00	0.11	0.18	0.62	0.09	0.00
BDC-05-18	2/7/2017		2000		2.8	3.4	2.4	<0.2	<1.0	<1.0	<1.0	0.011	0.003	<0.002	<0.002	0.40		3.0	5.3	0.72	32.4	1.8	6.24	0.02	0.03	0.02	0.00	0.00	0.00	0.07	0.00	0.25	0.38	0.37	0.00	0.00
BDC-05-18	5/3/2017		2085		3.6	4.6	1.3	<0.2	<1.0	<1.0	<1.0	0.007	0.002	<0.002	<0.002	1.33		2.2	8.1	0.095	81.5	1.7	5.94	0.02	0.04	0.01	0.00	0.00	0.00	0.07	0.00	0.31	0.50	0.19	0.00	0.00
BDC-05-18	8/1/2017		2175		1.9	2.4	1.1	<0.2	<1.0	<1.0	<1.0	0.047	0.001	<0.002	<0.002	1.12		2.6	5.2	3.9	-1.2	18.3	6.16	0.01	0.02	0.01	0.00	0.00	0.00	0.04	0.00	0.28	0.44	0.28	0.00	0.00
BDC-05-18	11/7/2017		2273	-3	0.6	1.7	2.6	<0.2	<1.0	<1.0	<1.0	0.112	0.003	0.004	<0.002	0.57		1.8	1.3	7.2	32.4	3.9	6.27	0.00	0.01	0.03	0.00	0.00	0.00	0.04	0.00	0.08	0.30	0.62	0.00	0.00
BDC-05-18	5/2/2018		2449	173	<0.2	0.31	6.74	3.42	<1.14	<1.23	<1.06	0.005	0.005	0.002	<0.001	0.46		4.6	0.823	15.6	15.0	27.9	6.03	0.00	0.00	0.07	0.05	0.00	0.00	0.13	0.00	0.00	0.02	0.55	0.43	0.00
BDC-05-18	11/7/2018		2638	362	0.90	1.01	6.86	2.18	<1.14	<1.23	<1.06	0.003	0.001	0.0004	<0.001	0.30		1.4	3.22	14.6	50.7	2.67	5.95	0.01	0.01	0.07	0.03	0.00	0.00	0.12	0.00	0.05	0.06	0.60	0.29	0.00
BDC-05-18	5/2/2019		2814	538	2.81	1.47	2.10	0.60	<1.14	<1.23	<1.06	0.002	0.0005	0.001	0.0004	0.34		1.0	7.20	4.71	58.7	1.94	5.98	0.02	0.01	0.02	0.01	0.00	0.00	0.06	0.00	0.29	0.19	0.36	0.16	0.00
BDC-05-18	11/6/2019		3002	726	3.41	1.42	1.42	0.52	<1.14	<1.23	<1.06	0.006	0.0003	0.002	0.001	2.39		1.4	9.24	2.43	41.5	2.59	6.20	0.02	0.01	0.01	0.01	0.00	0.00	0.05	0.00	0.38	0.20	0.27	0.15	0.00
BDC-05-19	7/31/2011		-18		15	21	23	<1.0	<1.1	<1.2	<1.1	0.002	0.001	0.002	<0.002	1.81	0.2	2.6	5.2	4.7	34	7.3	6.97	0.09	0.16	0.24	0.00	0.00	0.00	0.49	0.00	0.19	0.33	0.49	0.00	0.00
(MW 10 ft DG)	11/1/2011		75		9.1	13	36	4.1	<1.1	<1.2	<1.1	0.020	0.020	0.007	<0.002	1.53	<1.0	1.8	2.5	4.5	-142	170	6.82	0.05	0.10	0.37	0.07	0.00	0.00	0.59	0.00	0.09	0.17	0.63	0.11	0.00
	2/19/2012		185		<1.0	1.7	68	14	1.4	<1.0	<1.0					0.85	<0.5	2.0	<1.5	22.0	36	296	6.40	0.00	0.01	0.70	0.22	0.05	0.00	0.94	0.05	0.00	0.01	0.71	0.23	0.05
BDC-05-19	5/6/2012		262		0.7	1.4	52	23	1.8	<1.0	<1.0	0.058	0.052	0.032	0.008	0.02		2.0	1.4	25.0	69	244	6.39	0.00	0.01	0.54	0.37	0.06	0.00	0.92	0.06	0.00	0.01	0.55	0.37	0.07
BDC-05-19	9/5/2012		384		<2.0	<2.0	13	15	3.9	<1.0	<1.0					0.19		1.8	1.4	19.0	73	68.0	6.43	0.00	0.00	0.13	0.24	0.14	0.00	0.37	0.14	0.00	0.00	0.26	0.47	0.27
BDC-05-19	11/15/2012		455		<1.0	1.1	9.9	15	5.5	<1.0	<1.0	0.088	0.074	0.006	<0.002	0.21		1.6	1.8	24.0	3	68.1	6.58	0.00	0.01	0.10	0.24	0.20	0.00	0.35	0.20	0.00	0.02	0.19	0.44	0.36
BDC-05-19	2/25/2013		557		<1.0	<1.0	6.9	20	6.5	<1.0	<1.0					0.25		2.0	0.31	23.0	71	53.0	6.64	0.00	0.00	0.07	0.32	0.23	0.00	0.39	0.23	0.00	0.00	0.11	0.51	0.37
BDC-05-19	5/22/2013		643		<0.2	<0.2	5.1	9.6	7.2	<3.0	<1.0	0.054	0.051	0.006	<0.002	0.28		1.6	0.85	22.0	-385	52.4	8.12	0.00	0.00	0.05	0.15	0.26	0.00	0.21	0.26	0.00	0.00	0.11	0.33	0.55
BDC-05-19	8/28/2013		741		<2.0	<2.0	6.9	7.3	7.3	2.5	<1.0					1.53		2.0	0.52	22.0	-318	60.6	6.54	0.00	0.00	0.07	0.12	0.26	0.08	0.19	0.34	0.00	0.00	0.13	0.22	0.65
BDC-05-19	11/13/2013		818		<2.0	<2.0	2.3	3.1	4.1	3.0	<1.0	0.046	0.040	0.003	<0.002	3.93		1.4	0.52	26.0	-270	57.7	6.54	0.00	0.00	0.02	0.05	0.15	0.10	0.07	0.25	0.00	0.00	0.07	0.16	0.77
BDC-05-19	2/11/2014		908		<1.0	<1.0	<1.0	2.0	2.5	5.7	<1.0					5.69		2.0	0.39	23.0	-239	64.8	6.51	0.00	0.00	0.00	0.03	0.09	0.19	0.03	0.28	0.00	0.00	0.00	0.10	0.90
BDC-05-19	5/13/2014		999		<1.0	<1.0	<1.0	1.8	2.0	5.9	<1.0	0.033	0.025	0.003	<0.002	2.51		2.2	0.37	26.0	-306	54.9	6.56	0.00	0.00	0.00	0.03	0.07	0.20	0.03	0.27	0.00	0.00	0.00	0.10	0.90
BDC-05-19	8/6/2014		1084		<1.0	<1.0	<1.0	2.6	5.4	4.6	<1.0					6.55		1.8	<0.30	21.0	-174	57.8	7.13	0.00	0.00	0.00	0.04	0.19	0.15	0.04	0.35	0.00	0.00	0.00	0.11	0.89
BDC-05-19	11/10/2014		1180		<1.0	<1.0	<1.0	1.6	2.5	7.0	<1.0	0.032	0.025	0.004	<0.002	0.03		1.8	0.31	25.0	-82	40.1	6.20	0.00	0.00	0.00	0.03	0.09	0.23	0.03	0.32	0.00	0.00	0.00	0.07	0.93
BDC-05-19	1/21/2015		1252		<0.2	<0.2	<0.2	3.8	1.3	4.0	<1.0					0.19		2.2	0.55	18.0	-102	31.4	6.19	0.00	0.00	0.00	0.06	0.05	0.13	0.06	0.18	0.00	0.00	0.00	0.25	0.75
BDC-05-19	4/27/2015		1348		<0.2	<0.2	<0.2	1.6	<1.0	3.5	<1.0	0.031	0.023	0.006	<0.002	0.06		1.4	<0.30	19.0	-74	20.1	6.15	0.00	0.00	0.00	0.03	0.00	0.12	0.03	0.12	0.00	0.00	0.00	0.18	0.82
BDC-05-19	7/21/2015		1433		<0.2	<0.2	<0.2	1.5	1.6	2.2	<1.0					0.10		1.2	<0.30	21.0	-41	20.3	6.26	0.00	0.00	0.00	0.02	0.06	0.07	0.02	0.13	0.00	0.00	0.00	0.16	0.84
BDC-05-19	10/28/2015		1532		<0.2	<0.2	<0.2	1.0	<1.0	3.3	<1.0	0.034	0.027	0.004	<0.002	0.07		0.6	<0.30	19.0	-19	28.8	6.35	0.00	0.00	0.00	0.02	0.00	0.11	0.02	0.11	0.00	0.00	0.00	0.13	0.87
BDC-05-19	1/26/2016		1622		<0.2	<0.2	<0.2	1.2	<1.0	3.4	<1.0					0.21		1.3	<0.30	18.0	-95	25.9	6.41	0.00	0.00	0.00	0.02	0.00	0.11	0.02	0.11	0.00	0.00	0.00	0.15	0.85
BDC-05-19	4/20/2016		1707		<0.2	<0.2	<0.2	0.6	<1.0	3.4	<1.0	0.025	0.021	0.003	<0.002	0.14		1.2	0.36	19.0	-43	21.3	6.45	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.11	0.00	0.00	0.00	0.08	0.92
BDC-05-19	8/9/2016		1818		<0.2	<0.2	<0.2	0.4	<1.0	3.9	<1.0	0.015	0.014	<0.002	<0.002	0.31		1.5	0.6	17.0	-109.1	12.2	6.07	0.00	0.00	0.00	0.01	0.00	0.13	0.01	0.13	0.00	0.00	0.00	0.05	0.95
BDC-05-19	11/3/2016		1904		<0.2	<0.2	<0.2	0.2	<1.0	<1.0	<1.0	0.012	0.010	<0.002	<0.002	0.08		2.6	0.30	18.0	-116.1	12.9	6.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-19	2/8/2017		2001		<0.2	<0.2	<0.2	0.3	<1.0	3.2	<1.0	0.023	0.011	0.003	<0.002	0.34		3.2	0.32	16.0	-33.3	12.1	6.54	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.00	0.00	0.00	0.04	0.96
BDC-05-19	5/4/2017		2086		<0.2	<0.2	<0.2	0.4	<1.0	2.3	<1.0	0.020	0.013	<0.002	<0.002	0.24		1.8	0.43	13.0	-96	11.6	6.26	0.00	0.00	0.00	0.01	0.00	0.08	0.01	0.08	0.00	0.00	0.00	0.08	0.92
BDC-05-19	8/1/2017		2175		<0.2	<0.2	<0.2	0.2	<1.0	9.3	<1.0	0.017	0.012	<0.002	<0.002	0.11		2.2	<0.30	15.0	-98.0	10.2	6.21	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.31	0.00	0.00	0.00	0.01	0.99
BDC-05-19	11/6/2017		2272	-4	<0.2	<0.2	<0.2	<0.2	<1.0	1.5	<1.0	0.006	0.004	<0.002	<0.002	0.55		3.0	0.45	15.0	-19.6	9.3	6.46	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	1.00
BDC-05-19	5/2/2018		2449	173	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.011	0.008	<0.001	<0.001	1.28		3.4	0.124	13.8	-105.6	22.62	6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-19	11/6/2018		2637	361	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.006	0.006	<0.001	<0.001	0.71		4.6	0.255	20.9	-72.6	15.89	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-19	5/2/2019		2814	538	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.012	0.011	0.001	<0.001	0.32		6.0	0.232	19.7	-69.4	15.61	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-19	11/5/2019		3001	725	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.006	0.005	0.0005	<0.001	0.15		2.0	0.496	14.8	11.8	16.51	6.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH													
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008									PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Well	Date																																		
BDC-05-20	7/31/2011		-18		<1.0	7.0	45	<1.0	<1.1	<1.2	<1.1	0.011	0.011	<0.002	<0.002	2.33	<0.1	1.5	7.4	0.2	-42	10.8	7.12	0.00	0.05	0.46	0.00	0.00	0.00	0.52	0.00	0.00	0.10	0.90	0.00	0.00
(MW 31 ft DG)	11/3/2011		77		<1.0	5.7	25	1.0	<1.1	<1.2	<1.1	0.010	0.011	<0.002	<0.002	1.54	<0.1	1.0	6.0	4.6	11	8.3	7.14	0.00	0.04	0.26	0.02	0.00	0.00	0.32	0.00	0.00	0.14	0.81	0.05	0.00
	2/19/2012		185		<0.2	2.9	17	2.5	<1.0	<1.0	<1.0					0.35	<0.5	1.5	<1.5	16.0	31	8.2	6.69	0.00	0.02	0.18	0.04	0.00	0.00	0.24	0.00	0.00	0.09	0.74	0.17	0.00
BDC-05-20	5/7/2012		263		<0.2	1.8	14	2.2	<1.0	<1.0	<1.0	0.011	0.011	<0.002	<0.002	0.69		1.8	2.3	20.0	20	11.1	6.66	0.00	0.01	0.14	0.04	0.00	0.00	0.19	0.00	0.00	0.07	0.75	0.18	0.00
BDC-05-20	9/5/2012		384		<0.4	<0.4	12	2.0	<1.0	<1.0	<1.0					0.08		1.4	<0.3	14.0	67	12.1	6.75	0.00	0.00	0.12	0.03	0.00	0.00	0.16	0.00	0.00	0.00	0.79	0.21	0.00
BDC-05-20	11/16/2012		456		<0.5	0.6	17	3.5	<1.0	<1.0	<1.0	0.012	0.013	<0.002	<0.002	0.07		2.0	<0.3	18.0	0.9	13.1	6.88	0.00	0.00	0.18	0.06	0.00	0.00	0.24	0.00	0.00	0.02	0.74	0.24	0.00
BDC-05-20	2/26/2013		558		<0.2	0.5	9.8	6.1	<1.0	<1.0	<1.0					0.16		1.5	<0.3	22.0	16	16.3	6.86	0.00	0.00	0.10	0.10	0.00	0.00	0.20	0.00	0.00	0.02	0.50	0.48	0.00
BDC-05-20	5/23/2013		644		<0.2	0.4	10	8.1	1.5	<1.0	<1.0	0.016	0.017	<0.002	<0.002	0.25		1.2	<0.3	25.0	-233	16.9	7.55	0.00	0.00	0.10	0.13	0.05	0.00	0.24	0.05	0.00	0.01	0.36	0.45	0.18
BDC-05-20	8/28/2013		741		<0.2	0.2	6.5	10	2.1	<1.0	<1.0					2.38		2.6	<0.30	20.0	-317	15.4	6.70	0.00	0.00	0.07	0.16	0.07	0.00	0.23	0.07	0.00	0.01	0.22	0.53	0.25
BDC-05-20	11/14/2013		819		<0.2	0.3	8.1	8.8	2.2	<1.0	<1.0	0.021	0.021	<0.002	<0.002	2.26		1.4	<0.30	19.0	-287	17.9	6.77	0.00	0.00	0.08	0.14	0.08	0.00	0.23	0.08	0.00	0.01	0.27	0.46	0.26
BDC-05-20	2/12/2014		909		<0.2	0.2	3.9	7.8	3.0	<4.0	<1.0					2.82		1.8	<0.30	16.0	-205	16.3	6.78	0.00	0.00	0.04	0.12	0.11	0.00	0.17	0.11	0.00	0.01	0.15	0.46	0.39
BDC-05-20	5/13/2014		999		<0.2	<0.2	3.8	6.3	2.0	<1.0	<1.0	0.017	0.017	<0.002	<0.002	3.44		1.6	0.36	16.0	-213	18.7	6.79	0.00	0.00	0.04	0.10	0.07	0.00	0.14	0.07	0.00	0.00	0.19	0.48	0.34
BDC-05-20	8/6/2014		1084		<0.2	<0.2	1.3	7.5	2.1	2.0	<1.0					4.23		1.4	<0.30	12.0	-150	17.6	7.31	0.00	0.00	0.01	0.12	0.07	0.07	0.13	0.14	0.00	0.00	0.05	0.44	0.51
BDC-05-20	11/10/2014		1180		<0.2	<0.2	0.7	4.9	3.0	3.6	<1.0	0.021	0.021	<0.002	<0.002	0.08		0.8	0.97	15.0	-117	15.9	6.50	0.00	0.00	0.01	0.08	0.11	0.12	0.09	0.23	0.00	0.00	0.02	0.25	0.73
BDC-05-20	1/21/2015		1252		<0.2	<0.2	0.5	3.8	2.7	2.6	<1.0					0.27		1.0	0.59	13.0	-120	13.8	6.47	0.00	0.00	0.01	0.06	0.10	0.09	0.07	0.18	0.00	0.00	0.02	0.24	0.73
BDC-05-20	4/26/2015		1347		<0.2	<0.2	0.4	6.9	4.8	1.6	<1.0	0.028	0.023	<0.002	<0.002	0.06		0.8	<0.30	14.0	-99	11.4	6.43	0.00	0.00	0.00	0.11	0.17	0.05	0.11	0.22	0.00	0.00	0.01	0.33	0.66
BDC-05-20	7/21/2015		1433		<0.2	<0.2	0.2	2.7	4.5	3.0	<1.0					0.12		1.3	<0.30	17.0	-59	14.2	6.55	0.00	0.00	0.00	0.04	0.16	0.10	0.05	0.26	0.00	0.00	0.01	0.14	0.85
BDC-05-20	10/27/2015		1531		<0.2	<0.2	<0.2	2.0	1.5	1.1	<1.0	0.028	0.028	<0.002	<0.002	0.23		1.4	<0.30	11.0	-35	10.6	6.47	0.00	0.00	0.00	0.03	0.05	0.04	0.03	0.09	0.00	0.00	0.00	0.26	0.74
BDC-05-20	1/26/2016		1622		<0.2	<0.2	0.2	2.7	2.1	1.5	<1.0					0.26		1.3	<0.30	11.0	-109	9.9	6.63	0.00	0.00	0.00	0.04	0.07	0.05	0.05	0.12	0.00	0.00	0.01	0.25	0.73
BDC-05-20	4/21/2016		1708		<0.2	<0.2	0.3	6.8	6.1	2.5	<1.0	0.034	0.030	<0.002	<0.002	0.38		0.8	<0.30	8.8	-44	16.2	6.63	0.00	0.00	0.00	0.11	0.22	0.08	0.11	0.30	0.00	0.00	0.01	0.26	0.73
BDC-05-20	8/9/2016		1818		<0.2	<0.2	0.2	2.2	7.0	2.9	<1.0	0.030	0.028	<0.002	<0.002	-0.01		2.0	0.37	8.4	-82	12.9	6.62	0.00	0.00	0.00	0.04	0.25	0.10	0.04	0.35	0.00	0.00	0.01	0.09	0.90
BDC-05-20	11/3/2016		1904		<0.2	<0.2	<0.2	1.4	5.2	2.5	<1.0	0.027	0.028	<0.002	<0.002	0.40		1.0	<0.30	8.9	-121.9	14.1	6.60	0.00	0.00	0.00	0.02	0.19	0.08	0.02	0.27	0.00	0.00	0.00	0.08	0.92
BDC-05-20	2/8/2017		2001		<0.2	<0.2	<0.2	1.8	5.2	2.8	<1.0	0.029	0.030	<0.002	<0.002	0.39		2.8	<0.30	7.1	-44.2	13.0	6.61	0.00	0.00	0.00	0.03	0.19	0.09	0.03	0.28	0.00	0.00	0.00	0.09	0.91
BDC-05-20	5/4/2017		2086		<0.2	<0.2	<0.2	1.2	2.3	4.3	<1.0	0.027	0.026	<0.002	<0.002	0.30		1.6	1.2	4.3	-99.6	12.9	6.55	0.00	0.00	0.00	0.02	0.08	0.14	0.02	0.22	0.00	0.00	0.00	0.08	0.92
BDC-05-20	8/1/2017		2175		<0.2	<0.2	<0.2	0.9	1.4	4.6	<1.0	0.027	0.027	<0.002	<0.002	0.61		2.1	<0.30	6.4	-104.9	12.3	6.46	0.00	0.00	0.00	0.01	0.05	0.15	0.01	0.20	0.00	0.00	0.00	0.07	0.93
BDC-05-20	11/7/2017		2273	-3	<0.2	<0.2	<0.2	1.1	<1.0	1.3	<1.0	0.027	0.027	<0.002	<0.002	0.36		2.2	<0.30	8.7	6.8	7.9	6.56	0.00	0.00	0.00	0.02	0.00	0.04	0.02	0.04	0.00	0.00	0.00	0.29	0.71
BDC-05-20	5/2/2018		2449	173	<0.2	<0.2	<0.2	1.04	<1.14	<1.23	<1.06	0.028	0.028	<0.001	0.0004	0.89		2.3	<0.1	3.9	-96.4	12.2	6.55	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-20	11/7/2018		2638	362	<0.2	<0.2	<0.2	0.90	<1.14	<1.23	<1.06	0.030	0.028	<0.001	<0.001	0.19		2.8	<0.100	24.3	-45.2	9.14	6.54	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-20	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.86	<1.14	<1.23	<1.06	0.028	0.027	<0.001	<0.001	0.23		3.8	<0.10	22.9	-84.3	11.96	6.57	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-20	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.78	<1.14	<1.23	<1.06	0.025	0.026	0.0005	<0.001	1.07		3.2	0.196	20.8	-130.5	12.30	6.56	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-21	7/31/2011		-18		<1.0	<1.0	1.3	14	2.6	<1.2	<1.1	0.006	0.006	<0.002	<0.002	2.98	<0.1	3.2	0.2	5.6	-31	6.4	7.33	0.00	0.00	0.01	0.22	0.09	0.00	0.24	0.09	0.00	0.00	0.04	0.68	0.28
(MW 31 ft XG)	11/3/2011		77		<1.0	<1.0	1.0	4.7				0.005	0.005	<0.002	<0.002	1.95	<0.1	1.4	6.3		-12	5.2	7.29	0.00	0.00	0.01	0.08			0.09		0.00	0.00	0.12	0.88	
	2/19/2012		185		<0.2	0.3	0.7	5.9								0.40	<0.5	1.4	<1.5		47	7.2	6.65	0.00	0.00	0.01	0.09			0.10		0.00	0.02	0.07	0.91	
BDC-05-21	5/7/2012		263		<0.2	0.4	0.8	2.5				0.010	0.011	0.005	<0.002	0.86		1.5	1.9		-35	12.3	6.76	0.00	0.00	0.01	0.04			0.05		0.00	0.06	0.16	0.78	
BDC-05-21	9/5/2012		384		<0.2	0.3	0.6	2.9								0.08		2.5	1.4		62	9.5	6.78	0.00	0.00	0.01	0.05			0.05		0.00	0.04	0.11	0.85	
BDC-05-21	11/16/2012		456		<0.5	<0.5	0.6	2.9				0.020	0.020	<0.002	<0.002	0.02		1.5	0.6		-4	8.9	6.92	0.00	0.00	0.01	0.05			0.05		0.00	0.00	0.12	0.88	
BDC-05-21	2/26/2013		558		<0.2	0.3	0.8	3.3	<1.0	<1.0	<1.0					0.24		1.4	<0.3	18.0	-2.6	8.7	7.03	0.00	0.00	0.01	0.05	0.00	0.00	0.06	0.00	0.00	0.04	0.13	0.83	0.00
BDC-05-21	5/23/2013		644		<0.2	0.3	0.9	6.5				0.024	0.022	<0.002	<0.002	0.19		1.5	<0.3		-235	8.2	7.50	0.00	0.00	0.01	0.10			0.12		0.00	0.02	0.08	0.90	
BDC-05-21	8/28/2013		741		<0.2	0.2	0.8	7.7	6.2	1.8	<1.0					0.74		3.5	<0.30	14.0	-310	7.9	6.72	0.00	0.00	0.01	0.12	0.22	0.06	0.13	0.28	0.00	0.00	0.02	0.30	0.68
BDC-05-21	11/14/2013		819		<0.2	0.2	1.0	7.3	3.5	1.4	<1.0	0.019	0.017	<0.002	<0.002	2.84		2.0	<0.30	12.0	-239	7.7	6.78	0.00	0.00	0.01	0.12	0.12	0.05	0.13	0.17	0.00	0.01	0.03	0.39	0.57
BDC-05-21	2/12/2014		909		<0.2	0.2	3.0	3.4	1.9	2.9	<1.0					2.74		2.2	<0.30	12.0	-210	8.3	6.87	0.00	0.00	0.03	0.05	0.07	0.10	0.09	0.16	0.00	0.01	0.12	0.22	0.65
BDC-05-21	5/13/2014		999		<0.2	<0.2	1.9	2.2	2.8	2.9	<1.0	0.022	0.017	<0.002	<0.002	3.33		1.4	0.60	9.1	-259	8.6	6.82	0.00	0.00	0.02	0.04	0.10	0.10	0.05	0.20	0.00	0.00	0.08	0.14	0.78
BDC-05-21	8/6/2014		1084		<0.2	<0.2	2.3	5.6	3.8	1.8	<1.0					3.75		2.2	<0.30	6.5	-153	9.4	7.42	0.00	0.00	0.02	0.09	0.14	0.06	0.11	0.20	0.00	0.00	0.08	0.29	0.63
BDC-05-21	11/10/2014		1180		<0.2	<0.2	1.5	3.4	4.3	1.2	<1.0	0.017	0.014	<0.002	<0.002	0.24		1.4	0.99	5.8	-126	5.7	6.44	0.00	0.00	0.02	0.05	0.15	0.04	0.07	0.19	0.00	0.00	0.06	0.21	0.73
BDC-05-21	1/21/2015		1252		<0.2	<0.2	1.1	3.5	2.2	<1.0	<1.0					0.15		1.0	0.97	1.8	-124	6.3	6.43	0.00	0.00	0.01	0.06	0.08	0.00	0.07	0.08	0.00	0.00	0.08	0.38	0.54
BDC-05-21	4/27/2015		1348		<0.2	<0.2	1.5	4.4	2.7	<1.0	<1.0	0.013	0.011	<0.002	<0.002	0.28		0.8	1.9	4.8	-104	5.4	6.43	0.00	0.00	0.02	0.07	0.10	0.00	0.09	0.10	0.00	0.00	0.08	0.39	0.53
BDC-05-21	7/20/2015		1432		<0.2	<0.2	0.8	3.0	2.7	<1.0	<1.0					0.17		1.2	0.55	6.8	-84	4.5	6.41	0.00	0.00	0.01	0.05	0.10	0.00	0.06	0.10	0.00	0.00	0.05	0.31	0.63
BDC-05-21	10/27/2015		1531		<0.2	<0.2	0.5	4.1	2.1	<1.0	<1.0	0.009	0.011	<0.002	<0.002	0.08		2.0	0.49	3.0	-46	5.7	6.53	0.00	0.00	0.01	0.07	0.07	0.00	0.07	0.07	0.00	0.00	0.04	0.45	0.51
BDC-05-21	1/26/2016		1622		<0.2	<0.2	2.0	2.9	1.2	<1.0	<1.0					1.41			1.40	2.5	-119	13.8	6.50	0.00	0.00	0.02	0.05	0.04	0.00	0.07	0.04	0.00	0.00	0.19	0.42	0.39
BDC-05-21	4/21/2016		1708		<0.2	<0.2	1.7	2.4	1.6	<1.0	<1.0	0.016	0.016	<0.002	<0.002	0.18		1.0	1.1	4.6	-75	12.7	6.78	0.00	0.00	0.02	0.04	0.06	0.00	0.06	0.06	0.00	0.00	0.16	0.34	0.50
BDC-05-21	8/9/2016		1818		<0.2	<0.2	0.6	1.6	3	2.3	<1.0	0.008	0.008	<0.002	<0.002	0.05		4.0	<0.30	11.0	-99.6	6.7	6.52	0.00	0.00	0.01	0.03	0.11	0.08	0.03	0.18	0.00	0.00	0.03	0.12	0.85
BDC-05-21	11/2/2016		1903		<0.2	<0.2	0.4	1.3	1.2	1.8	<1.0	0.008	0.009	<0.002	<0.002	0.43		0.8	<0.30	8.8	-122.8	9.5	6.45	0.00	0.00	0.00	0.02	0.04	0.06	0.02	0.10	0.00	0.00	0.03	0.16	0.80
BDC-05-21	2/7/2017		2000		<0.2	<0.2	0.5	1.4	<1.0	1.6	<1.0	0.007	0.006	<0.002	<0.002	0.36		2.6	<0.30	9.1	-67.5	9.3	6.52	0.00	0.00	0.01	0.02	0.00	0.05	0.03	0.05	0.00	0.00	0.06	0.28	0.66
BDC-05-21	5/3/2017		2085		<0.2	<0.2	0.7	2.0	2.8	1.3	<1.0	0.009	0.009	<0.002	<0.002	0.46		2.0	0.64	3.4	-114.4	9.1	6.45	0.00	0.00	0.01	0.03	0.10	0.04	0.04	0.14	0.00	0.00	0.04	0.18	0.78
BDC-05-21	8/1/2017		2175		<0.2	<0.2	0.6	1.5	3.9	5.6	<1.0	0.009	0.009	<0.002	<0.002	2.53		2.8	1.1	4.9		13.9	6.11	0.00	0.00	0.01	0.02	0.14	0.19	0.03	0.33	0.00	0.00	0.02	0.07	0.92
BDC-05-21	11/7/2017		2273	-3	<0.2	<0.2	0.9	1.2	<1.0	2.5	<1.0	0.011	0.011	<0.002	<0.002	0.42		2.0	1.3	5.8	10.7	13.2	6.54	0.00	0.00	0.01	0.02	0.00	0.08	0.03	0.08	0.00	0.00	0.08	0.17	0.74
BDC-05-21	5/2/2018		2449	173	<0.2	<0.2	0.43	0.83	<1.14	<1.23	<1.06	0.008	0.008	<0.001	<0.001	0.10		4.0	7.32	9.1	5.6	4.95	6.40	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.25	0.75	0.00
BDC-05-21	11/7/2018		2638	362	<0.2	<0.2	0.20	0.72	<1.14	<1.23	<1.06	0.007	0.007	<0.001	<0.001	0.39		2.8	0.490	10.3	13.2	5.89	6.32	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.15	0.85	0.00
BDC-05-21	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.50	<1.14	<1.23	<1.06	0.009	0.009	<0.001	<0.001	0.18		4.6	2.19	5.1	-4.1	4.62	6.28	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-21	11/6/2019		3002	726	<0.2	<0.2	<0.2	0.32	<1.14	<1.23	<1.06	0.009	0.011	<0.001	<0.001	1.10		3.4	1.97	5.14	-82.4	6.95	6.28	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-22	7/31/2011		-18		<1.0	1.1	9.6	1.0	<1.1	<1.2	<1.1	0.025	0.024	<0.002	<0.002	2.02	<0.1	2.2	14.0	5.1	-59	7.9	7.21	0.00	0.01	0.10	0.02	0.00	0.00	0.12	0.00	0.00	0.07	0.80	0.13	0.00
(MW 48 ft XG)	11/3/2011		77		<1.0	2.1	10	<1.0				0.020	0.020	<0.002	<0.002	1.46	<0.1	0.8	18.1		19	6.1	7.08	0.00	0.02	0.10	0.00			0.12		0.00	0.13	0.87	0.00	
	2/19/2012		185		<0.2	2.0	13	0.4								0.43	<0.5	1.2	17.0		110	6.2	6.73	0.00	0.02	0.13	0.01			0.16		0.00	0.10	0.86	0.04	
BDC-05-22	5/7/2012		263		<0.2	2.0	11	0.5				0.025	0.023	0.002	<0.002	0.81		1.6	19.4		32	8.4	6.68	0.00	0.02	0.11	0.01			0.14		0.00	0.11	0.83	0.06	
BDC-05-22	9/5/2012		384		<0.2	1.8	9.5	0.8								0.06		2.2	14.7		75	7.6	6.71	0.00	0.01	0.10	0.01			0.12		0.00	0.11	0.79	0.10	
BDC-05-22	11/16/2012		456		<0.5	1.6	10	0.7				0.033	0.031	<0.002	<0.002	0.02		0.8	17.8		5	7.7	6.93	0.00	0.01	0.10	0.01			0.13		0.00	0.10	0.82	0.09	
BDC-05-22	2/26/2013		558		<0.2	1.3	9.4	1.2								0.09		1.6	10.1		23	7.5	6.92	0.00	0.01	0.10	0.02			0.13		0.00	0.08	0.77	0.15	
BDC-05-22	5/23/2013		644		<0.2	1.2	10	0.6				0.029	0.029	<0.002	<0.002	0.25		1.4	6.3		-233	8.7	7.63	0.00	0.01	0.10	0.01			0.12		0.00	0.07	0.85	0.08	
BDC-05-22	8/28/2013		741		<0.2	1.2	7.3	0.2								0.65			3.5		-322	8.9	6.69	0.00	0.01	0.08	0.00			0.09		0.00	0.10	0.86	0.04	
BDC-05-22	11/14/2013		819		<0.2	1.2	6.9	<0.2				0.028	0.027	<0.002	<0.002	1.96		1.5	5.9		-240	8.8	6.74	0.00	0.01	0.07	0.00			0.08		0.00	0.11	0.89	0.00	
BDC-05-22	2/12/2014		909		<0.2	0.7	5.7	<0.2								2.67		2.0	4.9		-224	7.3	6.88	0.00	0.01	0.06	0.00			0.06		0.00	0.08	0.92	0.00	
BDC-05-22	5/13/2014		999		<0.2	1.4	6.7	<0.2				0.027	0.025	<0.002	<0.002	3.16		1.5	8.7		-183	8.4	6.68	0.00	0.01	0.07	0.00			0.08		0.00	0.13	0.87	0.00	
BDC-05-22	8/6/2014		1084		<0.2	1.2	5.5	<0.2								4.59		1.6	10.9		-137	9.6	7.31	0.00	0.01	0.06	0.00			0.07		0.00	0.14	0.86	0.00	
BDC-05-22	11/10/2014		1180		<0.2	1.2	5.8	<0.2				0.031	0.031	<0.002	<0.002	0.05		1.4	19.2		-113	6.8	6.43	0.00	0.01	0.06	0.00			0.07		0.00	0.13	0.87	0.00	
BDC-05-22	1/21/2015		1252		<0.2	0.7	4.2	<0.2								0.30		1.0	1.2		-140	7.3	6.53	0.00	0.01	0.04	0.00			0.05		0.00	0.11	0.89	0.00	
BDC-05-22	4/27/2015		1348		<0.2	0.5	4.2	<0.2				0.025	0.026	0.004	<0.002	0.14		1.8	<0.30		-115	5.2	6.44	0.00	0.00	0.04	0.00			0.05		0.00	0.08	0.92	0.00	
BDC-05-22	7/21/2015		1433		<0.2	0.7	5.5	<0.2								0.12		1.0	4.4		-47	6.1	6.38	0.00	0.01	0.06	0.00			0.06		0.00	0.09	0.91	0.00	
BDC-05-22	10/27/2015		1531		<0.2	0.6	4.5	<0.2				0.030	0.027	<0.002	<0.002	0.09		1.0	4.2		-50	6.9	6.59	0.00	0.00	0.05	0.00			0.05		0.00	0.09	0.91	0.00	
BDC-05-22	1/26/2016		1622		<0.2	0.9	7.1	<0.2								0.28		1.4	8.5		-109	6.8	6.55	0.00	0.01	0.07	0.00			0.08		0.00	0.09	0.91	0.00	
BDC-05-22	4/21/2016		1708		<0.2	0.9	7.3	<0.2				0.035	0.034	<0.002	<0.002	0.79		1.0	22.4		-39	6.0	6.44	0.00	0.01	0.08	0.00			0.08		0.00	0.08	0.92	0.00	
BDC-05-22	8/9/2016		1818		<0.2	1.1	6.2	1.5				0.029	0.030	<0.002	<0.002	0.04		2.2	6.6		-60.8	6.2	6.50	0.00	0.01	0.06	0.02			0.10		0.00	0.09	0.66	0.25	
BDC-05-22	11/3/2016		1904		<0.2	0.3	7.0	0.8				0.025	0.025	<0.002	0.004	0.60		0.8	0.57		-126.9	5.7	6.66	0.00	0.00	0.07	0.01			0.09		0.00	0.03	0.83	0.15	
BDC-05-22	2/8/2017		2001		<0.2	0.3	8.4	<0.2				0.026	0.026	<0.002	<0.002	0.54		3.4	0.3		-23.5	5.9	6.27	0.00	0.00	0.09	0.00			0.09		0.00	0.03	0.97	0.00	
BDC-05-22	5/4/2017		2086		<0.2	0.6	9.4	<0.2				0.028	0.030	<0.002	<0.002	0.24		2.6	6.6		-128	6.0	6.57	0.00	0.00	0.10	0.00			0.10		0.00	0.04	0.96	0.00	
BDC-05-22	8/1/2017		2175		<0.2	0.7	9.1	<0.2				0.032	0.030	<0.002	<0.002	1.88		2.6	1.8		-85.1	6.3	6.28	0.00	0.01	0.09	0.00			0.10		0.00	0.05	0.95	0.00	
BDC-05-22	11/7/2017		2273	-3	<0.2	<0.2	6.7	<0.2				0.021	0.021	<0.002	<0.002	0.55		1.6	<0.30		-0.8	5.9	6.60	0.00	0.00	0.07	0.00			0.07		0.00	0.00	1.00	0.00	
BDC-05-22	5/2/2018		2449	173	<0.2	0.55	10.6	1.02				0.033	0.032	<0.001	<0.001	0.90		3.4	10.9		-88.1	5.7	6.49	0.00	0.00	0.11	0.02			0.13		0.00	0.03	0.84	0.13	
BDC-05-22	11/7/2018		2638	362	<0.2	0.39	11.9	1.25				0.028	0.030	0.005	<0.001	0.30		3.2	2.12		-29.0	5.39	6.47	0.00	0.00	0.12	0.02			0.15		0.00	0.02	0.84	0.14	
BDC-05-22	5/2/2019		2814	538	<0.2	0.54	6.48	1.02				0.043	0.039	<0.001	<0.001	0.23		3.7	2.43		-80.6	9.83	6.56	0.00	0.00	0.07	0.02			0.09		0.00	0.05	0.77	0.19	
BDC-05-22	11/6/2019		3002	726	<0.2	0.35	4.87	0.69				0.043	0.043	<0.001	<0.001	1.71		4.0	1.12		-133.1	9.35	6.53	0.00	0.00	0.05	0.01			0.06		0.00	0.04	0.79	0.17	
BDC-05-23	7/31/2011		-18		<1.0	<1.0	3.2	<1.0	<1.1	<1.2	<1.1	0.005	0.005	0.002	<0.002	2.72	<0.1	2.2	8.6	6.0	-101	9.1	7.47	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	1.00	0.00	0.00
(MW 170ft DG)	11/3/2011		77		<1.0	<1.0	4.8	<1.0				0.005	0.006	<0.002	<0.002	1.45	<0.1	1.0	25.2		1	8.8	7.08	0.00	0.00	0.05	0.00			0.05		0.00	0.00	1.00	0.00	
	2/19/2012		185		<0.2	0.6	4.7	0.7								0.96	<0.5	1.2	8.9		162	8.1	6.33	0.00	0.00	0.05	0.01			0.06		0.00	0.07	0.75	0.17	
BDC-05-23	5/7/2012		263		<0.2	0.7	5.4	0.8				0.008	0.008	<0.002	<0.002	0.07		2.0	15.8		45	9.3	6.70	0.00	0.01	0.06	0.01			0.07		0.00	0.07	0.75	0.17	
BDC-05-23	9/5/2012		384		<0.2	0.7	6.2	0.9								0.08		1.9	8.8		78	11.3	6.84	0.00	0.01	0.06	0.01			0.08		0.00	0.06	0.76	0.17	
BDC-05-23	11/16/2012		456		<0.5	0.8	6.9	0.5				0.012	0.010	<0.002	<0.002	0.09		1.0	4.9		-6	11.6	7.06	0.00	0.01	0.07	0.01			0.09		0.00	0.07	0.83	0.09	
BDC-05-23	2/25/2013		557		<0.2	0.5	4.2	1.0								0.08		1.5	0.87		72	9.2	6.91	0.00	0.00	0.04	0.02			0.06		0.00	0.06	0.69	0.25	
BDC-05-23	5/23/2013		644		<0.2	0.5	4.7	1.0				0.015	0.015	<0.002	<0.002	0.31		1.2	1.7		-234	11.0	7.59	0.00	0.00	0.05	0.02			0.07		0.00	0.06	0.71	0.23	
BDC-05-23	8/28/2013		741		<1.0	2.2	21	5.4								0.60		0.5	0.35		-323	10.4	6.76	0.00	0.02	0.22	0.09			0.32		0.00	0.05	0.68	0.27	
BDC-05-23	11/14/2013		819		<0.2	0.3	3.0	0.9				0.017	0.015	<0.002	<0.002	1.58		1.3	0.62		-252	11.1	6.87	0.00	0.00	0.03	0.01			0.05		0.00	0.05	0.65	0.30	
BDC-05-23	2/12/2014		909		<0.2	0.2	2.7	1.2								2.40		1.8	0.74		-229	9.3	6.86	0.00	0.00	0.03	0.02			0.05		0.00	0.03	0.57	0.40	
BDC-05-23	5/13/2014		999		<0.2	0.3	4.5	1.0				0.023	0.023	<0.002	<0.002	3.15		1.4	3.1		-207	12.1	6.97	0.00	0.00	0.05	0.02			0.06		0.00	0.04	0.72	0.25	
BDC-05-23	8/6/2014		1084		<0.2	0.3	4.2	1.2								4.49		1.2	2.7		-149	13.3	7.35	0.00	0.00	0.04	0.02			0.06		0.00	0.04	0.67	0.30	
BDC-05-23	11/10/2014		1180		<0.2	0.3	3.9	1.0				0.023	0.021	<0.002	<0.002	0.10		1.6	1.9		-122	10.1	6.40	0.00	0.00	0.04	0.02			0.06		0.00	0.04	0.69	0.27	
BDC-05-23	1/21/2015		1252		<0.2	<0.2	2.8	1.7								0.13		1.4	0.66		-144	9.5	6.49	0.00	0.00	0.03	0.03			0.06		0.00	0.00	0.51	0.49	
BDC-05-23	4/27/2015		1348		<0.2	<0.2	2.9	2.4				0.022	0.021	<0.002	<0.002	0.19		1.6	0.74		-114	7.5	6.40	0.00	0.00	0.03	0.04			0.07		0.00	0.00	0.44	0.56	
BDC-05-23	7/20/2015		1432		<0.2	<0.2	1.5	2.7								0.22		0.9	<0.30		-84	7.1	6.40	0.00	0.00	0.02	0.04			0.06		0.00	0.00	0.26	0.74	
BDC-05-23	10/27/2015		1531		<0.2	<0.2	2.1	1.6				0.021	0.020	<0.002	<0.002	0.18		1.4	0.46		-55	7.9	6.64	0.00	0.00	0.02	0.03			0.05		0.00	0.00	0.46	0.54	
BDC-05-23	1/26/2016		1622		<0.2	<0.2	4.9	0.9								0.50			2.2		-112	7.8	6.44	0.00	0.00	0.05	0.01			0.06		0.00	0.00	0.78	0.22	
BDC-05-23	4/21/2016		1708		<0.2	<0.2	4.0	1.4				0.024	0.023	<0.002	<0.002	0.28		0.6	3.0		-72	6.3	6.83	0.00	0.00	0.04	0.02			0.06		0.00	0.00	0.65	0.35	
BDC-05-23	8/9/2016		1818		<0.2	<0.2	3.2	1.1				0.026	0.025	<0.002	<0.002	0.03		1.8	2.8		-80.3	7.3	6.64	0.00	0.00	0.03	0.02			0.05		0.00	0.00	0.65	0.35	
BDC-05-23	11/3/2016		1904		<0.2	<0.2	3.7	0.5				0.023	0.023	0.003	<0.002	0.62		0.6	4.2		-122.2	7.4	6.73	0.00	0.00	0.04	0.01			0.05		0.00	0.00	0.83	0.17	
BDC-05-23	2/7/2017		2000		<0.2	<0.2	2.1	1.3				0.016	0.016	<0.002	<0.002	0.62		3.0	2.2		-65.0	7.1	6.70	0.00	0.00	0.02	0.02			0.04		0.00	0.00	0.51	0.49	
BDC-05-23	5/3/2017		2085		<0.2	<0.2	2.0	0.5				0.026	0.026	<0.002	<0.002	0.80		2.0	10.9		-37.3	7.2	6.52	0.00	0.00	0.02	0.01			0.03		0.00	0.00	0.72	0.28	
BDC-05-23	8/1/2017		2175		<0.2	<0.2	0.9	0.5				0.017	0.019	<0.002	<0.002	1.00		2.2	4.7		-20.5	6.7	6.15	0.00	0.00	0.01	0.01			0.02		0.00	0.00	0.54	0.46	
BDC-05-23	11/7/2017		2273	-3	<0.2	<0.2	2.6	1.8				0.025	0.025	<0.002	<0.002	0.44		3.2	2.0		10.5	7.5	6.61	0.00	0.00	0.03	0.03			0.06		0.00	0.00	0.48	0.52	
BDC-05-23	5/2/2018		2449	173	<0.2	<0.2	0.31	<0.2				0.026	0.026	0.001	<0.001	0.51		1.4	11.4		30	5.6	6.45	0.00	0.00	0.00	0.00			0.00		0.00	0.00	1.00	0.00	
BDC-05-23	11/7/2018		2638	362	<0.2	<0.2	1.66	1.61				0.022	0.022	0.001	<0.001	0.33		1.2	2.97		-23.5	6.23	6.58	0.00	0.00	0.02	0.03			0.04		0.00	0.00	0.40	0.60	
BDC-05-23	5/2/2019		2814	538	<0.2	<0.2	2.00	1.30				0.035	0.028	0.001	<0.001	0.28		5.0	12.7		-83.4	6.27	6.67	0.00	0.00	0.02	0.02			0.04		0.00	0.00	0.50	0.50	
BDC-05-23	11/5/2019		3001	725	<0.2	<0.2	1.42	1.46				0.021	0.022	<0.001	<0.001	0.51		4.8	4.07		-117.4	6.92	6.66	0.00	0.00	0.01	0.02			0.04		0.00	0.00	0.39	0.61	

Table 3
SWMU-17 Groundwater Data Cleanup Action Summary
Boeing Developmental Center
Tukwila, Washington

		Pilot Injection	Full Injection #1	Full Injection #2	Volatile Organic Compounds							Metals				Aquifer Redox Conditions						Donor Indicators		VOCs- micromoles/Liter (b)							Molar Fraction (c)				
		Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	Elapsed Time From Injection (days)	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	As, Tot (mg/L)	As, Dis (mg/L)	Cu, Tot (mg/L)	Cu, Dis (mg/L)	DO (mg/L)	Nitrate-Nitrogen (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Methane (mg/L)	ORP (mV)	TOC (mg/L)	pH	PCE	TCE	c DCE	VC	Ethene	Ethane	Total Chloroethenes (d)	Ethene + Ethane	PCE	TCE	c DCE	VC	Ethene + Ethane
Proposed Groundwater Cleanup Levels (a)					5.3	1.4	134	2.4	NA	NA	NA	0.008	0.008	0.008	0.008																				
Well	Date																																		
BDC-05-24	7/31/2011		-18		<1.0	<1.0	1.6	1.6	<1.1	<1.2	<1.1	0.003	0.003	<0.002	<0.002	1.67	<0.1	2.0	1.1	7.6	-7	10.0	7.06	0.00	0.00	0.02	0.03	0.00	0.00	0.04	0.00	0.00	0.00	0.39	0.61	0.00
(MW 18 ft XG)	11/1/2011		75		<1.0	2.0	4.0	2.2				0.002	0.002	<0.002	<0.002	1.50	<0.1	1.6	0.3		-2.6	8.1	7.06	0.00	0.02	0.04	0.04			0.09		0.00	0.17	0.45	0.38	
	2/19/2012		185		<0.2	0.2	0.7	0.8								0.31	<0.5	1.8	<1.5		63	9.8	6.55	0.00	0.00	0.01	0.01			0.02		0.00	0.07	0.34	0.59	
BDC-05-24	5/6/2012		262		<0.2	1.3	2.8	1.0				0.006	0.004	<0.002	<0.002	0.03			0.9		73	9.1	6.60	0.00	0.01	0.03	0.02			0.05		0.00	0.18	0.53	0.29	
BDC-05-24	9/5/2012		384		<0.2	1.2	4.0	0.9								0.08		2.0	<0.3		67	7.4	6.67	0.00	0.01	0.04	0.01			0.06		0.00	0.14	0.64	0.22	
BDC-05-24	11/15/2012		455		<0.5	<0.5	1.2	<0.5				0.002	0.003	<0.002	<0.002	0.13		1.0	<0.3		-1.7	10.7	6.94	0.00	0.00	0.01	0.00			0.01		0.00	0.00	1.00	0.00	
BDC-05-24	2/25/2013		557		<0.2	0.7	5.1	1.9	1.1	<1.2	<1.0					0.10		1.5	1.1	9.1	87	7.2	6.72	0.00	0.01	0.05	0.03	0.04	0.00	0.09	0.04	0.00	0.04	0.41	0.24	0.31
BDC-05-24	5/22/2013		643		<0.2	0.8	7.6	2.1				0.004	0.003	<0.002	<0.002	0.58		1.4	0.82		-272	7.4	7.54	0.00	0.01	0.08	0.03			0.12		0.00	0.05	0.66	0.28	
BDC-05-24	8/28/2013		741		<0.2	0.5	4.4	1.6	<1.0	1.8	<1.0					0.78		1.4	0.47	11.0	-321	8.6	6.57	0.00	0.00	0.05	0.03	0.00	0.06	0.07	0.06	0.00	0.03	0.34	0.19	0.44
BDC-05-24	11/13/2013		818		<0.2	0.4	3.3	1.4	<1.0	1.4	<1.0	0.003	0.003	<0.002	<0.002	2.43		1.3	1.4	11.0	-219	8.7	6.54	0.00	0.00	0.03	0.02	0.00	0.05	0.06	0.05	0.00	0.03	0.32	0.21	0.44
BDC-05-24	2/12/2014		909		<0.2	0.2	1.7	0.6	1.1	3.0	<1.0					2.72		2.0	0.81	11.0	-211	7.1	6.76	0.00	0.00	0.02	0.01	0.04	0.10	0.03	0.14	0.00	0.01	0.10	0.06	0.83
BDC-05-24	5/12/2014		998		<0.2	0.3	4.8	1.6	1.0	2.3	<1.0	0.003	0.002	<0.002	<0.002	2.58		1.2	0.87	10.0	-196	8.2	6.75	0.00	0.00	0.05	0.03	0.04	0.08	0.08	0.11	0.00	0.01	0.26	0.14	0.59
BDC-05-24	8/6/2014		1084		<0.2	0.2	2.8	1.8	3.6	2.3	<1.0					4.02		1.0	0.36	9.6	-167	9.5	7.33	0.00	0.00	0.03	0.03	0.13	0.08	0.06	0.20	0.00	0.01	0.11	0.11	0.78
BDC-05-24	11/10/2014		1180		<0.2	<0.2	6.2	12	2.0	<1.0	<1.0	0.001	0.001	<0.002	<0.002	0.05		1.2	1.8	0.97	-86	4.2	6.52	0.00	0.00	0.06	0.19	0.07	0.00	0.26	0.07	0.00	0.00	0.20	0.59	0.22
BDC-05-24	1/21/2015		1252		<0.2	0.4	2.1	1.6	2.5	<1.0	<1.0					0.14		2.0	2.3	5.4	-65	3.8	6.31	0.00	0.00	0.02	0.03	0.09	0.00	0.05	0.09	0.00	0.02	0.16	0.18	0.64
BDC-05-24	4/27/2015		1348		<0.2	0.5	0.9	2.5	2.5	<1.0	<1.0	0.003	0.003	<0.002	<0.002	0.08		0.8	0.97	3.2	-27	3.2	6.22	0.00	0.00	0.01	0.04	0.09	0.00	0.05	0.09	0.00	0.03	0.07	0.28	0.63
BDC-05-24	7/21/2015		1433		<0.2	0.3	1.3	3.9	<1.0	<1.0	<1.0					0.09		1.8	6.2	0.45	-23	2.2	6.27	0.00	0.00	0.01	0.06	0.00	0.00	0.08	0.00	0.00	0.03	0.17	0.80	0.00
BDC-05-24	10/28/2015		1532		<0.2	0.5	0.7	1.3	<1.0	<1.0	<1.0	0.003	0.004	<0.002	<0.002	0.47		1.0	5.1	1.4	-3.1	2.9	6.54	0.00	0.00	0.01	0.02	0.00	0.00	0.03	0.00	0.00	0.12	0.23	0.65	0.00
BDC-05-24	1/26/2016		1622		<0.2	<0.2	0.4	1.9	<1.0	1.2	<1.0					0.34		1.0	0.43	12.0	-76	8.3	6.47	0.00	0.00	0.00	0.03	0.00	0.04	0.03	0.04	0.00	0.00	0.06	0.41	0.54
BDC-05-24	4/20/2016		1707		<0.2	0.2	0.5	0.7	<1.0	1.8	<1.0	0.004	0.002	<0.002	<0.002	0.28			1.3	7.5	-3.8	4.6	6.44	0.00	0.00	0.01	0.01	0.00	0.06	0.02	0.06	0.00	0.02	0.07	0.14	0.77
BDC-05-24	8/9/2016		1818		<0.2	0.7	1.9	2.2	3.6	3.6	<1.0	0.005	0.003	<0.002	<0.002	0.15			2.2	6.0	-34.6	2.6	5.85	0.00	0.01	0.02	0.04	0.13	0.12	0.06	0.25	0.00	0.02	0.06	0.11	0.80
BDC-05-24	11/3/2016		1904		<0.2	0.2	0.7	0.8	1.9	1.3	<1.0	0.002	0.002	<0.002	<0.002	0.34		1.8	0.80	12.0	-86.4	4.9	5.95	0.00	0.00	0.01	0.01	0.07	0.04	0.02	0.11	0.00	0.01	0.05	0.10	0.84
BDC-05-24	2/8/2017		2001		<0.2	0.3	1.3	2.1	2.7	3.2	<1.0	0.003	0.002	<0.002	0.004	0.34		2.2	1.8	5.9	-6.4	4.0	6.41	0.00	0.00	0.01	0.03	0.10	0.11	0.05	0.20	0.00	0.01	0.05	0.13	0.80
BDC-05-24	5/4/2017		2086		<0.2	<0.2	0.4	0.5	<1.0	3.7	<1.0	0.004	0.003	<0.002	<0.002	0.20		2.4	1.5	5.9	-36.4	4.8	6.22	0.00	0.00	0.00	0.01	0.00	0.12	0.01	0.12	0.00	0.00	0.03	0.06	0.91
BDC-05-24	8/1/2017		2175		<0.2	<0.2	0.4	0.5	1.1	<1.0	<1.0	0.003	0.002	<0.002	<0.002	0.11		2.0	1.3	11.0	-51.1	5.7	5.92	0.00	0.00	0.00	0.01	0.04	0.00	0.01	0.04	0.00	0.00	0.08	0.16	0.76
BDC-05-24	11/7/2017		2273	-3	<0.2	<0.2	<0.2	0.5	<1.0	1.3	<1.0	0.002	0.001	<0.002	<0.002	0.37		1.8	<0.30	12.0	-10.7	8.4	6.42	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.04	0.00	0.00	0.00	0.16	0.84
BDC-05-24	5/2/2018		2449	173	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	<1.06	0.001	0.001	<0.001	<0.001	1.13		3.2	<0.1	7.24	-106.1	10.9	6.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA
BDC-05-24	11/6/2018		2637	361	<0.2	<0.2	0.26	0.66	<1.14	<1.23	<1.06	0.002	0.002	<0.001	<0.001	0.30		5.0	<0.100	17.0	-56.4	12.51	6.23	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.20	0.80	0.00
BDC-05-24	5/2/2019		2814	538	<0.2	<0.2	<0.2	0.42	<1.14	<1.23	<1.06	0.001	0.001	<0.001	<0.001	0.36		5.2	0.379	12.7	-66.1	11.40	6.41	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00
BDC-05-24	11/5/2019		3001	725	<0.2	<0.2	<0.2	0.39	<1.14	<1.23	<1.06	0.002	0.002	0.0004	<0.001	4.10		1.7	0.515	8.92	-103.7	11.80	6.50	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.00	0.00

Abbreviations and Acronyms:

PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
As = arsenic
Cu = copper
Tot = total
Dis = dissolved
DO = dissolved oxygen
ORP = oxidation reduction potential
TOC = total organic carbon
NA = not applicable, not available
µg/L = micrograms per liter
mg/L = milligrams per liter
IW = Injection Well
MW = Monitoring Well
DG = Downgradient; distance from nearest injection well
UG = Upgradient; distance from nearest injection well
XG = Crossgradient; distance from nearest injection well

Notes:

(a) Proposed Cleanup Standards and Comparison to Site Data, Boeing Developmental Center, Tukwila,Washington (Landau Associates, 5/7/13).
(c) Indicates the fraction of total ethenes due to each compound.
(d) Calculated by dividing the concentration in groundwater by the molecular weight of the compound. Reporting limits for non-detect results replaced with zero.
(e) Sum of PCE, TCE, cDCE, and VC.
(b) Calculated by dividing the concentration in groundwater by the molecular weight of the compound. Reporting limits for non-detect results replaced with zero.
(c) Indicates the fraction of total ethenes (PCE+TCE+cDCE+VC+ethene/ethane) due to each individual compound on a molar basis.
(d) Sum of PCE, TCE, cDCE, and VC.

Box = exceedance of proposed cleanup level

= not analyzed
= Highlights the predominant ethene

Injection Dates:

10/28/2008 Pilot Injection: BDC-05-02 only
8/18/2011 Full Injection #1: BDC-05-02, BDC-05-07, and BDC-05-09 through BDC-05-17; performed 8/15/11-8/18/11
11/10/2017 Full Injection #2: BDC-05-02, BDC-05-03, BDC-05-04, BDC-05-07, and BDC-05-10; performed 11/7/17-11/10/2017

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (d) PCE (µg/L) 5.3	TCE (µg/L) 1.4	cDCE (µg/L) 134	VC (µg/L) 2.4	Ethene (µg/L) ---	Ethane (µg/L) ---	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
06A (c)	06/15/2004	-2					<1.0	**1.0**	**23**	**4.0**	<0.50	<0.50	6.34	-19.6	0.8	58.9	<0.50	6.5	18.8	---
06A (c)	08/23/2004	67					<1.0	<1.0	**45**	**5.9**	<0.50	<0.50	0.46	92	3.5	40.7	21	7.0	288	Hazy brown
06A (c)	10/19/2004	124	-58				<1.0	<1.0	**2.6**	**31**	<0.50	<0.50	0.70	54	3.0	44.8	530	6.8	80.8	---
06A (c)	02/22/2005	250	68				<1.0	<1.0	**3.3**	<1.0	<0.50	<0.50	1.15	187	2.4	<0.1	130	6.8	244	---
06A (c)	05/16/2005	333	151				<1.0	<1.0	**2.6**	<1.0	<0.50	<0.50	1.25	58	3.0	0.1	10000	6.9	145	---
06A (c)	08/22/2005	431	249				<1.0	<1.0	**1.6**	<1.0	<0.50	<0.50	1.26	212	2.7	3.1	390	6.8	54.2	Clear, with yellow tint
06A (c)	11/14/2005	515	333				<1.0	<1.0	**1.3**	**1.2**	<0.50	<0.50	0.93	108	3.0	0.1	3700	6.9	31.8	---
06A (c)	02/22/2006	615	433				<1.0	<1.0	**1.4**	**4.8**	<11.4	<12.3	0.80	186	2.6	60.4	10100	6.4	15.5	---
06A (c)	05/18/2006	700	518				<1.0	<1.0	<1.0	**1.6**	<11	<12	6.41	1	3.0	20.9	16000	6.6	23.9	---
06A (c)	08/16/2006	790	608				<1.0	<1.0	<1.0	**1.5**	<1.1	<1.2	0.89	240	2.2	23.1	18800	6.5	23.2	---
06A (c)	11/29/2006	895	713				<0.2	<0.2	**0.4**	**2.1**	<1.1	<1.2	2.09	102	2.6	33.1	20200	6.5	31.4	---
06A (c)	02/23/2007	981	799				<1.0	<1.0	<1.0	**6.7**	<1.1	<1.2	0.65	-97	4.5	26.2	17400	6.5	24.6	---
06A (c)	05/24/2007	1071	889				<1.0	<1.0	<1.0	**2.9**	<1.1	**2.0**	0.56	184	4.0	21.0	18300	6.7	21.5	---
06A (c)	11/30/2007	1261	1079				<0.2	<0.2	<0.2	**1.2**	<1.1	**2.2**	0.80	173	3.0	29.1	21900	6.7	22.6	---
06A (c)	05/21/2008	1434	1252		-96		<1.0	<1.0	<1.0	**1.4**	<1.1	**1.3**	2.11	-82	2.5	21.0	13200	6.9	20.1	---
06A (c)	11/25/2008	1622	1440		92		<1.0	<1.0	**1.7**	<1.0	<1.1	<1.2	1.71	-73	3.4	0.1	19700	6.5	150	---
06A (c)	05/20/2009	1798	1616		268		<4.0	<4.0	<4.0	<4.0	<1.1	<1.2	0.52	-45	4.0	<0.5	19500	6.8	38.2	---
06A (c)	11/19/2009	1981	1799		451		<1.0	<1.0	**1.9**	<1.0	<1.1	<1.2	2.66	6	2.8	0.8	20100	6.2	25.4	---
06A (c)	5/24/2010	2167	1985		637		<1.0	<1.0	**1.3**	**1.9**	<1.1	<1.2	3.56	448	2.0	16	19900	6.6	19.3	---
06A (c)	11/11/2010	2338	2156		808		<1.0	<1.0	<1.0	**1.7**	<1.1	<1.2	4.75	106	2.6	0.4	24700	7.0	20.2	---
06A (c)	5/4/2011	2512	2330		982		<1.0	<1.0	<1.0	**1.4**	<1.1	<1.2	2.14	22	2.5	<0.2	21400	7.1	13.6	---
06A (c)	11/13/2011	2705	2523		1175		<0.2	<0.2	**0.3**	**0.8**	<1.1	<1.2	5.80	-54	1.0	0.3	6370	7.2	12.7	---
06A (c)	5/15/2012	2889	2707		1359		<0.2	<0.2	**0.4**	**1.2**	<1.0	<1.0	0.08	66	2.0	4.3	13000	6.7	11.6	---
06A (c)	11/14/2012	3072	2890		1542		<0.2	<0.2	**0.3**	**0.8**	<1.0	<4.0	0.02	-0.5	1.5	<0.30	13000	6.9	9.0	---
06A (c)	5/21/2013	3260	3078		1730		<0.5	<0.5	<0.5	**1.3**	<1.0	<1.0	0.17	-434	2.6	3.3	5200	7.9	8.8	---
06A (c)	11/12/2013	3435	3253		1905		<0.2	<0.2	**0.4**	**2.4**	<1.0	<1.0	2.68	-298	1.2	5.8	3500	6.8	8.3	---
06A (c)	5/7/2014	3611	3429		2081		<0.2	<0.2	**0.4**	**1.5**	<1.0	<1.0	3.60	-386	1.5	11.2	1300	7.1	7.2	---
06A (c)	11/5/2014	3793	3611		2263		<0.2	<0.2	**0.4**	**2.7**	<1.0	<1.0	0.28	-89	1.0	13.9	770	6.7	7.2	---
06A (c)	4/29/2015	3968	3786		2438		<0.2	<0.2	**0.6**	**3.3**	<1.0	<1.0	0.36	-54	3.0	17.5	430	6.7	5.2	---
06A (c)	10/26/2015	4148	3966		2618	-16	<0.2	<0.2	**0.2**	**2.5**	<1.0	<1.0	0.17	-66	0.8	19.7	410	6.6	6.5	---
06A (c)	4/19/2016	4324	4142		2794	160	<0.2	<0.2	**1**	**0.7**	<100	<100	0.06	-118	1.0	<0.30	18000	7.0	203	Cola brown
06A (c)	11/1/2016	4520	4338		2990	356	<0.2	<0.2	**0.5**	**0.7**	<100	<100	0.35	-154.9	NM	0.47	20000	7.1	121	Opaque dark brown/amber color
06A (c)	5/2/2017	4702	4520		3172	538	<0.2	<0.2	**0.3**	**0.4**	<1.0	**1.4**	0.26	-151.5	NM	<0.30	18000	7.2	124	Turbid, dark brown/amber color, strong injection fluid odor, no sheen
06A (c)	11/8/2017	4892	4710		3362	728	<0.2	<0.2	**0.3**	**0.3**	<1.0	**3.4**	0.41	-56.1	NM	16.1	13000	7.1	99.5	Cloudy, amber, injection fluid odor, no sheen (slight effervescence)
06A (c)	5/1/2018	5066	4884		3536	902	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	0.15	-28.7	NM	0.342	6130	7.2	149.3	Slightly turbid, amber color, strong injection fluid odor, no sheen (effervescent)
06A (c)	11/6/2018	5255	5073		3725	1091	<0.2	<0.2	<0.2	<0.2	<1.14	**1.55**	0.50	-61.9	NM	0.476	5090	7.0	116.1	Turbid with particulates, amber color, slight iron odor, no sheen
06A (c)	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	<0.2	<0.2	<1.14	**1.80**	0.42	-88.6	NM	1.09	4220	7.1	102.7	Amber, moderate turbidity, no odor, no sheen
06A (c)	11/6/2019	5620	5438		4090	1456	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	0.58	-105.6	NM	3.12	1730	6.9	410.2	Brown, high turbidity, no odor, no sheen

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (d) 5.3 PCE (µg/L)	1.4 TCE (µg/L)	134 cDCE (µg/L)	2.4 VC (µg/L)	--- Ethene (µg/L)	--- Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
06B	05/04/2004	-44					**9.5**	**3.2**	**10**	**9.4**	<0.50	<0.50	0.36	179	4.5	18.7	130	6.8	25.6	Clear, yellow tint
06B	08/23/2004	67					**1.9**	**1.2**	**13**	**2.3**	<0.50	<0.50	0.45	115	3.2	33.8	1100	6.9	177	Yellow-brown tint (nearly clear)
06B	10/19/2004	124	-58				<1.0	<1.0	**10**	**3.6**	<0.50	<0.50	0.61	217	3.5	14.8	590	6.7	53.6	Yellow tint
06B	02/22/2005	250	68				<1.0	<1.0	**11**	<1.0	<0.50	<0.50	0.79	224	2.6	<0.5	3800	6.9	968	---
06B	05/16/2005	333	151				<2.0	<2.0	**5.5**	<2.0	<0.50	<0.50	1.51	133	3.5	<0.5	2300	6.9	336	Clear, yellow-brown tint
06B	08/22/2005	431	249				<1.0	<1.0	**1.8**	**1.6**	<0.50	<0.50	1.21	217	2.8	<0.1	440	6.9	100	Clear, with yellow tint
06B	11/14/2005	515	333				<1.0	<1.0	**1.1**	**1.3**	<0.50	<0.50	1.05	241	2.8	<0.1	2900	6.9	64.4	---
06B	02/22/2006	615	433				<1.0	<1.0	<1.0	**1.4**	**53.5**	<12.3	0.74	184	2.6	14.8	13000	6.4	30.4	---
06B	05/18/2006	700	518				<1.0	<1.0	<1.0	**1.3**	<11	<12	2.25	52	3.2	13.6	16000	6.6	25.9	---
06B	08/16/2006	790	608				<1.0	<1.0	<1.0	**1.1**	<1.1	<1.2	0.82	225	2.4	12.9	21700	6.5	14.7	---
06B	11/29/2006	895	713				<0.2	<0.2	**1.4**	**2.6**	<1.1	<1.2	1.82	111	2.4	10.9	22000	6.5	25.2	---
06B	02/23/2007	981	799				<1.0	<1.0	**3.8**	**9.5**	<1.1	<1.2	0.75	-66	5.0	25.0	17700	6.5	21.1	---
06B	05/24/2007	1071	889				<1.0	<1.0	**1.4**	**6.5**	<1.1	<1.2	0.58	151	3.0	11.3	18500	6.6	21.4	---
06B	11/30/2007	1261	1079				<0.2	<0.2	<0.2	**1.0**	<1.1	**4.0**	0.83	135	4.0	26.3	24900	6.4	26.5	---
06B	05/21/2008	1434	1252		-96		<1.0	<1.0	<1.0	<1.0	<1.1	**4.9**	2.66	-61	3.4	21.1	12700	6.7	20.4	---
06B	11/25/2008	1622	1440		92		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	2.53	-68	2.4	0.2	18400	6.6	19.6	---
06B	05/20/2009	1798	1616		268		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.33	-36	4.0	<0.5	25300	6.9	20.9	---
06B	11/19/2009	1981	1799		451		<1.0	<1.0	<1.0	<1.0	<1.1	**6.7**	1.01	10	2.8	0.1	22500	6.9	20.0	---
06B	5/24/2010	2167	1985		637		<1.0	<1.0	<1.0	**4.2**	<1.1	**1.6**	3.05	417	2.0	3.0	7110	7.0	19.1	---
06B	11/11/2010	2338	2156		808		<1.0	<1.0	<1.0	**5.4**	<1.1	**1.4**	3.40	112	2.0	8.6	4600	7.1	15.8	---
06B	5/4/2011	2512	2330		982		<1.0	<1.0	<1.0	**5.2**	<1.1	<1.2	2.55	57	2.2	19.7	2120	7.1	12.6	---
06B	11/13/2011	2705	2523		1175		<0.2	<0.2	<0.2	**0.8**	<1.1	<1.2	6.10	-34	1.5	0.3	2260	7.3	14.8	---
06B	5/15/2012	2889	2707		1359		<0.2	<0.2	**0.5**	**6.0**	<1.0	**1.3**	0.14	71	1.8	10.9	2200	6.6	11.4	---
06B	11/14/2012	3072	2890		1542		<0.2	<0.2	<0.2	**3.7**	<1.0	**1.8**	0.02	10	2.0	7.0	2300	6.8	13.7	---
06B	5/21/2013	3260	3078		1730		<0.5	<0.5	<0.5	**4.3**	<1.0	<1.0	0.17	-427	2.5	20.1	720	7.7	11.0	---
06B	11/12/2013	3435	3253		1905		<0.2	<0.2	<0.2	**2.5**	<1.0	<1.0	2.62	-309	1.5	4.0	350	7.0	15.5	---
06B	5/7/2014	3611	3429		2081		<0.2	<0.2	<0.2	**2.4**	<1.0	<1.0	3.50	-320	1.6	2.8	1200	7.1	10.2	---
06B	11/5/2014	3793	3611		2263		<0.2	<0.2	<0.2	**1.8**	<1.0	<1.0	0.30	-54	1.7	4.7	2200	6.8	6.9	---
06B	4/29/2015	3968	3786		2438		<0.2	<0.2	<0.2	**1.8**	<1.0	<1.0	0.52	-39	1.0	0.99	1300	6.6	4.0	---
06B	10/26/2015	4148	3966		2618	-16	<0.2	<0.2	<0.2	**1.0**	<1.0	<1.0	0.99	-39	1.0	2.0	1900	6.6	4.9	---
06B	4/19/2016	4324	4142		2794	160	<2.0	<2.0	<2.0	<2.0	<100	<100	0.06	-78	NM	0.3	17000	6.8	306	---
06B	11/1/2016	4520	4338		2990	356	<0.2	<0.2	**0.5**	**0.2**	<100	<100	0.32	-148.5	NM	0.71	23000	7.24	274	Opaque dark brown/black color
06B	5/2/2017	4702	4520		3172	538	<0.2	<0.2	<0.2	**0.3**	<1.0	<1.0	0.17	-129.6	NM	1.3	21000	7.38	149	Turbid, dark brown/black color, strong injection fluid odor, no sheen
06B	11/8/2017	4892	4710		3362	728	<0.2	<0.2	<0.2	**0.6**	<1.0	**2.4**	0.10	-45.5	NM	<30.0	18000	6.88	320	Turbid, black, strong injection fluid odor
06B	5/1/2018	5066	4884		3536	902	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	1.05	14.0	NM	<0.5	5370	6.71	4147	Very turbid, black, no odor, no sheen
06B	11/6/2018	5255	5073		3725	1091	<0.2	<0.2	<0.2	<0.2	<1.14	<1.23	3.43	69.4	NM	1.01	4870	6.51	1740	Very turbid, dark brown/black color, slight iron odor, no sheen
06B	5/1/2019	5431	5249		3901	1267	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	1.18	20.6	NM	7.87	4510	6.67	4692	Thick black, high turbidity, no odor, no sheen, molasses
06B	11/20/2019	5634	5452		4104	1470	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	2.20	-7.6	NM	1.69	2590	6.89	1065	Dark brown, moderate to high turbidity, no odor, no sheen

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
							Proposed Groundwater Cleanup Levels (d) 5.3	1.4	134	2.4	---	---								
06C	05/04/2004	-44					<1.0	<1.0	<1.0	<1.0	<0.50	**0.6**	0.40	93	5.0	20.7	360	6.7	29.0	---
06C	08/23/2004	67					<1.0	<1.0	**1.4**	<1.0	**5.7**	**5.9**	0.63	95	2.5	42.7	3100	6.3	1560	White froth on surface of purge water
06C	10/19/2004	124	-58				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	2.00	206	3.0	18.1	450	6.3	464	Yellow tint
06C	02/22/2005	250	68				<1.0	<1.0	**3.6**	<1.0	<0.50	<0.50	0.82	198	2.6	<0.5	2400	6.9	858	---
06C	05/16/2005	333	151				<1.0	<1.0	**1.1**	<1.0	<0.50	<0.50	1.94	98	3.0	0.2	2700	7.0	111	Clear, with yellow tint
06C	08/22/2005	431	249				<1.0	<1.0	**1.1**	<1.0	<0.50	<0.50	1.36	194	2.8	<0.1	510	7.0	68.7	Clear, with yellow tint
06C	11/14/2005	515	333				<1.0	<1.0	**1.1**	<1.0	<0.50	<0.50	1.07	258	2.0	<0.1	2900	7.0	48.3	---
06C	02/22/2006	615	433				<1.0	<1.0	<1.0	<1.0	**47.7**	<12.3	0.88	247	1.4	47.5	12300	6.6	93.4	---
06C	05/18/2006	700	518				<1.0	<1.0	<1.0	<1.0	<11	<12	4.88	129	2.0	30.6	15000	6.6	36.6	---
06C	08/16/2006	790	608				<1.0	<1.0	<1.0	<1.0	<1.1	**2.3**	0.93	231	1.6	31.8	18900	6.6	13.4	---
06C	11/29/2006	895	713				<0.2	<0.2	**0.3**	<0.2	<1.1	**1.4**	2.25	192	1.8	27.3	20600	6.6	46.4	---
06C	02/23/2007	981	799				<1.0	<1.0	<1.0	<1.0	<1.1	**1.7**	1.08	-46	4.0	25.9	18900	6.4	39.0	---
06C	05/24/2007	1071	889				<1.0	<1.0	<1.0	<1.0	<1.1	**2.0**	0.72	216	3.5	20.8	20800	6.5	34.0	---
06C	11/30/2007	1261	1079				<0.2	<0.2	**0.2**	**0.3**	<1.1	**2.8**	1.58	174	4.2	32.6	30500	6.2	40.2	---
06C	05/21/2008	1434	1252		-96		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	2.91	-16	2.5	21.0	23800	6.3	31.9	---
06C	11/25/2008	1622	1440		92		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	3.39	-66	2.6	<0.1	28700	6.8	634	---
06C	05/20/2009	1798	1616		268		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.66	-28	3.5	<0.8	20600	6.9	39.2	---
06C	11/19/2009	1981	1799		451		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	1.89	26	NM	<0.1	25600	6.2	42.8	---
09A	05/03/2004	-45					**150**	**230**	**970**	**37**	<0.50	<0.50	0.46	287	1.0	64.2	8.4	6.7	16.2	Clear, yellow tint
09A	08/23/2004	67					<3.0	**11**	**370**	**150**	**4.2**	<0.50	0.40	143	2.6	51.8	4.7	7.1	56.8	Clear with black tint, H2S odor
09A	10/19/2004	124	-58				<5.0	**19**	**460**	**220**	**2.7**	<0.50	0.53	219	4.0	77.4	17	6.9	19.6	Clear, slightly yellow tint
09A	02/21/2005	249	67				<10	<10	**41**	**37**	**1.9**	<0.50	0.78	169	2.0	<0.5	1500	7.1	2110	Hazy, yellow color
09A	05/11/2005	328	146				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	1.53	141	2.0	<0.5	1700	7.2	1260	Hazy, yellow-brown tint
09A	08/22/2005	431	249				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	1.58	141	2.8	<0.1	460	6.8	156	Clear, yellow-brown tint
09A	11/14/2005	515	333				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	1.07	238	2.0	<0.1	2600	6.9	62.8	---
09A	02/21/2006	614	432				<1.0	<1.0	<1.0	<1.0	<11.4	<12.3	0.94	332	2.6	0.2	5650	6.3	58.8	---
09A	05/15/2006	697	515				<1.0	<1.0	<1.0	<1.0	<11	<12	1.35	193	2.2	63.4	15000	6.4	44.4	---
09A	08/16/2006	790	608				<1.0	<1.0	<1.0	**1.2**	<1.1	**2.1**	1.55	175	2.0	56.8	16800	6.4	50.0	---
09A	11/27/2006	893	711				<0.2	<0.2	**0.3**	**1.1**	**1.9**	**6.3**	2.09	211	3.2	52.5	15200	6.6	51.0	---
09A	02/22/2007	980	798				<1.0	<1.0	<1.0	<1.0	<1.1	**7.8**	0.65	-107	4.6	0.3	15300	6.4	48.8	---
09A	05/22/2007	1069	887				<1.0	<1.0	<1.0	**2.8**	<1.1	**4.8**	0.75	91	2.6	0.1	16700	6.6	43.1	---
09A	11/29/2007	1260	1078				<1.0	<1.0	<1.0	<1.0	<1.1	**24.5**	1.01	147	3.8	45.4	27600	6.4	40.6	---
09A	05/19/2008	1432	1250		-98		<0.2	**0.2**	**110**	**85**	**7.8**	**35.6**	2.26	-82	3.0	29.4	17100	6.7	31.0	---
09A	11/24/2008	1621	1439		91		**1.9**	**4.6**	**160**	**42**	**4.0**	**2.1**	2.61	-52	3.0	<2.0	13700	6.2	5600	---
09A	05/18/2009	1796	1614		266		<10	<10	<10	<10	<1.1	<1.2	0.44	-88	2.5	<2.0	18100	7.1	1620	---
09A	11/16/2009	1978	1796		448		<5.0	<1.0	<5.0	<5.0	<1.1	<1.2	1.23	-61	2.6	<1.0	16600	6.6	403	---
09A	5/20/2010	2163	1981		633		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	11.09	515	2.2	<1.0	18700	7.0	72.8	Duffy: Interference w/DO sensor?
09A	11/10/2010	2337	2155		807		<1.0	<1.0	<1.0	<1.0	<1.1	**2.0**	3.92	118	2.2	0.3	24400	7.0	70.0	---
09A	5/3/2011	2511	2329		981		<2.0	<2.0	<2.0	<2.0	<1.1	**2.0**	2.55	33	2.0	<0.2	17800	6.9	44.4	---
09A	11/13/2011	2705	2523		1175		<0.2	<0.2	**0.2**	<0.2	<1.1	**1.2**	2.23	-66	1.2	0.4	11800	7.0	39.4	---
09A	5/14/2012	2888	2706		1358		<0.2	<0.2	**0.2**	<0.2	<1.0	**13**	0.57	91	1.5	0.40	22000	6.4	30.5	---
09A	11/14/2012	3072	2890		1542		<2.0	<2.0	<2.0	<2.0	<1.0	**11**	0.02	-4	2.0	0.53	21000	6.6	30.9	---
09A	5/21/2013	3260	3078		1730		<2.0	<2.0	<2.0	<2.0	<1.0	**16**	0.32	-399	1.8	<0.30	24000	7.8	33.0	---
09A	11/12/2013	3435	3253		1905		<2.0	<2.0	<2.0	<2.0	<1.0	**10**	3.87	-258	1.7	0.41	18000	6.5	30.2	---
09A	5/7/2014	3611	3429		2081		<2.0	<2.0	<2.0	<2.0	<1.0	**29**	4.46	-322	1.4	0.50	26000	6.7	21.5	---
09A	11/5/2014	3793	3611		2263		<0.2	<0.2	<0.2	<0.2	<1.0	**15**	0.12	-90	2.0	<0.30	25000	6.6	24.8	---
09A	4/29/2015	3968	3786		2438		<0.2	<0.2	<0.2	<0.2	<1.0	**28**	0.20	-63	1.4	0.58	27000	6.4	17.8	---

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (d) 5.3 PCE (µg/L)	1.4 TCE (µg/L)	134 cDCE (µg/L)	2.4 VC (µg/L)	--- Ethene (µg/L)	--- Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
09A	10/26/2015	4148	3966		2618	-16	<0.2	<0.2	<0.2	<0.2	<1.0	**49**	0.10	-38	1.0	0.57	21000	6.3	21.7	---
09A	4/19/2016	4324	4142		2794	160	<0.2	<0.2	<0.2	**0.7**	<1.0	**34**	0.15	-105	0.8	<0.30	22000	6.7	33.3	---
09A	11/1/2016	4520	4338		2990	356	<0.2	<0.2	<0.2	<0.2	<1.0	**120**	0.73	-89	NM	<0.30	19000	6.46	17.5	Slight yellow/greenish tint
09A	5/2/2017	4702	4520		3172	538	<0.2	<0.2	<0.2	<0.2	<1.0	**430**	1.03	-118.2	NM	<0.30	20000	6.58	22.3	Clear, yellow tint, injection fluid odor, no sheen
09A	11/8/2017	4892	4710		3362	728	<0.2	<0.2	<0.2	**0.4**	**51**	**230**	0.34	17.6	NM	0.85	21000	6.59	16.7	Clear, colorless, slight injection fluid-like odor, no sheen
09A	5/1/2018	5066	4884		3536	902	<0.2	<0.2	<0.2	**2.23**	**3.54**	**575**	0.08	-37.1	NM	0.107	14900	6.59	25.22	Clear, golden/yellow tint, no odor, no sheen
09A	11/5/2018	5254	5072		3724	1090	<0.2	<0.2	<0.2	<0.2	<1.14	**402**	0.33	-102.4	NM	0.409	9960	6.64	22.61	Clear, golden tint, slightest injection fluid odor, no sheen
09A	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	<0.2	<0.2	<1.14	**247**	0.40	-77.1	NM	<0.100	11100	6.71	33.17	Clear, yellow, no odor, no sheen
09A	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	<0.2	<0.2	<1.14	**123**	2.72	-18.7	NM	1.11	4120	6.57	21.06	Tan/yellowish, low turbidity, no odor, no sheen
09B	05/03/2004	-45					<3.0	**4.2**	**250**	<3.0	<0.50	<0.50	0.37	269	4.0	61.4	2.7	6.8	20.7	Clear, yellow tint
09B	08/23/2004	67					<5.0	**16**	**530**	**100**	**0.76**	<0.50	0.34	174	1.4	73.0	23	7.4	29.7	Clear, yellow-brown tint, H2S odor
09B	10/19/2004	124	-58				<5.0	**17**	**300**	**340**	**1.4**	<0.50	0.30	219	1.0	59.6	29	7.5	24.3	Clear with yellow color
09B	02/21/2005	249	67				<10	<10	**890**	**520**	**1.7**	<0.50	0.56	160	2.8	1.0	2000	6.8	608	Hazy, tan brown color
09B	05/11/2005	328	146				<1.0	<1.0	**12**	**24**	<0.50	<0.50	1.48	158	3.5	0.4	9600	7.0	219	Hazy, yellow-brown tint
09B	08/22/2005	431	249				<1.0	<1.0	<1.0	**1.7**	<0.50	<0.50	1.45	224	2.5	<0.1	400	6.7	17.6	Clear, with yellow-brown tint
09B	11/14/2005	515	333				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	1.24	235	1.4	<0.1	3100	6.8	51.2	---
09B	02/21/2006	614	432				<1.0	<1.0	<1.0	**1.3**	<11.4	<12.3	0.90	329	2.8	<0.1	8730	6.3	46.4	---
09B	05/15/2006	697	515				<1.0	<1.0	<1.0	<1.0	<11	<12	1.11	191	1.8	33.9	17000	6.3	45.6	---
09B	08/16/2006	790	608				<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.94	188	1.6	55.4	19300	6.3	250	---
09B	11/27/2006	893	711				<0.2	<0.2	**0.3**	**0.5**	<1.1	<1.2	1.76	190	2.8	50.2	21800	6.5	78.2	---
09B	02/22/2007	980	798				<1.0	<1.0	<1.0	<1.0	<1.1	**1.6**	0.67	-80	3.5	0.2	16100	6.3	64.0	---
09B	05/22/2007	1069	887				<1.0	<1.0	<1.0	<1.0	<1.1	**1.4**	0.76	154	3.0	<0.1	18700	6.5	35.3	---
09B	11/29/2007	1260	1078				<1.0	<1.0	<1.0	<1.0	<1.1	**3.8**	1.29	238	2.2	58.3	29800	6.2	44.5	---
09B	05/19/2008	1432	1250		-98		<0.2	<0.2	**0.2**	**0.4**	<1.1	**3.0**	2.34	-78	3.4	39.1	12900	6.4	37.3	---
09B	11/24/2008	1621	1439		91		<1.0	<1.0	<1.0	<1.0	<1.1	**17.6**	2.22	-47	3.0	<1.0	27000	6.7	27.0	---
09B	05/18/2009	1796	1614		266		<1.0	<1.0	<1.0	<1.0	<1.1	**6.9**	0.38	-38	3.5	<0.5	19700	6.9	37.1	---
09B	11/16/2009	1978	1796		448		<1.0	<1.0	<1.0	<1.0	<1.1	**16.1**	1.27	12	3.5	<0.1	24500	6.2	28.1	---

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds: PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Aquifer Redox Conditions: DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters: pH	TOC (mg/L)	Notes
							Proposed Groundwater Cleanup Levels (d): 5.3	1.4	134	2.4	---	---								
09C	05/03/2004	-45					<1.0	<1.0	**4.0**	**3.3**	**1.9**	**0.7**	0.33	229	4.0	19.1	350	6.8	28.5	Clear, yellow tint
09C	08/23/2004	67					<1.0	<1.0	**1.7**	<1.0	**1.1**	**2.8**	0.47	114	2.6	23.2	610	6.7	302	Clear, H2S odor
09C	10/19/2004	124	-58				<1.0	<1.0	<1.0	**1.5**	**1.1**	<0.50	0.60	185	3.0	12.2	620	7.0	99.6	Near clear, yellow tint
09C	02/21/2005	249	67				<1.0	<1.0	**1.7**	<1.0	<0.50	**1.6**	0.60	154	2.0	<0.1	3500	6.6	300	Clear with yellow tint
09C	05/11/2005	328	146				<1.0	<1.0	**1.2**	<1.0	<0.50	<0.50	1.34	138	2.5	<0.1	2700	6.4	44.6	Yellow-brown tint
09C	08/22/2005	431	249				<1.0	<1.0	**7.6**	**2.2**	<0.50	<0.50	1.31	230	2.5	<0.1	360	6.7	52.0	---
09C	11/14/2005	515	333				<1.0	<1.0	**1.2**	<1.0	<0.50	<0.50	1.41	228	2.4	<0.1	7300	6.9	50.6	---
09C	02/21/2006	614	432				<1.0	<1.0	<1.0	<1.0	<11.4	<12.3	0.78	326	2.4	<0.1	10300	6.5	44.2	---
09C	05/15/2006	697	515				<1.0	<1.0	<1.0	<1.0	<11	<12	1.01	192	2.0	27.9	21000	7.0	42.1	---
09C	08/16/2006	790	608				<1.0	<1.0	<1.0	<1.0	<1.1	**1.6**	0.80	199	1.2	28.8	22900	6.5	33.0	---
09C	11/27/2006	893	711				<0.2	<0.2	<0.2	<0.2	<1.1	**9.1**	1.40	289	2.4	26.7	23500	6.5	44.0	---
09C	02/22/2007	980	798				<1.0	<1.0	<1.0	<1.0	<1.1	**3.9**	0.75	-32	3.6	0.2	17700	6.5	33.8	---
09C	05/22/2007	1069	887				<1.0	<1.0	<1.0	<1.0	<1.1	**5.4**	0.52	123	3.5	<0.1	20600	6.6	25.4	---
09C	11/29/2007	1260	1078				<1.0	<1.0	<1.0	<1.0	<1.1	**5.4**	0.81	147	3.6	27.3	30000	6.5	27.1	---
09C	05/19/2008	1432	1250		-98		<0.2	<0.2	<0.2	**0.2**	<1.1	**15.2**	2.11	-57	4.6	18.6	22800	6.5	22.3	---
09C	11/24/2008	1621	1439		91		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	2.92	-44	1.8	<2.0	17700	6.6	334	---
09C	05/18/2009	1796	1614		266		<1.0	<1.0	<1.0	<1.0	<1.1	**4.3**	0.45	-44	3.5	<0.5	21400	7.0	24.0	---
09C	11/16/2009	1978	1796		448		<3.0	<3.0	<3.0	<3.0	<1.1	**1.9**	1.27	-7	3.0	<0.1	22400	6.4	20.7	---
10A	05/03/2004	-45					**29**	**27**	**80**	**6.4**	<0.50	<0.50	0.60	108	2.0	37.8	2.8	6.8	20.0	Clear, yellow tint
10A	08/23/2004	67					**14**	**12**	**170**	**4.0**	<0.50	<0.50	0.49	181	3.5	38.9	1.1	7.0	59.6	Clear, black tint
10A	10/19/2004	124	-58				**15**	**15**	**100**	**23**	<0.50	<0.50	0.66	224	4.0	37.8	2.7	7.0	24.0	Clear
10A	02/21/2005	249	67				**4.7**	**4.8**	**24**	**6.8**	<0.50	**0.54**	0.53	166	3.6	24.3	430	7.0	22.4	Clear, yellow color
10A	05/11/2005	328	146				**4.2**	**5.4**	**26**	**7.2**	<0.50	<0.50	0.95	47	3.0	27.9	540	7.2	25.9	Clear, yellow-brown tint
10A	08/22/2005	431	249				**2.7**	**6.3**	**48**	**76**	<0.50	<0.50	0.73	177	2.0	48.8	240	7.0	31.4	Clear, with yellow-brown tint
10A	11/14/2005	515	333				**3.3**	**6.7**	**47**	**73**	<0.50	<0.50	0.91	178	2.0	50.6	370	7.1	34.1	---
10A	02/21/2006	614	432				**3.7**	**9.6**	**42**	**150**	<11.4	<12.3	0.54	320	2.0	53.9	1130	6.8	45.8	---
10A	05/15/2006	697	515				**1.8**	**3.7**	**63**	**19**	<11	<12	0.67	190	1.8	57.4	3100	6.8	49.2	---
10A	08/16/2006	790	608				**1.6**	**1.6**	**38**	**20**	<1.1	<1.2	1.50	201	1.4	57.5	1620	6.7	50.8	---
10A	11/27/2006	893	711				<0.2	<0.2	**7.4**	**9.2**	**2.6**	**2.6**	2.67	201	3.0	57.9	1650	6.9	56.0	---
10A	02/22/2007	980	798				**1.2**	<1.0	**32**	**35**	<1.1	<1.2	0.57	-176	4.6	20.4	1370	6.8	56.4	---
10A	05/22/2007	1069	887				**1.1**	<1.0	**28**	**44**	<1.1	**1.4**	0.88	73	3.0	10.2	2590	6.9	47.3	---
10A	11/29/2007	1260	1078				**1.2**	<1.0	**22**	**78**	**4.4**	**3.7**	0.80	106	4.2	47.9	4810	6.9	47.8	---
10A	05/19/2008	1432	1250		-98		<1.0	<1.0	**22**	**180**	**7.9**	**4.4**	2.19	-177	4.0	32.5	4870	7.0	33.3	---
10A	11/24/2008	1621	1439		91		<1.0	<1.0	**1.6**	**5.0**	<1.1	<1.2	2.29	-87	3.4	1.3	16900	7.1	1200	---
10A	05/18/2009	1796	1614		266		<2.0	<2.0	<2.0	<2.0	<1.1	<1.2	0.66	-80	3.3	<1.0	17900	6.9	168	---
10A	11/16/2009	1978	1796		448		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	3.14	-40	4.2	<1.0	18200	6.3	69.2	---
10A	5/20/2010	2163	1981		633		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	16.23	341	3.0	<1.0	17600	6.8	60.4	Duffy: Replace DO electrolic membrane
10A	11/10/2010	2337	2155		807		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	4.09	67	2.4	0.5	22800	6.9	56.8	---
10A	5/3/2011	2511	2329		981		<2.0	<2.0	<2.0	<2.0	<1.1	<1.2	2.47	-21	2.5	<0.2	20700	6.9	41.6	---
10A	11/13/2011	2705	2523		1175		<0.2	<0.2	**0.2**	**0.4**	<1.1	<1.2	2.45	-38	2.0	0.3	15400	7.1	33.8	---
10A	5/14/2012	2888	2706		1358		<0.2	<0.2	**0.2**	**0.4**	<1.0	<1.0	0.57	88	2.5	0.32	20000	6.4	38.0	---
10A	11/14/2012	3072	2890		1542		<0.2	<0.2	**0.3**	**0.4**	<1.0	<1.0	0.03	-16	2.0	<0.30	19000	6.6	30.6	---

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (d) 5.3 PCE (µg/L)	1.4 TCE (µg/L)	134 cDCE (µg/L)	2.4 VC (µg/L)	--- Ethene (µg/L)	--- Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
10A	5/21/2013	3260	3078		1730		<0.2	<0.2	**0.2**	**0.3**	<1.0	<3.0	0.35	-340	1.8	<0.30	26000	7.5	29.5	---
10A	11/12/2013	3435	3253		1905		<0.2	<0.2	**0.2**	**0.4**	<1.0	**2.5**	3.53	-242	1.4	0.38	16000	6.5	29.1	---
10A	5/7/2014	3611	3429		2081		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.06	-305	2.1	<0.30	26000	6.7	27.9	---
10A	11/5/2014	3793	3611		2263		<0.2	<0.2	**0.2**	**0.3**	<1.0	**5.5**	0.17	-134	2.0	<0.30	25000	6.5	26.1	---
14A	05/04/2004	-44					<1.0	<1.0	**140**	**110**	<0.50	<0.50	0.53	-8	7.5	38.9	590	6.8	20.7	Clear, yellow tint
14A	08/23/2004	67					<1.0	**2.9**	**560**	**180**	**0.89**	**0.67**	0.54	162	3.2	30.1	810	6.8	22.6	---
14A	10/19/2004	124	-58				<5.0	**39**	**1200**	**650**	<0.50	<0.50	0.64	69	3.0	43.3	350	6.9	20.6	---
14A	02/21/2005	249	67	-24			<5.0	<5.0	**300**	**1000**	**13**	**2.7**	0.41	101	1.8	3.8	1700	6.9	44.0	Clear, yellow tint
14A	05/16/2005	333	151	60			<10	<10	<10	<10	<0.50	<0.50	5.90	45	4.0	<2.0	590	6.4	8620	---
14A	08/22/2005	431	249	158			<10	<10	<10	<10	<0.50	<0.50	1.62	234	3.0	<2.0	220	6.8	5380	Clear, yellow-brown
14A	11/15/2005	516	334	243			<3.0	<3.0	**6.0**	<3.0	<0.50	<0.50	1.26	257	2.0	<0.1	2500	6.4	602	---
14A	02/21/2006	614	432	341			<1.0	<1.0	<1.0	<1.0	<11.4	<12.3	1.36	335	2.0	<0.1	5400	7.4	180	---
14A	05/17/2006	699	517	426			<2.0	<2.0	**2.1**	<2.0	<11	<12	1.78	76	2.8	12.0	9400	6.4	67.1	---
14A	08/16/2006	790	608	517			<1.0	<1.0	**3.0**	<1.0	<1.1	<1.2	1.16	240	1.2	16.5	6320	6.5	66.0	---
14A	11/29/2006	895	713	622			<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	1.57	248	2.8	11.8	11100	6.3	72.0	---
14A	02/22/2007	980	798	707			<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.89	-56	7.0	0.2	7670	6.2	34.9	---
14A	05/23/2007	1070	888	797			<1.0	<1.0	**1.5**	<1.0	<1.1	<1.2	1.11	165	3.0	8.6	10100	6.3	27.5	---
14A	12/03/2007	1264	1082	991			<1.0	<1.0	**1.6**	<1.0	<1.1	<1.2	2.29	-86	3.2	15.9	14500	6.4	55.6	---
14A	05/20/2008	1433	1251	1160	-97		<1.0	<1.0	**1.2**	<1.0	<1.1	<1.2	3.45	-88	3.6	<0.1	12100	6.3	26.3	---
14A	11/24/2008	1621	1439	1348	91		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	2.79	-70	3.0	194	14500	6.1	8.68	---
14A	05/20/2009	1798	1616	1525	268		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.41	-95	3.5	20.0	14400	6.3	9.83	---
14A	11/17/2009	1979	1797	1706	449		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.81	-18	3.2	165	15800	5.7	6.22	---
14A	5/24/2010	2167	1985	1894	637		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	4.29	311	2.8	5.1	14600	6.4	8.07	---
14A	11/10/2010	2337	2155	2064	807		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	2.47	171	2.6	38.6	14300	6.8	6.88	---
14A	5/5/2011	2513	2331	2240	983		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	2.96	83	1.8	8.4	15100	7.1	3.28	---
14A	11/13/2011	2705	2523	2432	1175		<0.2	<0.2	**0.6**	<0.2	<1.1	<1.2	2.04	-52	1.5	<0.1	7510	6.9	8.05	---
14A	5/14/2012	2888	2706	2615	1358		<0.2	<0.2	**0.3**	**0.2**	<1.0	**8.7**	0.13	62	2.6	3.4	16000	6.4	5.9	---
14A	11/14/2012	3072	2890	2799	1542		<0.2	<0.2	**0.6**	<0.2	<1.0	**5.0**	0.03	31	1.5	79.0	16000	6.4	6.5	---
14A	5/21/2013	3260	3078	2987	1730		<0.5	<0.5	<0.5	<0.5	<1.0	**4.8**	0.24	-428	2.4	2.3	18000	7.4	6.5	---
14A	11/12/2013	3435	3253	3162	1905		<0.2	<0.2	**0.5**	<0.2	<1.0	**6.3**	4.46	-286	1.3	0.52	14000	6.4	8.0	---
14A	5/7/2014	3611	3429	3338	2081		<0.2	<0.2	**0.3**	**0.3**	<1.0	**4.6**	4.39	-427	1.6	19.9	15000	6.8	6.5	---
14A	11/5/2014	3793	3611	3520	2263		<0.2	<0.2	**0.4**	**0.2**	<1.0	**10**	0.04	-48	2.0	23.6	15000	6.5	6.8	---

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
							Proposed Groundwater Cleanup Levels (d) 5.3	1.4	134	2.4	---	---								
15A	05/03/2004	-45					<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	---
15A	10/26/2004	131	-51				<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	---
15A	05/16/2005	333	151				<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	---
15A	11/15/2005	516	334				<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	---
15A	05/17/2006	699	517				<5.0	<5.0	<5.0	<5.0	NA	NA	0.79	131	NA	NA	NA	6.7	NA	---
15A	11/29/2006	895	713				<3.0	<3.0	<3.0	<3.0	NA	NA	1.26	513	NA	NA	NA	6.6	NA	---
15A	05/23/2007	1070	888				<1.0	<1.0	**1.4**	**2.6**	NA	NA	1.19	144	NA	NA	NA	6.7	NA	---
15A	12/03/2007	1264	1082				<1.0	<1.0	<1.0	**1.3**	NA	NA	1.31	-105	NA	NA	NA	6.6	NA	---
15A	05/20/2008	1433	1251		-97		<3.0	<3.0	<3.0	<3.0	NA	NA	2.57	-135	NA	NA	NA	6.7	NA	---
15A	11/24/2008	1621	1439		91		<1.0	<1.0	<1.0	<2.0	NA	NA	2.07	-61	NA	NA	NA	6.8	NA	---
15A	05/19/2009	1797	1615		267		<3.0	<3.0	<3.0	<3.0	NA	NA	0.35	-33	NA	NA	NA	6.9	NA	---
15A	11/18/2009	1980	1798		450		<1.0	<1.0	<1.0	**1.4**	NA	NA	0.72	-0.1	NA	NA	NA	6.3	NA	---
15A	5/20/2010	2163	1981		633		<1.0	<1.0	<1.0	**1.6**	NA	NA	1.10	606	NA	NA	NA	6.8	NA	---
15A	11/10/2010	2337	2155		807		<1.0	<1.0	<1.0	**1.4**	NA	NA	2.42	118	NA	NA	NA	7.1	NA	---
15A	5/5/2011	2513	2331		983		<10	<10	<10	<10	NA	NA	4.83	-19	NA	NA	NA	7.2	NA	---
15A	11/13/2011	2705	2523		1175		<0.2	<0.2	**0.3**	**1.0**	NA	NA	4.01	-41	NA	NA	NA	7.3	NA	---
15A	5/14/2012	2888	2706		1358		<1.0	<1.0	<1.0	**1.2**	NA	NA	0.64	56	NA	NA	NA	6.7	NA	---
15A	11/13/2012	3071	2889		1541		<0.2	<0.2	**0.4**	**0.8**	NA	NA	0.03	23	NA	NA	NA	6.8	NA	---
15A	5/21/2013	3260	3078		1730		<0.5	<0.5	**0.6**	**1.1**	NA	NA	0.20	-394	NA	NA	NA	7.4	NA	---
15A	11/12/2013	3435	3253		1905		<0.2	<0.2	**0.5**	**0.8**	NA	NA	3.38	-267	NA	NA	NA	6.7	NA	---
15A	5/7/2014	3611	3429		2081		<0.2	<0.2	**0.6**	**1.0**	NA	NA	3.86	-351	NA	NA	NA	6.9	NA	---
15A	11/5/2014	3793	3611		2263		<0.2	<0.2	**0.4**	**0.5**	NA	NA	0.09	-126	NA	NA	NA	6.8	NA	---
19A	05/02/2004	-46	-228				<1.0	<1.0	<1.0	<1.0	NA	NA	0.33	-3	NA	NA	NA	6.5	NA	---
19A	02/21/2005	249	67				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.65	180	NA	47.4	17	6.7	15.5	---
19A	05/12/2005	329	147				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.63	169	3.0	31.3	9.1	6.8	14.2	Clear, colorless
19A	08/22/2005	431	249				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.74	106	3.0	68.3	16	6.6	10.5	Clear, colorless
19A	11/15/2005	516	334				<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.56	201	2.6	95.9	35	6.8	9.30	---
19A	02/22/2006	615	433				<1.0	<1.0	<1.0	<1.0	<11.4	<12.3	0.77	65	3.0	124.0	111	6.6	31.3	---
19A	05/17/2006	699	517				<1.0	<1.0	<1.0	<1.0	<11	<12	1.14	56	2.0	73.4	230	6.4	15.7	---
19A	08/15/2006	789	607				<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.60	229	2.0	47.3	202	6.4	11.5	---
19A	11/27/2006	893	711				<0.2	**0.2**	**0.3**	<0.2	<1.1	<1.2	0.88	264	2.0	41.9	186	6.4	13.6	---
19A	02/22/2007	980	798				<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.42	-23	3.0	20.7	248	6.2	19.8	---
19A	05/22/2007	1069	887				<1.0	<1.0	<1.0	<1.0	<1.1	**5.2**	0.34	277	3.5	30.8	179	6.4	15.4	---
19A	11/29/2007	1260	1078				<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.67	243	2.2	37.2	235	6.2	14.3	---
19A	05/20/2008	1433	1251		-97		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	3.23	-79	3.8	20.9	134	6.4	11.5	---
19A	11/23/2008	1620	1438		90		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	1.62	-61	2.0	46.1	97.8	6.4	10.6	---
19A	05/19/2009	1797	1615		267		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.30	-28	3.2	28.6	127	6.8	12.8	---
19A	11/18/2009	1980	1798		450		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	1.58	-2	3.4	22.1	122	6.5	10.7	---

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (d) 5.3 PCE (µg/L)	1.4 TCE (µg/L)	134 cDCE (µg/L)	2.4 VC (µg/L)	--- Ethene (µg/L)	--- Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
22A	03/21/2005	277	95	4			<1.0	<1.0	**3.5**	**2.0**	<0.50	<0.50	1.86	53	2.8	12.8	280	7.0	11.1	Hazy, suspended silt
22A	05/12/2005	329	147	56			<1.0	<1.0	**2.3**	**2.9**	<0.50	<0.50	0.83	155	2.6	1.3	300	7.1	31.3	---
22A	08/22/2005	431	249	158			<1.0	<1.0	**2.3**	**3.2**	<0.50	<0.50	0.70	170	2.6	3.0	230	6.9	26.5	Clear, slight yellow-brown tint
22A	11/16/2005	517	335	244			<1.0	<1.0	**1.4**	**2.2**	<0.50	<0.50	1.67	321	2.4	1.3	1300	6.3	29.9	---
22A	02/22/2006	615	433	342			<1.0	<1.0	**1.4**	**3.3**	<11.4	<12.3	0.69	97	2.0	59.0	1940	6.8	32.0	---
22A	05/17/2006	699	517	426			<1.0	<1.0	**2.4**	**1.7**	<11	<12	0.67	102	2.6	32.7	3600	6.8	17.6	---
22A	08/15/2006	789	607	516			<1.0	<1.0	**1.8**	**2.4**	<1.1	<1.2	0.65	239	2.0	54.7	5700	6.7	24.0	---
22A	11/30/2006	896	714	623			<0.2	**0.3**	**2.2**	**2.4**	<1.1	<1.2	2.15	286	2.6	40.0	4020	6.6	25.2	---
22A	02/22/2007	980	798	707			<1.0	<1.0	**2.5**	**2.3**	<1.1	<1.2	0.53	-76	5.0	<0.1	3000	6.6	22.4	---
22A	05/23/2007	1070	888	797			<1.0	<1.0	**2.5**	**2.7**	<1.1	<1.2	0.30	51	3.0	27.3	3510	6.8	18.2	---
22A	12/03/2007	1264	1082	991			<1.0	<1.0	**2.0**	**1.3**	<1.1	<1.2	0.61	41	2.6	12.3	2030	6.6	16.0	---
22A	05/20/2008	1433	1251	1160	-97		<1.0	<1.0	**2.6**	**1.9**	<1.1	<1.2	2.83	-103	4.0	20.2	1540	6.7	13.8	---
22A	11/23/2008	1620	1438	1347	90		<1.0	<1.0	**2.2**	**3.1**	<1.1	<1.2	1.13	-70	1.8	2.6	3100	6.8	19.2	---
22A	05/19/2009	1797	1615	1524	267		<1.0	<1.0	**2.5**	**2.5**	<1.1	<1.2	0.26	-43	3.2	3.4	3490	7.0	21.0	---
22A	11/18/2009	1980	1798	1707	450		<1.0	<1.0	**2.1**	**1.8**	<1.1	<1.2	0.43	-3.3	3.0	2.1	2060	6.4	13.8	---
22A	5/24/2010	2167	1985	1894	637		<1.0	<1.0	**1.7**	**1.7**	<1.1	<1.2	6.58	204	2.4	0.6	2370	7.0	15.1	---
22A	11/11/2010	2338	2156	2065	808		<1.0	<1.0	**1.2**	**2.7**	<1.1	<1.2	3.27	113	2.2	0.5	4650	7.0	21.8	---
22A	5/4/2011	2512	2330	2239	982		<1.0	<1.0	**1.1**	**2.2**	<1.1	<1.2	1.96	4	2.0	0.6	6350	7.0	22.4	---
22A	11/13/2011	2705	2523	2432	1175		<0.2	<0.2	**0.9**	**1.7**	<1.1	<1.2	2.89	-38	1.2	0.4	2510	7.3	17.6	---
22A	5/14/2012	2888	2706	2615	1358		<0.2	<0.2	**0.6**	**2.0**	<1.0	**3.3**	0.03	45	2.2	<0.30	5100	6.8	25.4	---
22A	11/14/2012	3072	2890	2799	1542		<0.2	<0.2	**0.5**	**1.8**	<1.0	**1.7**	0.03	1	1.8	<0.30	4400	6.9	22.7	---
22A	5/20/2013	3259	3077	2986	1729		<0.2	<0.2	**0.4**	**2.0**	<1.0	**1.6**	0.24	-404	1.0	<0.30	6100	7.7	24.6	---
22A	11/12/2013	3435	3253	3162	1905		<0.2	<0.2	**0.5**	**1.7**	<1.0	**1.1**	3.69	-289	1.4	1.8	3500	6.7	19.8	---
22A	5/7/2014	3611	3429	3338	2081		<0.2	<0.2	**0.5**	**1.6**	<1.0	<1.0	4.8	-368	1.3	0.66	4200	6.8	23.6	---
22A	11/5/2014	3793	3611	3520	2263		<0.2	<0.2	**0.4**	**1.5**	<1.0	**1.5**	0.13	-131	1.5	0.39	4800	6.8	25.8	---
22A	4/29/2015	3968	3786	3695	2438		<0.2	<0.2	**0.6**	**1.5**	<1.0	<1.0	0.09	-87	1.0	2.0	4300	6.5	14.8	---
22A	10/27/2015	4149	3967	3876	2619	-15	<0.2	<0.2	**0.5**	**1.5**	<1.0	<1.0	0.07	-64	2.0	2.6	3500	6.6	16.7	---
22A	4/19/2016	4324	4142	4051	2794	160	<0.2	<0.2	**0.5**	<0.2	<100	<100	0.14	-163	1.0	1.9	15000	7.0	2980	---
22A	11/2/2016	4521	4339	4248	2991	357	<0.2	<0.2	**0.5**	<0.2	<100	<100	0.37	-252.6	NM	<0.30	18000	7.34	542	Clear dark brown/amber color
22A	5/2/2017	4702	4520	4429	3172	538	<0.2	<0.2	**0.4**	**0.3**	<1.0	<1.0	0.41	-206.8	NM	<0.30	18000	7.24	300	Clear, dark brown/amber color, injection fluid odor, no sheen, very effervescent
22A	11/8/2017	4892	4710	4619	3362	728	<0.2	<0.2	**0.6**	**0.3**	<1.0	**1.8**	0.32	-17.5	NM	<15.0	17000	7.10	277	Clear, dark amber tint, injection fluid odor, no sheen (slight effervescence)
22A	5/1/2018	5066	4884	4793	3536	902	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	0.08	-94.7	NM	<0.5	18800	7.12	297.2	Turbid, amber color, strong injection fluid odor, no sheen (very effervescent)
22A	11/5/2018	5254	5072	4981	3724	1090	<2.0	<2.0	<2.0	<2.0	<1.14	<1.23	0.89	-161.9	NM	<0.10	13100	6.98	191.6	Clear, dark amber tint, injection fluid odor, no sheen
22A	5/1/2019	5431	5249	5158	3901	1267	<0.2	<0.2	**0.52**	<0.2	<1.14	<1.23	0.22	-138.2	NM	0.51	14400	7.01	179.4	Amber, moderate turbidity, no odor, no sheen
22A	11/4/2019	5618	5436	5345	4088	1454	<0.2	<0.2	**0.49**	**0.21**	<1.14	<1.23	2.94	-80.6	NM	0.344	10000	6.92	172.8	Dark amber, low turbidity, slight odor, no sheen

Table 4
SWMU-20 Cleanup Action Summary—Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (d) 5.3 PCE (µg/L)	1.4 TCE (µg/L)	134 cDCE (µg/L)	2.4 VC (µg/L)	--- Ethene (µg/L)	--- Ethane (µg/L)	Aquifer Redox Conditions DO (mg/L)	ORP (mV)	Iron II mg/L	Sulfate (mg/L)	Methane (µg/L)	Donor Parameters pH	TOC (mg/L)	Notes
23A	03/21/2005	277	95	4			<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.63	81	2.0	0.4	410	7.0	33.0	Slight yellow tint
23A	05/12/2005	329	147	56			<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.58	158	2.0	<0.1	260	7.2	39.9	---
23A	08/22/2005	431	249	158			<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.75	130	3.4	1.5	98	7.0	21.0	---
23A	11/16/2005	517	335	244			<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	0.49	291	2.6	4.1	140	7.2	30.8	---
23A	02/22/2006	615	433	342			<1.0	<1.0	<1.0	<1.0	<11.4	<12.3	0.60	127	2.2	91.8	1520	6.4	34.5	---
23A	05/17/2006	699	517	426			<1.0	<1.0	<1.0	<1.0	<11	<12	0.60	120	3.0	38.8	1700	6.7	30.0	---
23A	08/15/2006	789	607	516			<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.77	256	2.2	63.9	3080	6.7	32.6	---
23A	11/30/2006	896	714	623			<0.2	<0.2	<0.2	<0.2	<1.1	<1.2	1.96	287	2.5	40.7	1930	6.2	45.2	---
23A	02/22/2007	980	798	707			<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.40	-58	2.0	2.9	1360	6.5	34.6	---
23A	05/23/2007	1070	888	797			<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.41	193	3.3	52.7	1850	6.4	38.7	---
23A	11/30/2007	1261	1079	988			<0.2	<0.2	**0.3**	<0.2	<1.1	<1.2	0.55	159	2.2	81.1	4430	6.6	38.6	---
23A	05/21/2008	1434	1252	1161	-96		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	3.12	-28	2.2	31.7	1570	6.1	29.6	---
23A	11/25/2008	1622	1440	1349	92		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	4.22	-68	1.8	<0.1	3270	6.8	39.0	---
23A	05/19/2009	1797	1615	1524	267		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.31	-3	3.2	0.1	2370	6.5	39.1	---
23A	11/18/2009	1980	1798	1707	450		<1.0	<1.0	<1.0	<1.0	<1.1	<1.2	0.41	1	2.4	1.6	1970	6.5	30.9	---

Abbreviations and Acronyms:

µg/L = micrograms per liter
cDCE = cis-1,2-dichloroethene
DO = dissolved oxygen
mg/L = milligrams per liter
mV = millivolts
NA = not analyzed
NM = not measured
ORP = oxidation reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
VC = vinyl chloride

Notes:

(a) Injections occurred on:
6/17/04 (6A, B, C; 9A, B, C)
12/16-17/04 (6A, 6B;9A,9B)
3/17/05 (14A)
8/25-28/08 (6A, 9A, 10A)
10/27-11/11/15 (6A, 6B, 10C, 15C, 16A, 16C, 17A, 20C, 22A)

(b) Conducted at Well MW-14A only.

(c) MW-06A installed June 2004.

(d) Proposed Cleanup Standards and Comparison to Site Data, Boeing Developmental Center, Tukwila,Washington (Landau Associates, 5/7/13).

Box = exceedance of proposed cleanup level
Bold = detected compund

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) PCE 5.3 (µg/L)	TCE 1.4 (µg/L)	cDCE 134 (µg/L)	VC 2.4 (µg/L)
MW-8C	5/3/2004	-45					<1.0	<1.0	<1.0	**2.8**
MW-8C	10/25/2004	130	-52				<1.0	<1.0	<1.0	**3.5**
MW-8C	5/12/2005	329	147				<1.0	<1.0	<1.0	<1.0
MW-8C	11/14/2005	515	333				<1.0	<1.0	<1.0	<1.0
MW-8C	5/15/2006	697	515				<10	<10	<10	<10
MW-8C	11/27/2006	893	711				<5.0	<5.0	<5.0	<5.0
MW-8C	5/21/2007	1068	886				<3.0	<3.0	<3.0	<3.0
MW-8C	11/29/2007	1260	1078				<5.0	<5.0	<5.0	<5.0
MW-8C	5/19/2008	1432	1250		-98		<5.0	<5.0	<5.0	<5.0
MW-8C	11/23/2008	1620	1438		90		<5.0	<5.0	<5.0	<5.0
MW-8C	05/18/2009	1796	1614		266		<1.0	<1.0	<1.0	<1.0
MW-8C	11/16/2009	1978	1796		448		<3.0	<3.0	<3.0	<3.0
MW-9D	5/3/2004	-45					<1.0	<1.0	<1.0	<1.0
MW-9D	10/19/2004	124	-58				<1.0	<1.0	<1.0	<1.0
MW-9D	5/11/2005	328	146				<1.0	<1.0	<1.0	<1.0
MW-9D	11/14/2005	515	333				<1.0	<1.0	<1.0	<1.0
MW-9D	5/15/2006	697	515				<1.0	<1.0	<1.0	<1.0
MW-9D	11/27/2006	893	711				<1.0	<1.0	<1.0	<1.0
MW-9D	5/22/2007	1069	887				<1.0	<1.0	<1.0	<1.0
MW-9D	11/29/2007	1260	1078				<1.0	<1.0	<1.0	<1.0
MW-9D	5/19/2008	1432	1250		-98		<0.2	<0.2	<0.2	<0.2
MW-9D	11/24/2008	1621	1439		91		<1.0	<1.0	<1.0	<1.0
MW-9D	05/18/2009	1796	1614		266		<1.0	<1.0	<1.0	<1.0
MW-9D	11/16/2009	1978	1796		448		<1.0	<1.0	<1.0	<1.0
MW-10C	5/3/2004	-45					<1.0	<1.0	**4.3**	**4.0**
MW-10C	10/19/2004	124	-58				<1.0	<1.0	**6.4**	**11**
MW-10C	5/11/2005	328	146				<1.0	<1.0	**4.0**	**1.9**
MW-10C	11/14/2005	515	333				<1.0	<1.0	<1.0	**1.0**
MW-10C	5/15/2006	697	515				<1.0	<1.0	**1.5**	**2.2**
MW-10C	11/27/2006	893	711				<0.2	<0.2	**1.9**	**2.6**
MW-10C	5/22/2007	1069	887				<1.0	<1.0	**6.7**	**5.8**
MW-10C	11/29/2007	1260	1078				<1.0	<1.0	**7.2**	**5.6**
MW-10C	5/19/2008	1432	1250		-98		<0.2	<0.2	**15**	**6.9**
MW-10C	11/24/2008	1621	1439		91		<1.0	<1.0	**8.5**	**7.5**
MW-10C	05/18/2009	1796	1614		266		<1.0	<1.0	<1.0	<1.0
MW-10C	11/16/2009	1978	1796		448		<1.0	<1.0	<1.0	<1.0
MW-10C	5/20/2010	2163	1981		633		<1.0	<1.0	<1.0	<1.0
MW-10C	11/10/2010	2337	2155		807		<1.0	<1.0	**3.5**	**4.4**
MW-10C	5/3/2011	2511	2329		981		<1.0	<1.0	**5.8**	**4.7**
MW-10C	11/13/2011	2705	2523		1175		<0.2	<0.2	**3.7**	**4.3**
MW-10C	5/14/2012	2888	2706		1358		<0.2	<0.2	**5.4**	**4.0**
MW-10C	11/14/2012	3072	2890		1542		<0.2	<0.2	**6.1**	**4.4**
MW-10C	5/21/2013	3260	3078		1730		<0.2	<0.2	**6.0**	**4.5**
MW-10C	11/12/2013	3435	3253		1905		<0.2	<0.2	**3.5**	**3.7**
MW-10C	5/7/2014	3611	3429		2081		<0.2	<0.2	**5.4**	**2.9**
MW-10C	11/5/2014	3793	3611		2263		<0.2	<0.2	**2.6**	**2.5**
MW-10C	4/28/2015	3967	3785		2437		<0.2	<0.2	**2.2**	**1.7**
MW-10C	10/26/2015	4148	3966		2618	-16	<0.2	<0.2	**1.0**	**1.1**
MW-10C	4/19/2016	4324	4142		2794	160	<0.2	<0.2	**0.5**	<0.2
MW-10C	11/1/2016	4520	4338		2990	356	<0.2	<0.2	**0.5**	<0.2

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) 5.3 PCE (µg/L)	1.4 TCE (µg/L)	134 cDCE (µg/L)	2.4 VC (µg/L)
MW-10C	5/2/2017	4702	4520		3172	538	<0.2	<0.2	**0.4**	**0.2**
MW-10C	11/8/2017	4892	4710		3362	728	<0.2	<0.2	**0.5**	**0.2**
MW-10C	5/1/2018	5066	4884		3536	902	<0.2	<0.2	**0.55**	**0.39**
MW-10C	11/5/2018	5254	5072		3724	1090	<0.2	<0.2	**0.39**	**0.22**
MW-10C	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	**0.53**	**0.46**
MW-10C	11/7/2019	5621	5439		4091	1457	<0.2	<0.2	**0.50**	**0.68**
MW-11A	5/2/2004	-46					<1.0	**2.1**	**21**	<1.0
MW-11A	10/25/2004	130	-52				<1.0	**2.0**	**20**	<1.0
MW-11A	5/12/2005	329	147				<1.0	**2.0**	**20**	<1.0
MW-11A	11/15/2005	516	334				<1.0	**2.0**	**22**	<1.0
MW-11A	5/16/2006	698	516				<1.0	**1.1**	**20**	<1.0
MW-11A	11/26/2006	892	710				<1.0	**1.5**	**24**	<1.0
MW-11A	5/22/2007	1069	887				<1.0	**1.5**	**26**	<1.0
MW-11A	11/27/2007	1258	1076				<1.0	**1.1**	**27**	<1.0
MW-11A	5/19/2008	1432	1250		-98		<0.2	**1.2**	**26**	**0.2**
MW-11A	11/23/2008	1620	1438		90		<1.0	**1.2**	**33**	<1.0
MW-11A	05/18/2009	1796	1614		266		<1.0	<1.0	**26**	<1.0
MW-11A	11/17/2009	1979	1797		449		<1.0	**1.0**	**30**	<1.0
MW-11A	5/19/2010	2162	1980		632		<1.0	**1.1**	**26**	<1.0
MW-11A	11/8/2010	2335	2153		805		<1.0	<1.0	**22**	<1.0
MW-11A	5/3/2011	2511	2329		981		<1.0	<1.0	**22**	<1.0
MW-11A	11/13/2011	2705	2523		1175		<0.2	**0.5**	**23**	**0.4**
MW-11A	5/14/2012	2888	2706		1358		<0.2	**0.7**	**24**	**0.4**
MW-11A	11/14/2012	3072	2890		1542		<2.0	<2.0	**25**	<2.0
MW-11A	5/21/2013	3260	3078		1730		<2.0	<2.0	**22**	<2.0
MW-11A	11/12/2013	3435	3253		1905		<2.0	<2.0	**24**	<2.0
MW-11A	5/7/2014	3611	3429		2081		<2.0	<2.0	**19**	<2.0
MW-11A	11/4/2014	3792	3610		2262		<0.2	**0.4**	**24**	**0.4**
MW-11A	4/28/2015	3967	3785		2437		<0.2	**0.5**	**21**	**0.3**
MW-11A	10/26/2015	4148	3966		2618	-16	**0.2**	**0.2**	**19**	**0.4**
MW-11A	4/19/2016	4324	4142		2794	160	<0.2	**0.3**	**20**	**0.4**
MW-11A	11/1/2016	4520	4338		2990	356	<0.2	<0.2	**15**	**0.5**
MW-11A	5/2/2017	4702	4520		3172	538	<0.2	**0.4**	**18**	**0.6**
MW-11A	11/8/2017	4892	4710		3362	728	<0.2	**0.2**	**21**	**0.5**
MW-11A	5/1/2018	5066	4884		3536	902	**0.26**	**0.26**	**11.8**	**0.35**
MW-11A	11/5/2018	5254	5072		3724	1090	<0.2	<0.2	**13.9**	**0.40**
MW-11A	5/1/2019	5431	5249		3901	1267	<0.2	**0.21**	**10.8**	**0.29**
MW-11A	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	**12.5**	**0.42**
MW-12A	5/2/2004	-46					<1.0	<1.0	**1.8**	<1.0
MW-12A	10/25/2004	130	-52				<1.0	<1.0	**4.4**	<1.0
MW-12A	5/12/2005	329	147				<1.0	<1.0	**2.0**	<1.0
MW-12A	11/15/2005	516	334				<1.0	<1.0	**3.8**	<1.0
MW-12A	5/16/2006	698	516				<1.0	<1.0	**1.5**	<1.0
MW-12A	11/26/2006	892	710				<0.2	**0.7**	**4.4**	<0.2
MW-12A	5/22/2007	1069	887				<1.0	<1.0	**2.4**	<1.0
MW-12A	11/27/2007	1258	1076				<1.0	<1.0	**3.2**	<1.0
MW-12A	5/19/2008	1432	1250		-98		<0.2	**0.6**	**3.2**	<0.2
MW-12A	11/23/2008	1620	1438		90		<1.0	<1.0	**4.7**	<1.0
MW-12A	05/18/2009	1796	1614		266		<1.0	<1.0	**1.4**	<1.0
MW-12A	11/17/2009	1979	1797		449		<1.0	<1.0	**4.7**	<1.0

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

		Elapsed Time from Injections (a) (days)					Volatile Organic Compounds			
							Proposed Groundwater Cleanup Levels (c)			
							5.3	1.4	134	2.4
Well	Date	1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)
MW-12A	5/19/2010	2162	1980		632		<1.0	<1.0	<1.0	<1.0
MW-12A	11/8/2010	2335	2153		805		<1.0	<1.0	**4.3**	<1.0
MW-12A	5/3/2011	2511	2329		981		<1.0	<1.0	<1.0	<1.0
MW-12A	11/13/2011	2705	2523		1175		<0.2	**0.6**	**3.1**	<0.2
MW-12A	5/14/2012	2888	2706		1358		**0.2**	<0.2	<0.2	<0.2
MW-12A	11/14/2012	3072	2890		1542		<0.2	**0.4**	**2.1**	<0.2
MW-12A	5/21/2013	3260	3078		1730		<0.2	<0.2	**0.5**	<0.2
MW-12A	11/12/2013	3435	3253		1905		<0.2	**0.5**	**2.2**	<0.2
MW-12A	5/7/2014	3611	3429		2081		**0.3**	<0.2	<0.2	<0.2
MW-12A	11/4/2014	3792	3610		2262		**0.3**	<0.2	**0.3**	<0.2
MW-13A	5/2/2004	-46					**5.1**	**4.6**	<1.0	<1.0
MW-13A	10/25/2004	130	-52				**4.3**	**4.0**	<1.0	<1.0
MW-13A	5/12/2005	329	147				**6.1**	**4.6**	<1.0	<1.0
MW-13A	11/14/2005	515	333				**6.0**	**4.5**	<1.0	<1.0
MW-13A	5/16/2006	698	516				**7.1**	**4.6**	<1.0	<1.0
MW-13A	11/27/2006	893	711				**8.3**	**6.5**	**0.3**	<0.2
MW-13A	5/21/2007	1068	886				**8.2**	**7.0**	**0.4**	<0.2
MW-13A	11/28/2007	1259	1077				**6.4**	**4.2**	<1.0	<1.0
MW-13A	5/19/2008	1432	1250		-98		**8.7**	**6.8**	**0.3**	<0.2
MW-13A	11/23/2008	1620	1438		90		**6.5**	**3.7**	<1.0	<1.0
MW-13A	05/18/2009	1796	1614		266		**7.7**	**5.6**	<1.0	<1.0
MW-13A	11/17/2009	1979	1797		449		**9.2**	**6.0**	<1.0	<1.0
MW-13A	5/20/2010	2163	1981		633		**9.4**	**5.3**	<1.0	<1.0
MW-13A	11/10/2010	2337	2155		807		**3.6**	**2.8**	<1.0	<1.0
MW-13A	5/4/2011	2512	2330		982		**3.9**	**2.4**	<1.0	<1.0
MW-13A	11/3/2011	2695	2513		1165		**1.6**	<1.0	<1.0	<1.0
MW-13A	5/14/2012	2888	2706		1358		**2.3**	**0.8**	<0.2	<0.2
MW-13A	11/13/2012	3071	2889		1541		**2.2**	**0.8**	<0.2	<0.2
MW-13A	5/21/2013	3260	3078		3078		**4.5**	**2.5**	**0.5**	<0.2
MW-13A	11/12/2013	3435	3253		3253		**2.2**	**0.6**	<0.2	<0.2
MW-13A	5/7/2014	3611	3429		3429		**3.1**	**1.3**	<0.2	<0.2
MW-13A	11/4/2014	3792	3610		3610		**2.3**	**0.5**	<0.2	<0.2
MW-13A	4/28/2015	3967	3785		3785		**1.8**	**0.4**	<0.2	<0.2
MW-13A	10/27/2015	4149	3967		3967	-15	**1.5**	**0.3**	<0.2	<0.2
MW-13A	4/19/2016	4324	4142		4142	160	**1.6**	**0.3**	<0.2	<0.2
MW-13A	11/1/2016	4520	4338		4338	356	**2.3**	**0.7**	<0.2	<0.2
MW-13A	5/2/2017	4702	4520		4520	538	**1.1**	<0.2	<0.2	<0.2
MW-13A	11/8/2017	4892	4710		4710	728	**1.6**	**0.3**	<0.2	<0.2
MW-13A	5/1/2018	5066	4884		4884	902	**1.45**	**0.43**	<0.2	<0.2
MW-13A	11/5/2018	5254	5072		5072	1090	**1.91**	**0.58**	<0.2	<0.2
MW-13A	5/1/2019	5431	5249		5249	1267	**1.03**	**0.22**	<0.2	<0.2
MW-13A	11/4/2019	5618	5436		5436	1454	**1.19**	**0.35**	<0.2	<0.2
MW-13C	5/2/2004	-46					<1.0	<1.0	<1.0	**2.5**
MW-13C	10/25/2004	130	-52				<1.0	<1.0	<1.0	**3.3**
MW-13C	5/12/2005	329	147				<1.0	<1.0	<1.0	<1.0
MW-13C	11/14/2005	515	333				<1.0	<1.0	<1.0	**3.8**
MW-13C	5/16/2006	698	516				<1.0	<1.0	<1.0	**2.2**
MW-13C	11/27/2006	893	711				<0.2	<0.2	**0.8**	**3.4**
MW-13C	5/21/2007	1068	886				<0.2	<0.2	**0.8**	**4.4**
MW-13C	11/28/2007	1259	1077				<1.0	<1.0	<1.0	**2**

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) PCE 5.3 (µg/L)	TCE 1.4 (µg/L)	cDCE 134 (µg/L)	VC 2.4 (µg/L)
MW-13C	5/19/2008	1432	1250		-98		<0.2	<0.2	**0.2**	**0.6**
MW-13C	11/23/2008	1620	1438		90		<1.0	<1.0	<1.0	**2.2**
MW-13C	05/18/2009	1796	1614		266		<1.0	<1.0	<1.0	<1.0
MW-13C	11/17/2009	1979	1797		449		<1.0	<1.0	<1.0	<1.0
MW-13C	5/20/2010	2163	1981		633		<1.0	<1.0	<1.0	<1.0
MW-13C	11/10/2010	2337	2155		807		<1.0	<1.0	<1.0	<1.0
MW-13C	5/4/2011	2512	2330		982		<1.0	<1.0	<1.0	<1.0
MW-13C	11/3/2011	2695	2513		1165		<1.0	<1.0	<1.0	<1.0
MW-13C	5/14/2012	2888	2706		1358		<0.2	<0.2	<0.2	**0.3**
MW-13C	11/13/2012	3071	2889		1541		<2.0	<2.0	<2.0	<2.0
MW-13C	5/21/2013	3260	3078		1730		<2.0	<2.0	<2.0	<2.0
MW-13C	11/12/2013	3435	3253		1905		<2.0	<2.0	<2.0	<2.0
MW-13C	5/7/2014	3611	3429		2081		<1.0	<1.0	<1.0	<1.0
MW-13C	11/4/2014	3792	3610		2262		<0.2	<0.2	<0.2	**0.2**
MW-13C	4/28/2015	3967	3785		2437		<0.2	<0.2	<0.2	**0.3**
MW-13C	10/27/2015	4149	3967		2619	-15	<0.2	<0.2	<0.2	**0.2**
MW-13C	4/19/2016	4324	4142		2794	160	<0.2	<0.2	<0.2	**0.3**
MW-13C	11/1/2016	4520	4338		2990	356	<0.2	<0.2	<0.2	**0.2**
MW-13C	5/2/2017	4702	4520		3172	538	<0.2	<0.2	<0.2	**0.3**
MW-13C	11/8/2017	4892	4710		3362	728	<0.2	<0.2	<0.2	**0.3**
MW-13C	5/1/2018	5066	4884		3536	902	<0.2	<0.2	<0.2	**0.25**
MW-13C	11/5/2018	5254	5072		3724	1090	<0.2	<0.2	<0.2	<0.2
MW-13C	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	<0.2	**0.22**
MW-13C	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	<0.2	<0.2
MW-14C	5/4/2004	-44					<1.0	<1.0	**63**	**44**
MW-14C	10/26/2004	131	-51	-142			<1.0	<1.0	**22**	**75**
MW-14C	5/16/2005	333	151	60			<1.0	<1.0	**11**	**6.1**
MW-14C	11/15/2005	516	334	243			<1.0	<1.0	<1.0	**1.8**
MW-14C	5/17/2006	699	517	426			<1.0	<1.0	<1.0	<1.0
MW-14C	11/29/2006	895	713	622			<0.2	<0.2	<0.2	**1.0**
MW-14C	5/23/2007	1070	888	797			<1.0	<1.0	<1.0	**2.5**
MW-14C	12/3/2007	1264	1082	991			<1.0	<1.0	**1.1**	**11**
MW-14C	5/20/2008	1433	1251	1160	-97		<1.0	<1.0	**1.4**	**22**
MW-14C	11/24/2008	1621	1439	1348	91		<1.0	<1.0	<1.0	**4.3**
MW-14C	05/20/2009	1798	1616	1525	268		<1.0	<1.0	<1.0	**1.1**
MW-14C	11/17/2009	1979	1797	1706	449		<1.0	<1.0	<1.0	<1.0
MW-14C	5/24/2010	2167	1985	1894	637		<1.0	<1.0	<1.0	<1.0
MW-14C	11/10/2010	2337	2155	2064	807		<1.0	<1.0	<1.0	<1.0
MW-14C	5/5/2011	2513	2331	2240	983		<1.0	<1.0	<1.0	<1.0
MW-14C	11/13/2011	2705	2523	2432	1175		<0.2	<0.2	<0.2	<0.2
MW-14C	5/14/2012	2888	2706	2615	1358		<0.2	<0.2	<0.2	<0.2
MW-14C	11/14/2012	3072	2890	2799	1542		<2.0	<2.0	<2.0	<2.0
MW-14C	5/21/2013	3260	3078	2987	1730		<2.0	<2.0	<2.0	<2.0
MW-14C	11/12/2013	3435	3253	3162	1905		<2.0	<2.0	<2.0	<2.0
MW-14C	5/7/2014	3611	3429	3338	2081		<1.0	<1.0	<1.0	<1.0
MW-14C	11/5/2014	3793	3611	3520	2263		<0.2	<0.2	<0.2	<0.2
MW-14C	4/29/2015	3968	3786	3695	2438		<0.2	<0.2	<0.2	<0.2
MW-14C	10/27/2015	4149	3967	3876	2619	-15	<0.2	<0.2	<0.2	<0.2
MW-14C	4/19/2016	4324	4142	4051	2794	160	<0.2	<0.2	<0.2	**0.3**
MW-14C	11/2/2016	4521	4339	4248	2991	357	<0.2	<0.2	<0.2	<0.2
MW-14C	5/2/2017	4702	4520	4429	3172	538	<0.2	<0.2	<0.2	**0.2**

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) PCE 5.3 (µg/L)	TCE 1.4 (µg/L)	cDCE 134 (µg/L)	VC 2.4 (µg/L)
MW-14C	11/8/2017	4892	4710	4619	3362	728	<0.2	<0.2	**0.2**	**0.2**
MW-14C	5/1/2018	5066	4884	4793	3536	902	<0.2	<0.2	**0.22**	<0.2
MW-14C	11/6/2018	5255	5073	4982	3725	1091	<0.2	<0.2	<0.2	<0.2
MW-14C	5/1/2019	5431	5249	5158	3901	1267	<0.2	<0.2	<0.2	<0.2
MW-14C	11/4/2019	5618	5436	5345	4088	1454	<0.2	<0.2	<0.2	<0.2
MW-14E	5/4/2004	-44					<1.0	<1.0	<1.0	<1.0
MW-14E	10/26/2004	131	-51	-142			<1.0	<1.0	<1.0	<1.0
MW-14E	5/16/2005	333	151	60			<1.0	<1.0	<1.0	<1.0
MW-14E	11/15/2005	516	334	243			<1.0	<1.0	<1.0	<1.0
MW-14E	5/17/2006	699	517	426			<1.0	<1.0	<1.0	<1.0
MW-14E	11/29/2006	895	713	622			<0.2	<0.2	<0.2	<0.2
MW-14E	5/23/2007	1070	888	797			<1.0	<1.0	<1.0	<1.0
MW-14E	12/3/2007	1264	1082	991			<1.0	<1.0	<1.0	<1.0
MW-14E	5/20/2008	1433	1251	1160	-97		<1.0	<1.0	<1.0	<1.0
MW-14E	11/24/2008	1621	1439	1348	91		<1.0	<1.0	<1.0	<1.0
MW-14E	05/20/2009	1798	1616	1525	268		<1.0	<1.0	<1.0	<1.0
MW-14E	11/17/2009	1979	1797	1706	449		<1.0	<1.0	<1.0	<1.0
MW-15C	5/3/2004	-45					<1.0	<1.0	**9.1**	**11**
MW-15C	10/26/2004	131	-51				<1.0	<1.0	**11**	**17**
MW-15C	5/16/2005	333	151				<1.0	<1.0	**13**	**6.4**
MW-15C	11/15/2005	516	334				<1.0	<1.0	<1.0	<1.0
MW-15C	5/17/2006	699	517				<1.0	<1.0	<1.0	<1.0
MW-15C	11/29/2006	895	713				<0.2	<0.2	<0.2	<0.2
MW-15C	5/23/2007	1070	888				<1.0	<1.0	<1.0	**2.2**
MW-15C	12/3/2007	1264	1082				<1.0	<1.0	<1.0	**2.5**
MW-15C	5/20/2008	1433	1251		-97		<1.0	<1.0	**1.8**	**6.6**
MW-15C	11/24/2008	1621	1439		91		<1.0	<1.0	**1.9**	**6.6**
MW-15C	05/19/2009	1797	1615		267		<1.0	<1.0	<1.0	<1.0
MW-15C	11/18/2009	1980	1798		450		<1.0	<1.0	<1.0	<1.0
MW-15C	5/20/2010	2163	1981		633		<1.0	<1.0	<1.0	<1.0
MW-15C	11/10/2010	2337	2155		807		<1.0	<1.0	<1.0	<1.0
MW-15C	5/5/2011	2513	2331		983		<1.0	<1.0	<1.0	<1.0
MW-15C	11/13/2011	2705	2523		1175		<0.2	<0.2	<0.2	<0.2
MW-15C	5/14/2012	2888	2706		1358		<0.2	<0.2	<0.2	<0.2
MW-15C	11/13/2012	3071	2889		1541		<2.0	**3.2**	<2.0	<2.0
MW-15C	5/21/2013	3260	3078		1730		<5.0	<5.0	<5.0	<5.0
MW-15C	11/12/2013	3435	3253		1905		<2.0	<2.0	<2.0	**2.3**
MW-15C	5/7/2014	3611	3429		2081		<2.0	<2.0	<2.0	**2.9**
MW-15C	11/5/2014	3793	3611		2263		<0.2	<0.2	**0.5**	**2.5**
MW-15C	4/29/2015	3968	3786		2438		<0.2	<0.2	**0.6**	**2.4**
MW-15C	10/27/2015	4149	3967		2619	-15	<0.2	<0.2	**0.5**	**2.0**
MW-15C	4/19/2016	4324	4142		2794	160	<0.2	**0.6**	**1.2**	**0.5**
MW-15C	11/2/2016	4521	4339		2991	357	<0.2	**0.3**	**1.7**	**0.7**
MW-15C	5/2/2017	4702	4520		3172	538	<0.2	<0.2	**1.2**	**0.5**
MW-15C	11/8/2017	4892	4710		3362	728	<0.2	<0.2	**1.3**	**0.4**
MW-15C	5/1/2018	5066	4884		3536	902	<2.0	<2.0	<2.0	<2.0
MW-15C	11/5/2018	5254	5072		3724	1090	<2.0	<2.0	<2.0	<2.0
MW-15C	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	**0.57**	**0.29**
MW-15C	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	**0.39**	**0.24**

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

		Elapsed Time from Injections (a) (days)					Volatile Organic Compounds			
							Proposed Groundwater Cleanup Levels (c)			
							5.3	1.4	134	2.4
Well	Date	1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)
MW-15D	5/3/2004	-45					<1.0	<1.0	<1.0	<1.0
MW-15D	10/26/2004	131	-51				<1.0	<1.0	<1.0	<1.0
MW-15D	5/16/2005	333	151				<1.0	<1.0	<1.0	<1.0
MW-15D	11/15/2005	516	334				<1.0	<1.0	<1.0	<1.0
MW-15D	5/17/2006	699	517				<1.0	<1.0	<1.0	<1.0
MW-15D	11/29/2006	895	713				<1.0	<1.0	<1.0	<1.0
MW-15D	5/23/2007	1070	888				<1.0	<1.0	<1.0	<1.0
MW-15D	12/3/2007	1264	1082				<1.0	<1.0	<1.0	<1.0
MW-15D	5/20/2008	1433	1251		-97		<1.0	<1.0	<1.0	<1.0
MW-15D	11/24/2008	1621	1439		91		<1.0	<1.0	<1.0	<1.0
MW-15D	05/19/2009	1797	1615		267		<1.0	<1.0	<1.0	<1.0
MW-15D	11/18/2009	1980	1798		450		<1.0	<1.0	<1.0	<1.0
MW-16A	5/2/2004	-46					**1.2**	**1.2**	**2.3**	<1.0
MW-16A	10/25/2004	130	-52				**1.2**	**1.3**	**1.8**	<1.0
MW-16A	5/12/2005	329	147				**1.2**	**1.8**	**2.6**	<1.0
MW-16A	11/15/2005	516	334				**1.3**	**2.2**	**2.1**	<1.0
MW-16A	5/16/2006	698	516				**1.0**	**1.4**	**2.3**	<1.0
MW-16A	11/26/2006	892	710				<0.2	**0.8**	**4.2**	<0.2
MW-16A	5/22/2007	1069	887				**1.1**	**1.3**	**1.9**	<1.0
MW-16A	11/28/2007	1259	1077				**1.7**	**1.2**	**1.2**	<1.0
MW-16A	5/19/2008	1432	1250		-98		**1.2**	**1.3**	**1.2**	<0.2
MW-16A	11/23/2008	1620	1438		90		**1.5**	**1.4**	**1.0**	<1.0
MW-16A	05/18/2009	1796	1614		266		**1.6**	**1.6**	<1.0	<1.0
MW-16A	11/16/2009	1978	1796		448		**2.2**	**1.5**	<1.0	<1.0
MW-16A	5/20/2010	2163	1981		633		**1.4**	**1.4**	<1.0	<1.0
MW-16A	11/10/2010	2337	2155		807		**1.3**	**1.1**	<1.0	<1.0
MW-16A	5/4/2011	2512	2330		982		**1.6**	**1.4**	<1.0	<1.0
MW-16A	11/13/2011	2705	2523		1175		**1.4**	**1.3**	**0.5**	<0.2
MW-16A	5/14/2012	2888	2706		1358		**1.6**	**1.7**	**0.5**	<0.2
MW-16A	11/14/2012	3072	2890		1542		**1.1**	**1.5**	**0.6**	<0.2
MW-16A	5/21/2013	3260	3078		1730		**1.4**	**1.5**	<0.5	<0.5
MW-16A	11/12/2013	3435	3253		1905		**2.1**	**1.8**	**0.3**	<0.2
MW-16A	5/8/2014	3612	3430		2082		**1.4**	**1.6**	**0.4**	<0.2
MW-16A	11/5/2014	3793	3611		2263		**1.6**	**1.5**	**0.4**	<0.2
MW-16A	4/28/2015	3967	3785		2437		**1.4**	**1.4**	**0.3**	<0.2
MW-16A	10/26/2015	4148	3966		2618	-16	**1.5**	**1.5**	**0.3**	<0.2
MW-16A	4/19/2016	4324	4142		2794	160	**0.8**	**0.7**	**10**	<0.2
MW-16A	11/2/2016	4521	4339		2991	357	**0.6**	**0.3**	**14**	**0.5**
MW-16A	5/2/2017	4702	4520		3172	538	**0.7**	**0.2**	**5.7**	**3.1**
MW-16A	11/8/2017	4892	4710		3362	728	<0.2	<0.2	**0.7**	**0.7**
MW-16A	5/1/2018	5066	4884		3536	902	<2.0	<2.0	<2.0	<2.0
MW-16A	11/5/2018	5254	5072		3724	1090	<2.0	<2.0	<2.0	<2.0
MW-16A	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	**0.35**	<0.2
MW-16A	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	**0.32**	**0.22**
MW-16C	5/2/2004	-46					<1.0	<1.0	**1.7**	**5.4**
MW-16C	10/25/2004	130	-52				<1.0	<1.0	**2.4**	**8.5**
MW-16C	5/12/2005	329	147				<1.0	<1.0	**2.8**	**7.7**
MW-16C	11/15/2005	516	334				<1.0	<1.0	**4.6**	**12**
MW-16C	5/16/2006	698	516				<1.0	<1.0	**5.2**	**6.3**
MW-16C	11/26/2006	892	710				**1.2**	**2.3**	**2.0**	<0.2

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) PCE 5.3 (µg/L)	TCE 1.4 (µg/L)	cDCE 134 (µg/L)	VC 2.4 (µg/L)
MW-16C	5/22/2007	1069	887				<1.0	<1.0	**8.8**	**10**
MW-16C	11/28/2007	1259	1077				<1.0	<1.0	**7**	**8.9**
MW-16C	5/19/2008	1432	1250		-98		<0.2	<0.2	**7.8**	**7.9**
MW-16C	11/23/2008	1620	1438		90		<1.0	<1.0	**5.3**	**8.8**
MW-16C	05/18/2009	1796	1614		266		<1.0	<1.0	**5.0**	**6.3**
MW-16C	11/16/2009	1978	1796		448		<1.0	<1.0	**4.9**	**5.6**
MW-16C	5/20/2010	2163	1981		633		<1.0	<1.0	**3.7**	**3.4**
MW-16C	11/10/2010	2337	2155		807		<1.0	<1.0	**3.3**	**2.8**
MW-16C	5/4/2011	2512	2330		982		<1.0	<1.0	**3.7**	**3.2**
MW-16C	11/13/2011	2705	2523		1175		<0.2	<0.2	**3.3**	**2.5**
MW-16C	5/14/2012	2888	2706		1358		<0.2	<0.2	**4.8**	**4.2**
MW-16C	11/14/2012	3072	2890		1542		<0.2	<0.2	**4.9**	**3.8**
MW-16C	5/21/2013	3260	3078		1730		<0.5	<0.5	**3.9**	**2.8**
MW-16C	11/12/2013	3435	3253		1905		<0.2	<0.2	**4.4**	**2.1**
MW-16C	5/8/2014	3612	3430		2082		<0.2	<0.2	**3.4**	**1.2**
MW-16C	11/5/2014	3793	3611		2263		<0.2	<0.2	**3.4**	**1.3**
MW-16C	4/28/2015	3967	3785		2437		<0.2	<0.2	**2.2**	**1.2**
MW-16C	10/26/2015	4148	3966		2618	-16	<0.2	<0.2	**2.7**	**1.1**
MW-16C	4/19/2016	4324	4142		2794	160	<0.2	<0.2	**0.9**	**0.3**
MW-16C	11/2/2016	4521	4339		2991	357	<0.2	<0.2	**1.9**	**0.3**
MW-16C	5/2/2017	4702	4520		3172	538	<0.2	<0.2	**0.4**	**0.2**
MW-16C	11/8/2017	4892	4710		3362	728	<0.2	<0.2	**0.7**	**0.4**
MW-16C	5/1/2018	5066	4884		3536	902	<0.2	<0.2	<0.2	<0.2
MW-16C	11/5/2018	5254	5072		3724	1090	<0.2	<0.2	**0.50**	**0.28**
MW-16C	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	**0.41**	**0.33**
MW-16C	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	**0.58**	**0.48**
MW-17A	5/2/2004	-46					**4.8**	**6.5**	**1.0**	<1.0
MW-17A	10/25/2004	130	-52				**5.2**	**4.8**	**1.2**	<1.0
MW-17A	11/15/2005	516	334				**4.0**	**5.4**	**1.1**	<1.0
MW-17A	5/15/2006	697	515				**4.2**	**4.4**	<1.0	<1.0
MW-17A	11/27/2006	893	711				**2.2**	**6.3**	**1.0**	<0.2
MW-17A	5/21/2007	1068	886				**4.7**	**5.3**	**1.0**	<0.2
MW-17A	11/29/2007	1260	1078				**4.2**	**4.3**	<1.0	<1.0
MW-17A	5/19/2008	1432	1250		-98		**4.3**	**5.1**	**0.8**	<0.2
MW-17A	11/23/2008	1620	1438		90		**4.2**	**5.2**	**1.2**	<1.0
MW-17A	05/19/2009	1797	1615		267		**3.2**	**4.9**	**1.4**	<1.0
MW-17A	11/12/2009	1974	1792		444		**3.7**	**4.5**	**1.1**	<1.0
MW-17A	5/20/2010	2163	1981		633		**4.0**	**3.1**	<1.0	<1.0
MW-17A	11/8/2010	2335	2153		805		**2.3**	**4.8**	**2.3**	<1.0
MW-17A	5/3/2011	2511	2329		981		**3.1**	**2.2**	**1.5**	<1.0
MW-17A	11/3/2011	2695	2513		1165		**2.6**	**2.8**	**1.0**	<1.0
MW-17A	5/14/2012	2888	2706		1358		**3.1**	**2.0**	**0.5**	<0.2
MW-17A	11/13/2012	3071	2889		1541		**2.8**	**3.5**	**0.9**	<0.2
MW-17A	5/20/2013	3259	3077		1729		**3.6**	**2.8**	**0.8**	<0.2
MW-17A	11/4/2014	3792	3610		2262		**3.9**	**3.4**	**1.0**	<0.2
MW-17A	5/6/2014	3610	3428		2080		**3.6**	**2.6**	**0.4**	<0.2
MW-17A	11/4/2014	3792	3610		2262		**2.9**	**3.1**	**0.9**	<0.2
MW-17A	4/28/2015	3967	3785		2437		**3.4**	**2.3**	**0.4**	<0.2
MW-17A	10/26/2015	4148	3966		2618	-16	**3.4**	**2.6**	**1.1**	<0.2
MW-17A	4/19/2016	4324	4142		2794	160	<2.0	<2.0	**8**	<2.0
MW-17A	11/1/2016	4520	4338		2990	356	<2.0	**0.4**	**8.2**	**0.8**

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) PCE 5.3 (µg/L)	TCE 1.4 (µg/L)	cDCE 134 (µg/L)	VC 2.4 (µg/L)
MW-17A	5/3/2017	4703	4521		3173	539	<0.2	<0.2	**0.8**	**2.2**
MW-17A	11/7/2017	4891	4709		3361	727	<0.2	<0.2	**1.3**	**5.9**
MW-17A	5/1/2018	5066	4884		3536	902	<2.0	<2.0	<2.0	**2.82**
MW-17A	11/5/2018	5254	5072		3724	1090	<2.0	<2.0	<2.0	<2.0
MW-17A	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	<0.2	**0.27**
MW-17A	11/5/2019	5619	5437		4089	1455	<0.2	<0.2	<0.2	<0.2
MW-18A	5/2/2004	-46	-228				<1.0	<1.0	<1.0	<1.0
MW-18C	5/2/2004	-46					<1.0	<1.0	<1.0	<1.0
MW-18C	10/25/2004	130	-52				<1.0	<1.0	<1.0	<1.0
MW-18C	5/12/2005	329	147				<1.0	<1.0	<1.0	<1.0
MW-18C	11/15/2005	516	334				<1.0	<1.0	<1.0	<1.0
MW-18C	5/17/2006	699	517				<1.0	<1.0	<1.0	<1.0
MW-18C	11/27/2006	893	711				<0.2	<0.2	<0.2	<0.2
MW-18C	5/21/2007	1068	886				<0.2	<0.2	<0.2	**0.2**
MW-18C	11/28/2007	1259	1077				<1.0	<1.0	<1.0	<1.0
MW-18C	5/19/2008	1432	1250		-98		<0.2	<0.2	<0.2	**0.2**
MW-18C	11/23/2008	1620	1438		90		<1.0	<1.0	<1.0	<1.0
MW-18C	05/19/2009	1797	1615		267		<1.0	<1.0	<1.0	<1.0
MW-18C	11/17/2009	1979	1797		449		<1.0	<1.0	<1.0	<1.0
MW-19C	5/2/2004	-46					<1.0	<1.0	<1.0	<1.0
MW-19C	10/25/2004	130	-52				<1.0	<1.0	<1.0	<1.0
MW-19C	5/12/2005	329	147				<1.0	<1.0	<1.0	<1.0
MW-19C	11/15/2005	516	334				<1.0	<1.0	<1.0	<1.0
MW-19C	5/17/2006	699	517				<1.0	<1.0	<1.0	<1.0
MW-19C	11/27/2006	893	711				<0.2	<0.2	**0.3**	<0.2
MW-19C	5/22/2007	1069	887				<1.0	<1.0	<1.0	<1.0
MW-19C	11/29/2007	1260	1078				<1.0	<1.0	<1.0	<1.0
MW-19C	5/20/2008	1433	1251		-97		<1.0	<1.0	<1.0	<1.0
MW-19C	11/23/2008	1620	1438		90		<1.0	<1.0	<1.0	<1.0
MW-19C	05/19/2009	1797	1615		267		<1.0	<1.0	<1.0	<1.0
MW-19C	11/18/2009	1980	1798		450		<1.0	<1.0	<1.0	<1.0
MW-20C	5/3/2004	-45					<1.0	<1.0	**1.4**	**2.4**
MW-20C	10/25/2004	130	-52				<1.0	<1.0	**1.7**	**4.6**
MW-20C	5/12/2005	329	147				<1.0	<1.0	**1.7**	**2.3**
MW-20C	11/15/2005	516	334				<1.0	<1.0	**2.1**	**2.9**
MW-20C	5/17/2006	699	517				<1.0	<1.0	**1.8**	**1.6**
MW-20C	11/29/2006	895	713				<0.2	**0.2**	**2.1**	**1.5**
MW-20C	5/21/2007	1068	886				<0.2	<0.2	**1.6**	**1.8**
MW-20C	11/29/2007	1260	1078				<1.0	<1.0	**1.6**	**1.3**
MW-20C	5/20/2008	1433	1251		-97		<1.0	<1.0	**1.6**	**2.5**
MW-20C	11/23/2008	1620	1438		90		<1.0	<1.0	**1.5**	**2.7**
MW-20C	05/19/2009	1797	1615		267		<1.0	<1.0	**1.4**	**2.0**
MW-20C	11/18/2009	1980	1798		450		<1.0	<1.0	**1.7**	**2.3**
MW-20C	5/20/2010	2163	1981		633		<1.0	<1.0	**1.3**	**1.8**
MW-20C	11/8/2010	2335	2153		805		<1.0	<1.0	**1.4**	**1.4**
MW-20C	5/4/2011	2512	2330		982		<1.0	<1.0	**1.1**	**1.8**
MW-20C	11/3/2011	2695	2513		1165		<1.0	<1.0	**1.3**	**2.1**
MW-20C	5/14/2012	2888	2706		1358		<0.2	<0.2	**1.2**	**1.5**
MW-20C	11/13/2012	3071	2889		1541		<2.0	<2.0	<2.0	<2.0

Table 5
SWMU-20 Cleanup Action Summary—Non-Source Zone
Boeing Developmental Center
Tukwila, Washington

Well	Date	Elapsed Time from Injections (a) (days) 1st Injection	2nd Injection	3rd (b) Injection	4th Injection	5th Injection	Volatile Organic Compounds — Proposed Groundwater Cleanup Levels (c) PCE 5.3 (µg/L)	TCE 1.4 (µg/L)	cDCE 134 (µg/L)	VC 2.4 (µg/L)
MW-20C	5/21/2013	3260	3078		1730		<5.0	<5.0	<5.0	<5.0
MW-20C	11/12/2013	3435	3253		1905		<2.0	<2.0	<2.0	<2.0
MW-20C	5/7/2014	3611	3429		2081		<2.0	<2.0	<2.0	<2.0
MW-20C	11/5/2014	3793	3611		2263		<0.2	<0.2	**0.9**	**0.7**
MW-20C	4/28/2015	3967	3785		2437		<0.2	<0.2	**0.7**	**1.0**
MW-20C	10/27/2015	4149	3967		2619	-15	<0.2	<0.2	**1.0**	**0.9**
MW-20C	4/19/2016	4324	4142		2794	160	<0.2	**0.2**	**2.2**	**0.3**
MW-20C	11/2/2016	4521	4339		2991	357	<0.2	**0.2**	**0.6**	**0.5**
MW-20C	5/2/2017	4702	4520		3172	538	<0.2	<0.2	**1.5**	**0.4**
MW-20C	11/8/2017	4892	4710		3362	728	<0.2	<0.2	**1.5**	**0.5**
MW-20C	5/1/2018	5066	4884		3536	902	<0.2	<0.2	**1.09**	<0.2
MW-20C	11/5/2018	5254	5072		3724	1090	<0.2	<0.2	**1.02**	**0.25**
MW-20C	5/1/2019	5431	5249		3901	1267	<0.2	<0.2	**1.14**	**0.28**
MW-20C	11/4/2019	5618	5436		4088	1454	<0.2	<0.2	**1.15**	**0.42**

Abbreviations and Acronyms:

PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
µg/L = micrograms per liter

Box = Exceedance of proposed cleanup level
Bold = detected compund

Notes:

(a) Injections occurred on:
6/17/04 (6A, B, C; 9A, B, C)
12/16-17/04 (6A, 6B;9A,9B)
3/17/05 (14A)
8/25-28/08 (6A, 9A, 10A)
10/27-11/11/15 (6A, 6B, 10C, 15C, 16A, 16C, 17A, 20C, 22A)

(b) Conducted at Well MW-14A only.

(c) Proposed Cleanup Standards and Comparison to Site Data, Boeing Developmental Center, Tukwila,Washington (Landau Associates, 5/7/13).

Table 6
Performance Monitoring Matrix
Boeing Developmental Center
Tukwila, Washington

Well ID	Frequency	Month(s)	VOCs (8260C) [Non-preserved]	Short-List VOCs - PCE, TCE, cDCE, VC (8260C) [Non-preserved]	Methane, Ethane, Ethene (RSKSOP-175, modified)	AMEE (RSKSOP-175, modified)	TOC (SM5310C)	BTEX (8260C)	TPH-G (NWTPH-G)	Sulfate (EPA 300.0)	Nitrate, Nitrite (EPA 300.0)	Nitrate (EPA 300.0)	Total and Dissolved Arsenic/Copper (200.8 ICP-MS)	Ferrous Iron (Field measurement)	Notes
AOC-5															
BDC-101	Semiannual	May/Nov						X	X	X	X				
BDC-102	Semiannual	May/Nov						X	X	X	X				
BDC-103	Semiannual	May/Nov						X	X	X	X				
BDC-104	Semiannual	May/Nov						X	X	X	X				
MW-17A	Semiannual	May/Nov	X							X		X		X	Nitrate contingency monitoring location; VOCs reported for SWMU-20
MW-18A	Semiannual	May/Nov								X		X		X	Nitrate contingency monitoring location
MW-21A	Semiannual	May/Nov								X		X		X	Nitrate contingency monitoring location
SWMU-17															
BDC-05-02	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-03	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-04	Semiannual	May/Nov		X		X	X			X	X		X	X	Nitrate contingency monitoring location
BDC-05-05	Semiannual	May/Nov		X			X			X			X	X	
BDC-05-07	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-08	Semiannual	May/Nov		X			X			X			X	X	
BDC-05-09	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-10	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-11	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-12	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-13	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-14	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-15	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-16	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-17	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-18	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-19	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-20	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-21	Semiannual	May/Nov		X		X	X			X			X	X	
BDC-05-22	Semiannual	May/Nov		X			X			X			X	X	
BDC-05-23	Semiannual	May/Nov		X			X			X			X	X	
BDC-05-24	Semiannual	May/Nov		X		X	X			X			X	X	

Table 6
Performance Monitoring Matrix
Boeing Developmental Center
Tukwila, Washington

Well ID	Frequency	Month(s)	VOCs (8260C) [Non-preserved]	Short-List VOCs - PCE, TCE, cDCE, VC (8260C) [Non-preserved]	Methane, Ethane, Ethene (RSKSOP-175, modified)	AMEE (RSKSOP-175, modified)	TOC (SM5310C)	BTEX (8260C)	TPH-G (NWTPH-G)	Sulfate (EPA 300.0)	Nitrate, Nitrite (EPA 300.0)	Nitrate (EPA 300.0)	Total and Dissolved Arsenic/Copper (200.8 ICP-MS)	Ferrous Iron (Field measurement)	Notes
SWMU-20															
MW-6A	Semiannual	May/Nov	X		X		X			X					MNA monitoring location
MW-6B	Semiannual	May/Nov	X		X		X			X					MNA monitoring location
MW-9A	Semiannual	May/Nov	X		X		X			X					MNA monitoring location
MW-10C	Semiannual	May/Nov	X												
MW-11A	Semiannual	May/Nov	X												
MW-13A	Semiannual	May/Nov	X												
MW-13C	Semiannual	May/Nov	X												
MW-14C	Semiannual	May/Nov	X												
MW-15C	Semiannual	May/Nov	X												
MW-16A	Semiannual	May/Nov	X												
MW-16C	Semiannual	May/Nov	X												
MW-20C	Semiannual	May/Nov	X												
MW-22A	Semiannual	May/Nov	X		X		X			X					MNA monitoring location

Notes:

Analytical method designated in parentheses following each anaylte name (e.g. "8260C").
Laboratory services changed to Analytical Resources, Inc. per client (January 2018).
Nitrate contingency monitoring locations are only sampled for nitrate if upgradient action levels are exceeded.
Matrix updated May 2020:
MW-17A sampled as part of AOC-05, but VOCs at this well are reported for SWMU-20.
Samples at MW-17A for VOC analysis collected in non-preserved containers.
Unused columns removed.

Abbreviations and Acronyms:

AMEE = acetylene, methane, ethane, and ethene
AOC = area of concern
BTEX = benzene, toluene, ethylbenzene, and xylenes
cDCE = *cis* -1,2-dichloroethene
MNA = monitored natural attenuation
PCE = tetrachloroethene
SWMU = solid waste management unit
TCE = trichloroethene
TOC = total organic carbon
VC = vinyl chloride
VOCs = volatile organic compounds

APPENDIX A

Laboratory Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

20 February 2019

Jennifer Parsons
The Boeing Company [Developmental Center]
PO Box 3703 MS 2R-96
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19B0057	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in it entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

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19B0057

LANDAU ASSOCIATES

Chain-of-Custody Record

[X] Seattle/Edmonds (425) 778-0907 [ ] Spokane (509) 327-9737
[ ] Tacoma (253) 926-2493 [ ] Portland (503) 542-1080
[ ]

Date 2/6/19
Page 1 of 1

Turnaround Time:
Standard X
Accelerated

Project Name DC Regional GW Project No. 0025217.099.039
Project Location/Event ADC-5 / February 2019
Sampler's Name Jeovani Huerta
Project Contact Chris Kimmel & Jen Parsons
Send Results To Chris Kimmel & Jen Parsons

Special Handling Requirements:

Shipment Method:

Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	BETX (8260C)	TPH-Dx (NWTPH-Dx)	Sulfate (300.0)	Nitrate/Nitrite (300.0)	Observations/Comments
BDC-Dupl-190206	2/6/19	800	AQ	6	X	X	X	X	
BDC-104-190206	2/6/19	826	AQ	6	X	X	X	X	
BDC-103-190206	2/6/19	906	AQ	6	X	X	X	X	
BDC-102-190206	2/6/19	956	AQ	6	X	X	X	X	
BDC-101-190206	2/6/19	1031	AQ	6	X	X	X	X	
Trip blanks	—	—	AQ	4	X	X			

Testing Parameters

Allow water samples to settle, collect aliquot from clear portion ☐

NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

Dissolved metal samples were field filtered

Other
48-hr hold time for nitrate

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Jeovani Huerta	Printed Name Jacob Waite	Printed Name	Printed Name
Company Landau Associates	Company ARI 4.9°C	Company	Company
Date 2/6/19 Time 1425	Date 02/06/19 Time 1425	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDC-Dup1-190206	19B0057-01	Water	06-Feb-2019 08:00	06-Feb-2019 14:25
BDC-104-190206	19B0057-02	Water	06-Feb-2019 08:26	06-Feb-2019 14:25
BDC-103-190206	19B0057-03	Water	06-Feb-2019 09:06	06-Feb-2019 14:25
BDC-102-190206	19B0057-04	Water	06-Feb-2019 09:56	06-Feb-2019 14:25
BDC-101-190206	19B0057-05	Water	06-Feb-2019 10:31	06-Feb-2019 14:25
Trip blanks	19B0057-06	Water	06-Feb-2019 00:00	06-Feb-2019 14:25

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing/Landau Edmonds Project Name: DC Regional GW

COC No(s): (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: 19B0057 Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 4.1°C

Time 1425

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D005206

Cooler Accepted by: JGW Date: 02/06/19 Time: 1425

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... (Bubble Wrap) (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	1-30-19	

Was Sample Split by ARI : (NA) YES Date/Time: Equipment: Split by:

Samples Logged by: SCF Date: 2-6-19 Time: 1454 Labels checked by: SCF 2/6/19

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

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

Additional Notes, Discrepancies, & Resolutions: 1 TB has an air bubble.

By: SCF Date: 2-6-19

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-Dup1-190206

19B0057-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 02/06/2019 08:00
Instrument: NT2 Analyst: PKC — Analyzed: 02/08/2019 13:49

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-01 B
Preparation Batch: BHB0202 — Sample Size: 10 mL
Prepared: 08-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**0.44**	ug/L	
m,p-Xylene	179601-23-1	1	0.40	**0.87**	ug/L	
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	**0.91**	ug/L	
Surrogate: Toluene-d8			*80-120 %*	*95.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*88.6*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-Dup1-190206

19B0057-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 08:00
Instrument: DX500 Analyst: KOTT — Analyzed: 02/06/2019 22:26

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-01 A
Preparation Batch: BHB0126 — Sample Size: 5 mL
Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	**0.173**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-Dup1-190206

19B0057-01RE1 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 02/06/2019 08:00
Instrument: NT2 Analyst: PKC — Analyzed: 02/11/2019 15:46

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-01RE1 C
Preparation Batch: BHB0214 — Sample Size: 10 mL
Prepared: 11-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*91.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.0*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-Dup1-190206

19B0057-01RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 08:00
Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 12:05

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-01RE1 A
Preparation Batch: BHB0126 — Sample Size: 5 mL
Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	100	10.0	10.0	**117**	mg/L	D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	100	10.0	10.0	**231**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-104-190206

19B0057-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 02/06/2019 08:26

Instrument: NT2 Analyst: PKC — Analyzed: 02/08/2019 14:09

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-02 C

Preparation Batch: BHB0202 — Sample Size: 10 mL

Prepared: 08-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*95.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*84.5*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-104-190206

19B0057-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 08:26

Instrument: DX500 Analyst: KOTT — Analyzed: 02/06/2019 23:17

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-02 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	**0.111**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-104-190206

19B0057-02RE1 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 02/06/2019 08:26

Instrument: NT2 Analyst: PKC — Analyzed: 02/11/2019 16:06

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-02RE1 D

Preparation Batch: BHB0214 — Sample Size: 10 mL

Prepared: 11-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*90.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.9*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-104-190206

19B0057-02RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 08:26

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 12:55

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-02RE1 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	10	1.00	1.00	**11.5**	mg/L	D

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PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-104-190206

19B0057-02RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 08:26

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 16:21

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-02RE2 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	50	5.00	5.00	**49.3**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-103-190206

19B0057-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 02/06/2019 09:06

Instrument: NT2 Analyst: PKC — Analyzed: 02/08/2019 14:29

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-03 F

Preparation Batch: BHB0202 — Sample Size: 10 mL

Prepared: 08-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**0.40**	ug/L	
m,p-Xylene	179601-23-1	1	0.40	**0.79**	ug/L	
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	**0.79**	ug/L	
Surrogate: Toluene-d8			*80-120 %*	*96.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*86.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-103-190206

19B0057-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 09:06

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 00:07

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-03 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	**0.180**	mg/L	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-103-190206

19B0057-03RE1 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 02/06/2019 09:06

Instrument: NT2 Analyst: PKC — Analyzed: 02/11/2019 16:27

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-03RE1 E

Preparation Batch: BHB0214 — Sample Size: 10 mL

Prepared: 11-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*92.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.8*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-103-190206

19B0057-03RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 09:06

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 13:12

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-03RE1 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	100	10.0	10.0	**112**	mg/L	D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	100	10.0	10.0	**219**	mg/L	D

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Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-102-190206

19B0057-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 02/06/2019 09:56

Instrument: NT2 Analyst: PKC — Analyzed: 02/08/2019 14:50

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-04 D

Preparation Batch: BHB0202 — Sample Size: 10 mL

Prepared: 08-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**0.98**	ug/L	
m,p-Xylene	179601-23-1	1	0.40	**12.5**	ug/L	
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	**12.6**	ug/L	
Surrogate: Toluene-d8			*80-120 %*	*96.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*98.1*	*%*	

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Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-102-190206

19B0057-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 09:56

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 00:24

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-04 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**1.53**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	**0.154**	mg/L	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-102-190206

19B0057-04RE1 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 02/06/2019 09:56

Instrument: NT2 Analyst: PKC — Analyzed: 02/11/2019 16:47

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-04RE1 E

Preparation Batch: BHB0214 — Sample Size: 10 mL

Prepared: 11-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	**192**	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			*80-120 %*	*90.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*99.6*	*%*	

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Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-102-190206

19B0057-04RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 09:56

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 15:47

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-04RE2 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	**15.2**	mg/L	D

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PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-101-190206

19B0057-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 02/06/2019 10:31

Instrument: NT2 Analyst: PKC — Analyzed: 02/08/2019 15:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-05 C

Preparation Batch: BHB0202 — Sample Size: 10 mL

Prepared: 08-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*94.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*82.7*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-101-190206

19B0057-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 10:31

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 00:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-05 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-101-190206

19B0057-05RE1 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 02/06/2019 10:31

Instrument: NT2 Analyst: PKC — Analyzed: 02/11/2019 17:07

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-05RE1 E

Preparation Batch: BHB0214 — Sample Size: 10 mL

Prepared: 11-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*89.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.9*	*%*	

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PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-101-190206

19B0057-05RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 10:31

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 13:29

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-05RE1 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	10	1.00	1.00	**7.73**	mg/L	D

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PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

BDC-101-190206

19B0057-05RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 02/06/2019 10:31

Instrument: DX500 Analyst: KOTT — Analyzed: 02/07/2019 16:04

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19B0057-05RE2 A

Preparation Batch: BHB0126 — Sample Size: 5 mL

Prepared: 06-Feb-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	**30.6**	mg/L	D

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PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Trip blanks

19B0057-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 02/06/2019 00:00
Instrument: NT2 Analyst: PKC — Analyzed: 02/08/2019 12:03

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-06 A
Preparation Batch: BHB0202 — Sample Size: 10 mL
Prepared: 08-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*95.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*88.3*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Trip blanks

19B0057-06RE1 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 02/06/2019 00:00
Instrument: NT2 Analyst: PKC — Analyzed: 02/11/2019 15:26

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19B0057-06RE1 B
Preparation Batch: BHB0214 — Sample Size: 10 mL
Prepared: 11-Feb-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*93.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.5*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Volatile Organic Compounds - Quality Control

Batch BHB0202 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHB0202-BLK2)				Prepared: 08-Feb-2019 Analyzed: 08-Feb-2019 11:43						
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Surrogate: Toluene-d8	4.75		ug/L	*5.00*		*94.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.44		ug/L	*5.00*		*88.9*	*80-120*			
LCS (BHB0202-BS2)				Prepared: 08-Feb-2019 Analyzed: 08-Feb-2019 10:21						
Benzene	10.6	0.20	ug/L	10.0		106	80-120			
Toluene	10.3	0.20	ug/L	10.0		103	80-120			
Ethylbenzene	10.5	0.20	ug/L	10.0		105	80-120			
m,p-Xylene	21.5	0.40	ug/L	20.0		108	80-121			
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121			
Xylenes, total	32.2	0.60	ug/L	30.0		107	76-127			
Surrogate: Toluene-d8	5.09		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.89		ug/L	*5.00*		*97.8*	*80-120*			
LCS Dup (BHB0202-BSD2)				Prepared: 08-Feb-2019 Analyzed: 08-Feb-2019 11:02						
Benzene	11.0	0.20	ug/L	10.0		110	80-120	4.00	30	
Toluene	10.9	0.20	ug/L	10.0		109	80-120	6.26	30	
Ethylbenzene	10.9	0.20	ug/L	10.0		109	80-120	3.84	30	
m,p-Xylene	22.8	0.40	ug/L	20.0		114	80-121	5.78	30	
o-Xylene	11.3	0.20	ug/L	10.0		113	80-121	5.71	30	
Xylenes, total	34.1	0.60	ug/L	30.0		114	76-127	5.76	30	
Surrogate: Toluene-d8	5.07		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.94		ug/L	*5.00*		*98.7*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Volatile Organic Compounds - Quality Control

Batch BHB0214 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHB0214-BLK1)				Prepared: 11-Feb-2019 Analyzed: 11-Feb-2019 14:57						
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.57		ug/L	*5.00*		*91.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.74		ug/L	*5.00*		*94.8*	*80-120*			
LCS (BHB0214-BS1)				Prepared: 11-Feb-2019 Analyzed: 11-Feb-2019 13:16						
Gasoline Range Organics (Tol-Nap)	1080	100	ug/L	1000		108	72-128			
Surrogate: Toluene-d8	4.89		ug/L	*5.00*		*97.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.97		ug/L	*5.00*		*99.3*	*80-120*			
LCS Dup (BHB0214-BSD1)				Prepared: 11-Feb-2019 Analyzed: 11-Feb-2019 13:56						
Gasoline Range Organics (Tol-Nap)	1120	100	ug/L	1000		112	72-128	3.92	30	
Surrogate: Toluene-d8	4.86		ug/L	*5.00*		*97.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.11		ug/L	*5.00*		*102*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Wet Chemistry - Quality Control

Batch BHB0126 - No Prep Wet Chem

Instrument: DX500 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHB0126-BLK1)				Prepared: 06-Feb-2019 Analyzed: 06-Feb-2019 21:53							
Nitrate-N	ND	0.100	0.100	mg/L							U
Nitrite-N	ND	0.100	0.100	mg/L							U
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHB0126-BS1)				Prepared: 06-Feb-2019 Analyzed: 06-Feb-2019 22:10							
Nitrate-N	1.53	0.100	0.100	mg/L	1.50		102	90-110			
Nitrite-N	1.52	0.100	0.100	mg/L	1.50		101	90-110			
Sulfate	1.46	0.100	0.100	mg/L	1.50		97.5	90-110			
Duplicate (BHB0126-DUP1)		**Source: 19B0057-01**		Prepared: 06-Feb-2019 Analyzed: 06-Feb-2019 22:43							
Nitrite-N	0.170	0.100	0.100	mg/L		0.173			1.75	20	
Duplicate (BHB0126-DUP2)		**Source: 19B0057-01RE1**		Prepared: 06-Feb-2019 Analyzed: 07-Feb-2019 12:22							
Nitrate-N	116	10.0	10.0	mg/L		117			0.69	20	D
Nitrite-N	ND	10.0	10.0	mg/L		ND					U
Sulfate	223	10.0	10.0	mg/L		231			3.56	20	D
Matrix Spike (BHB0126-MS1)		**Source: 19B0057-01**		Prepared: 06-Feb-2019 Analyzed: 06-Feb-2019 23:00							
Nitrite-N	2.13	0.100	0.100	mg/L	2.00	0.173	97.8	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BHB0126-MS2)		**Source: 19B0057-01RE1**		Prepared: 06-Feb-2019 Analyzed: 07-Feb-2019 12:39							
Nitrate-N	131	10.0	10.0	mg/L	100	117	14.6	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BHB0126-MS5)		**Source: 19B0057-01RE1**		Prepared: 06-Feb-2019 Analyzed: 07-Feb-2019 17:11							
Sulfate	668	50.0	50.0	mg/L	400	231	109	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrite-N	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
PO Box 3703 MS 2R-96	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	20-Feb-2019 11:54

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
M	Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

16 May 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19E0010	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19E0016

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 5/1/19
Page 1 of 1

Turnaround Time:
Standard ✓
Accelerated _____

Project Name DC Regional GW Project No. 025217.079.039
Project Location/Event AOC-5 / May 2019
Sampler's Name Devan Brandt & Brittany McManus
Project Contact Chris Kimmel & Jen Parsons
Send Results To Chris Kimmel & Jen Parsons

Special Handling Requirements: _____
Shipment Method: Drop off
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260C)	BETX (8260C)	TPH-G (NWTPH-G)	Sulfate (E300.0)	Nitrate/Nitrite (300.0) *	Nitrate (300.0) *
MW-17A-190501	5/1/19	1401	AQ	4	X			X		X
MW-18A-190501		1503	AQ	1				X		X
MW-21A-190501		1537	AQ	1				X		X
Trip Blanks	—	—	AQ	2	X					

Testing Parameters

Observations/Comments

___ Allow water samples to settle, collect aliquot from clear portion ☐

___ NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

___ Dissolved metal samples were field filtered

Other
* 48 hr Hold Times for Nitrate

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature Stephanie Fishel	Signature	Signature
Printed Name Devan Brandt	Printed Name Stephanie Fishel	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 5/1/19 Time 1650	Date 5-1-19 Time 1650	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-17A-190501	19E0010-01	Water	01-May-2019 14:01	01-May-2019 16:50
MW-18A-190501	19E0010-02	Water	01-May-2019 15:03	01-May-2019 16:50
MW-21A-190501	19E0010-03	Water	01-May-2019 15:37	01-May-2019 16:50
Trip Blanks	19E0010-04	Water	01-May-2019 14:01	01-May-2019 16:50

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control high in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

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WORK ORDER

19E0010

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due: 16-May-2019 18:00 (10 day TAT)

Received By: Stephanie Fishel
Logged In By: Erin I. Salle

Date Received: 01-May-2019 16:50
Date Logged In: 02-May-2019 07:45

Samples Received at: **13.7°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	No	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	No
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).	No	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Analysis	Due	TAT	Expires	Comments
19E0010-01 MW-17A-190501 [Water] Sampled 01-May-2019 14:01 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL	*B = VOA Vial, Clear, 40 mL*	*C = VOA Vial, Clear, 40 mL*	*D = VOA Vial, Clear, 40 mL*	
Sulfate, IC, EPA 300.0	16-May-2019 15:00	10	29-May-2019 14:01	
Nitrate-N, IC, EPA 300.0	16-May-2019 15:00	10	03-May-2019 14:01	
8260C VOA	16-May-2019 15:00	10	15-May-2019 14:01	Three versions
19E0010-02 MW-18A-190501 [Water] Sampled 01-May-2019 15:03 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL				
Sulfate, IC, EPA 300.0	16-May-2019 15:00	10	29-May-2019 15:03	
Nitrate-N, IC, EPA 300.0	16-May-2019 15:00	10	03-May-2019 15:03	
19E0010-03 MW-21A-190501 [Water] Sampled 01-May-2019 15:37 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL				
Sulfate, IC, EPA 300.0	16-May-2019 15:00	10	29-May-2019 15:37	
Nitrate-N, IC, EPA 300.0	16-May-2019 15:00	10	03-May-2019 15:37	
19E0010-04 Trip Blanks [Water] Sampled 01-May-2019 14:01 (GMT-08:00) Pacific Time (US & Canada)				
A = VOA Vial, Clear, 40 mL, HCL	*B = VOA Vial, Clear, 40 mL, HCL*			
8260C VOA	16-May-2019 15:00	10	15-May-2019 14:01	Three versions

Reviewed By _____ Date _____

WORK ORDER

19E0010

Client: The Boeing Company [Developmental Center]	**Project Manager:** Kelly Bottem
Project: Boeing Regional GW Developmental Center	**Project Number:** Boeing Regional GW Developmental Center

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

COC No(s): _____ (NA)

Assigned ARI Job No: 19E0016

Project Name: DC Regional GW

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1650 13.7

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D00256C

Cooler Accepted by: Set Date: 5-1-19 Time: 1650

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ...	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: Box		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO cas
Did all bottle labels and tags agree with custody papers?		cas (YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	YES	(NO)
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	cas (NA)	4/29/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: _____ Date: 5/2/19 Time: 0745 Labels checked by: _____

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

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

Additional Notes, Discrepancies, & Resolutions:

MW-17A-190501 all bottles have a sampling time of 1601, COC states 1401. MW-21A 190501 sampling time not written on bottle

By: _____ Date: cas 5/2/19

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

ARI Work Order: 19E0010

Cooler#: 1 Temperature(°C): 13.7

Sample ID	Bottle Count	Bottle Type
Samples received above 6°		

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Completed by: SAF Date: 5-1-19 Time: 1650

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-17A-190501

19E0010-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 14:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 12:33

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0010-01 C

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.27**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	**6.23**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.86**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-17A-190501

19E0010-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 14:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 12:33

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*115*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*97.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-17A-190501

19E0010-01RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 14:01

Instrument: DX500 Analyst: KOTT — Analyzed: 05/02/2019 15:50

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0010-01RE1 A

Preparation Batch: BHE0045 — Sample Size: 5 mL

Prepared: 02-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.732**	mg/L	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-18A-190501

19E0010-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 15:03

Instrument: DX500 Analyst: KOTT — Analyzed: 05/02/2019 15:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0010-02 A

Preparation Batch: BHE0045 — Sample Size: 5 mL

Prepared: 02-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-18A-190501

19E0010-02RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 15:03

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 16:06

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0010-02RE2 A

Preparation Batch: BHE0045 — Sample Size: 5 mL

Prepared: 02-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	**17.6**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-21A-190501

19E0010-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 15:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/02/2019 15:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0010-03 A

Preparation Batch: BHE0045 — Sample Size: 5 mL

Prepared: 02-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.125**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

MW-21A-190501

19E0010-03RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 15:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 16:23

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0010-03RE2 A

Preparation Batch: BHE0045 — Sample Size: 5 mL

Prepared: 02-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**11.4**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Trip Blanks

19E0010-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 14:01
Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 11:53

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0010-04 A
Preparation Batch: BHE0041 — Sample Size: 10 mL
Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Trip Blanks

19E0010-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 14:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 11:53

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*108*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0041-BLK1)	Prepared: 02-May-2019 Analyzed: 02-May-2019 10:06									
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0041-BLK1)			Prepared: 02-May-2019 Analyzed: 02-May-2019 10:06							
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L							U
Naphthalene	ND	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0041-BLK1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 10:06						
Surrogate: 1,2-Dichloroethane-d4	5.60		ug/L	*5.00*		*112*	*80-129*			
Surrogate: Toluene-d8	4.95		ug/L	*5.00*		*99.1*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.61		ug/L	*5.00*		*92.3*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.07		ug/L	*5.00*		*101*	*80-120*			
LCS (BHE0041-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 08:45						
Chloromethane	8.43	0.50	ug/L	10.0		84.3	60-138			
Vinyl Chloride	9.41	0.20	ug/L	10.0		94.1	66-133			
Bromomethane	11.0	1.00	ug/L	10.0		110	72-131			
Chloroethane	13.1	0.20	ug/L	10.0		131	60-155			Q
Trichlorofluoromethane	10.7	0.20	ug/L	10.0		107	80-129			
Acrolein	62.9	5.00	ug/L	50.0		126	52-144			Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.5	0.20	ug/L	10.0		115	76-129			
Acetone	55.8	5.00	ug/L	50.0		112	58-142			
1,1-Dichloroethene	11.5	0.20	ug/L	10.0		115	69-135			
Bromoethane	10.9	0.20	ug/L	10.0		109	78-128			
Iodomethane	10.5	1.00	ug/L	10.0		105	56-147			
Methylene Chloride	10.9	1.00	ug/L	10.0		109	65-135			
Acrylonitrile	11.2	1.00	ug/L	10.0		112	64-134			
Carbon Disulfide	10.7	0.20	ug/L	10.0		107	78-125			
trans-1,2-Dichloroethene	11.2	0.20	ug/L	10.0		112	78-128			
Vinyl Acetate	9.87	0.20	ug/L	10.0		98.7	55-138			
1,1-Dichloroethane	11.3	0.20	ug/L	10.0		113	76-124			
2-Butanone	53.0	5.00	ug/L	50.0		106	61-140			
2,2-Dichloropropane	9.85	0.20	ug/L	10.0		98.5	78-125			
cis-1,2-Dichloroethene	11.0	0.20	ug/L	10.0		110	80-121			
Chloroform	11.4	0.20	ug/L	10.0		114	80-122			
Bromochloromethane	11.3	0.20	ug/L	10.0		113	80-121			
1,1,1-Trichloroethane	12.1	0.20	ug/L	10.0		121	79-123			Q
1,1-Dichloropropene	11.2	0.20	ug/L	10.0		112	80-120			
Carbon tetrachloride	9.76	0.20	ug/L	10.0		97.6	53-137			
1,2-Dichloroethane	11.2	0.20	ug/L	10.0		112	75-123			
Benzene	11.2	0.20	ug/L	10.0		112	80-120			
Trichloroethene	10.7	0.20	ug/L	10.0		107	80-120			
1,2-Dichloropropane	11.2	0.20	ug/L	10.0		112	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0041-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 08:45						
Bromodichloromethane	12.1	0.20	ug/L	10.0		121	80-121			Q
Dibromomethane	11.0	0.20	ug/L	10.0		110	80-120			
4-Methyl-2-Pentanone	53.0	5.00	ug/L	50.0		106	67-133			
cis-1,3-Dichloropropene	10.5	0.20	ug/L	10.0		105	80-124			
Toluene	11.0	0.20	ug/L	10.0		110	80-120			
trans-1,3-Dichloropropene	9.86	0.20	ug/L	10.0		98.6	71-127			
2-Hexanone	53.5	5.00	ug/L	50.0		107	69-133			
1,1,2-Trichloroethane	11.2	0.20	ug/L	10.0		112	80-121			
1,3-Dichloropropane	11.1	0.20	ug/L	10.0		111	80-120			
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120			
Dibromochloromethane	9.84	0.20	ug/L	10.0		98.4	65-135			
1,2-Dibromoethane	11.7	0.20	ug/L	10.0		117	80-121			
Chlorobenzene	10.9	0.20	ug/L	10.0		109	80-120			
Ethylbenzene	11.1	0.20	ug/L	10.0		111	80-120			
1,1,1,2-Tetrachloroethane	9.93	0.20	ug/L	10.0		99.3	80-120			
m,p-Xylene	22.6	0.40	ug/L	20.0		113	80-121			
o-Xylene	11.1	0.20	ug/L	10.0		111	80-121			
Styrene	11.3	0.20	ug/L	10.0		113	80-124			
Bromoform	8.69	0.20	ug/L	10.0		86.9	51-134			
1,1,2,2-Tetrachloroethane	11.3	0.20	ug/L	10.0		113	77-123			
1,2,3-Trichloropropane	10.9	0.50	ug/L	10.0		109	76-125			
trans-1,4-Dichloro 2-Butene	8.54	1.00	ug/L	10.0		85.4	55-129			
n-Propylbenzene	11.3	0.20	ug/L	10.0		113	78-130			
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120			
Isopropyl Benzene	11.4	0.20	ug/L	10.0		114	80-128			
2-Chlorotoluene	11.0	0.20	ug/L	10.0		110	78-122			
4-Chlorotoluene	11.0	0.20	ug/L	10.0		110	80-121			
t-Butylbenzene	11.1	0.20	ug/L	10.0		111	78-125			
1,3,5-Trimethylbenzene	11.5	0.20	ug/L	10.0		115	80-129			
1,2,4-Trimethylbenzene	11.3	0.20	ug/L	10.0		113	80-127			
s-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-129			
4-Isopropyl Toluene	11.3	0.20	ug/L	10.0		113	79-130			
1,3-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120			
1,4-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
n-Butylbenzene	11.2	0.20	ug/L	10.0		112	74-129			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0041-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 08:45						
1,2-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,2-Dibromo-3-chloropropane	9.33	0.50	ug/L	10.0		93.3	62-123			
1,2,4-Trichlorobenzene	10.5	0.50	ug/L	10.0		105	64-124			
Hexachloro-1,3-Butadiene	10.2	0.50	ug/L	10.0		102	58-123			
Naphthalene	11.9	0.50	ug/L	10.0		119	50-134			
1,2,3-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	49-133			
Surrogate: 1,2-Dichloroethane-d4	5.46		ug/L	*5.00*		*109*	*80-129*			
Surrogate: Toluene-d8	5.15		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.88		ug/L	*5.00*		*97.5*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.8*	*80-120*			
LCS Dup (BHE0041-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 09:25						
Chloromethane	8.43	0.50	ug/L	10.0		84.3	60-138	0.05	30	
Vinyl Chloride	9.61	0.20	ug/L	10.0		96.1	66-133	2.09	30	
Bromomethane	11.1	1.00	ug/L	10.0		111	72-131	0.33	30	
Chloroethane	13.0	0.20	ug/L	10.0		130	60-155	0.50	30	Q
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	80-129	1.78	30	
Acrolein	63.8	5.00	ug/L	50.0		128	52-144	1.36	30	Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.5	0.20	ug/L	10.0		115	76-129	0.46	30	
Acetone	53.3	5.00	ug/L	50.0		107	58-142	4.55	30	
1,1-Dichloroethene	11.5	0.20	ug/L	10.0		115	69-135	0.03	30	
Bromoethane	10.9	0.20	ug/L	10.0		109	78-128	0.15	30	
Iodomethane	10.5	1.00	ug/L	10.0		105	56-147	0.58	30	
Methylene Chloride	11.0	1.00	ug/L	10.0		110	65-135	0.21	30	
Acrylonitrile	11.1	1.00	ug/L	10.0		111	64-134	0.27	30	
Carbon Disulfide	10.8	0.20	ug/L	10.0		108	78-125	0.93	30	
trans-1,2-Dichloroethene	11.3	0.20	ug/L	10.0		113	78-128	0.27	30	
Vinyl Acetate	10.5	0.20	ug/L	10.0		105	55-138	6.14	30	
1,1-Dichloroethane	11.3	0.20	ug/L	10.0		113	76-124	0.04	30	
2-Butanone	53.0	5.00	ug/L	50.0		106	61-140	0.03	30	
2,2-Dichloropropane	10.3	0.20	ug/L	10.0		103	78-125	4.85	30	
cis-1,2-Dichloroethene	11.0	0.20	ug/L	10.0		110	80-121	0.42	30	
Chloroform	11.2	0.20	ug/L	10.0		112	80-122	0.95	30	
Bromochloromethane	11.3	0.20	ug/L	10.0		113	80-121	0.36	30	
1,1,1-Trichloroethane	12.2	0.20	ug/L	10.0		122	79-123	0.44	30	Q

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0041-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 09:25						
1,1-Dichloropropene	11.0	0.20	ug/L	10.0		110	80-120	1.68	30	
Carbon tetrachloride	9.62	0.20	ug/L	10.0		96.2	53-137	1.45	30	
1,2-Dichloroethane	11.0	0.20	ug/L	10.0		110	75-123	1.74	30	
Benzene	11.1	0.20	ug/L	10.0		111	80-120	1.39	30	
Trichloroethene	10.5	0.20	ug/L	10.0		105	80-120	1.92	30	
1,2-Dichloropropane	11.2	0.20	ug/L	10.0		112	80-120	0.05	30	
Bromodichloromethane	11.9	0.20	ug/L	10.0		119	80-121	1.47	30	Q
Dibromomethane	11.0	0.20	ug/L	10.0		110	80-120	0.42	30	
4-Methyl-2-Pentanone	53.1	5.00	ug/L	50.0		106	67-133	0.15	30	
cis-1,3-Dichloropropene	10.4	0.20	ug/L	10.0		104	80-124	0.70	30	
Toluene	10.9	0.20	ug/L	10.0		109	80-120	0.76	30	
trans-1,3-Dichloropropene	9.98	0.20	ug/L	10.0		99.8	71-127	1.26	30	
2-Hexanone	53.5	5.00	ug/L	50.0		107	69-133	0.12	30	
1,1,2-Trichloroethane	11.1	0.20	ug/L	10.0		111	80-121	0.99	30	
1,3-Dichloropropane	10.9	0.20	ug/L	10.0		109	80-120	1.69	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	1.53	30	
Dibromochloromethane	9.65	0.20	ug/L	10.0		96.5	65-135	1.97	30	
1,2-Dibromoethane	11.6	0.20	ug/L	10.0		116	80-121	0.96	30	
Chlorobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.84	30	
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120	3.34	30	
1,1,1,2-Tetrachloroethane	9.74	0.20	ug/L	10.0		97.4	80-120	1.93	30	
m,p-Xylene	22.2	0.40	ug/L	20.0		111	80-121	1.77	30	
o-Xylene	11.0	0.20	ug/L	10.0		110	80-121	1.69	30	
Styrene	11.2	0.20	ug/L	10.0		112	80-124	1.20	30	
Bromoform	8.64	0.20	ug/L	10.0		86.4	51-134	0.66	30	
1,1,2,2-Tetrachloroethane	11.2	0.20	ug/L	10.0		112	77-123	0.20	30	
1,2,3-Trichloropropane	10.9	0.50	ug/L	10.0		109	76-125	0.19	30	
trans-1,4-Dichloro 2-Butene	8.10	1.00	ug/L	10.0		81.0	55-129	5.29	30	
n-Propylbenzene	11.3	0.20	ug/L	10.0		113	78-130	0.25	30	
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120	0.12	30	
Isopropyl Benzene	11.3	0.20	ug/L	10.0		113	80-128	1.04	30	
2-Chlorotoluene	11.0	0.20	ug/L	10.0		110	78-122	0.03	30	
4-Chlorotoluene	10.9	0.20	ug/L	10.0		109	80-121	0.29	30	
t-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-125	0.35	30	
1,3,5-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-129	0.69	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0041-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 09:25						
1,2,4-Trimethylbenzene	11.2	0.20	ug/L	10.0		112	80-127	0.81	30	
s-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-129	0.04	30	
4-Isopropyl Toluene	11.3	0.20	ug/L	10.0		113	79-130	0.78	30	
1,3-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120	0.17	30	
1,4-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	0.24	30	
n-Butylbenzene	11.1	0.20	ug/L	10.0		111	74-129	0.12	30	
1,2-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	1.45	30	
1,2-Dibromo-3-chloropropane	9.06	0.50	ug/L	10.0		90.6	62-123	2.94	30	
1,2,4-Trichlorobenzene	10.6	0.50	ug/L	10.0		106	64-124	0.16	30	
Hexachloro-1,3-Butadiene	10.3	0.50	ug/L	10.0		103	58-123	1.68	30	
Naphthalene	11.6	0.50	ug/L	10.0		116	50-134	2.50	30	
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133	1.03	30	
Surrogate: 1,2-Dichloroethane-d4	5.32		ug/L	*5.00*		*106*	*80-129*			
Surrogate: Toluene-d8	5.13		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.87		ug/L	*5.00*		*97.3*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.05		ug/L	*5.00*		*101*	*80-120*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Wet Chemistry - Quality Control

Batch BHE0045 - No Prep Wet Chem

Instrument: DX500 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0045-BLK1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 14:09							
Nitrate-N	ND	0.100	0.100	mg/L							U
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHE0045-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 14:26							
Nitrate-N	1.39	0.100	0.100	mg/L	1.50		92.5	90-110			
Sulfate	1.48	0.100	0.100	mg/L	1.50		98.8	90-110			
Duplicate (BHE0045-DUP1)		**Source: 19E0010-01**		Prepared: 02-May-2019 Analyzed: 02-May-2019 15:00							
Nitrate-N	ND	2.00	2.00	mg/L		ND					U
Duplicate (BHE0045-DUP2)		**Source: 19E0010-01RE1**		Prepared: 02-May-2019 Analyzed: 02-May-2019 16:07							
Sulfate	0.723	0.100	0.100	mg/L		0.732			1.24	20	
Matrix Spike (BHE0045-MS1)		**Source: 19E0010-01**		Prepared: 02-May-2019 Analyzed: 02-May-2019 16:23							
Nitrate-N	1.93	0.100	0.100	mg/L	2.00	ND	96.5	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	16-May-2019 15:33

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
M	Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

24 May 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19E0044	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19E0044

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 5/2/19
Page 1 of _____

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.039
Project Location/Event AOC-5 / May 2019
Sampler's Name Deven Brandt & Brittany McManus
Project Contact Chris Kimmel & Jen Parsons
Send Results To Chris Kimmel & Jen Parsons

Special Handling Requirements: _____
Shipment Method: PickUp
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	BETX (8260C)	TPH-G (NWTPH-G)	Sulfate (E300.0)	Nitrate/Nitrite (300.0)*	Observations/Comments
BDC-101-190502	5/2/19	1547	AQ	6	X	X	X	X	
BDC-DUP2-190502	↓	1600	↓	6	X	X	X	X	
BDC-102-190502		1617		6	X	X	X	X	
BDC-103-190502		1637		6	X	X	X	X	
BDC-104-190502	↓	1707	↓	6	X	X	X	X	
Trip Blanks	—	—	AQ	4	X	X			

Observations/Comments:
- ☐ Allow water samples to settle, collect aliquot from clear portion
- ☐ NWTPH-Dx - Acid wash cleanup ☐ - Silica gel cleanup ☐
- ☐ Dissolved metal samples were field filtered

Other * 48 hr Hold Times For Nitrate

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Deven Brandt	Printed Name Erin Salle	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 5/2/19 Time 1910	Date 5/3/19 Time 1015	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative 10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDC-101-190502	19E0044-01	Water	02-May-2019 15:47	03-May-2019 10:15
BDC-DUP2-190502	19E0044-02	Water	02-May-2019 16:00	03-May-2019 10:15
BDC-102-190502	19E0044-03	Water	02-May-2019 16:17	03-May-2019 10:15
BDC-103-190502	19E0044-04	Water	02-May-2019 16:37	03-May-2019 10:15
BDC-104-190502	19E0044-05	Water	02-May-2019 17:07	03-May-2019 10:15
Trip Blanks	19E0044-06	Water	02-May-2019 15:47	03-May-2019 10:15

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Work Order Case Narrative

Gasoline by NWTPH-g (GC/MS)

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

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4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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WORK ORDER

19E0044

Client: The Boeing Company [Developmental Center] | **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center | **Project Number:** Boeing Regional GW Developmental Center

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due:	17-May-2019 18:00 (10 day TAT)		
Received By:	Eric Larson	Date Received:	03-May-2019 10:15
Logged In By:	Jacob Walter	Date Logged In:	03-May-2019 12:36

Samples Received at: **2.5°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	Yes	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	No	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Analysis	Due	TAT	Expires	Comments

WORK ORDER

19E0044

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
19E0044-01 BDC-101-190502 [Water] Sampled 02-May-2019 15:47 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL	*B = VOA Vial, Clear, 40 mL, HCL*	*C = VOA Vial, Clear, 40 mL, HCL*	*D = VOA Vial, Clear, 40 mL, HCL*	
E = VOA Vial, Clear, 40 mL, HCL	*F = VOA Vial, Clear, 40 mL, HCL*			
8260C VOA	17-May-2019 15:00	10	16-May-2019 15:47	Three versions
Nitrate-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 15:47	
Nitrite-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 15:47	
Sulfate, IC, EPA 300.0	17-May-2019 15:00	10	30-May-2019 15:47	
8260C Gas (NWTPH)	17-May-2019 15:00	10	16-May-2019 15:47	
19E0044-02 BDC-DUP2-190502 [Water] Sampled 02-May-2019 16:00 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL	*B = VOA Vial, Clear, 40 mL, HCL*	*C = VOA Vial, Clear, 40 mL, HCL*	*D = VOA Vial, Clear, 40 mL, HCL*	
E = VOA Vial, Clear, 40 mL, HCL	*F = VOA Vial, Clear, 40 mL, HCL*			
Sulfate, IC, EPA 300.0	17-May-2019 15:00	10	30-May-2019 16:00	
8260C Gas (NWTPH)	17-May-2019 15:00	10	16-May-2019 16:00	
8260C VOA	17-May-2019 15:00	10	16-May-2019 16:00	Three versions
Nitrate-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 16:00	
Nitrite-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 16:00	
19E0044-03 BDC-102-190502 [Water] Sampled 02-May-2019 16:17 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL	*B = VOA Vial, Clear, 40 mL, HCL*	*C = VOA Vial, Clear, 40 mL, HCL*	*D = VOA Vial, Clear, 40 mL, HCL*	
E = VOA Vial, Clear, 40 mL, HCL	*F = VOA Vial, Clear, 40 mL, HCL*			
8260C VOA	17-May-2019 15:00	10	16-May-2019 16:17	Three versions
8260C Gas (NWTPH)	17-May-2019 15:00	10	16-May-2019 16:17	
Nitrite-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 16:17	
Sulfate, IC, EPA 300.0	17-May-2019 15:00	10	30-May-2019 16:17	
Nitrate-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 16:17	
19E0044-04 BDC-103-190502 [Water] Sampled 02-May-2019 16:37 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL	*B = VOA Vial, Clear, 40 mL, HCL*	*C = VOA Vial, Clear, 40 mL, HCL*	*D = VOA Vial, Clear, 40 mL, HCL*	
E = VOA Vial, Clear, 40 mL, HCL	*F = VOA Vial, Clear, 40 mL, HCL*			
8260C VOA	17-May-2019 15:00	10	16-May-2019 16:37	Three versions
Nitrate-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 16:37	
Nitrite-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 16:37	
Sulfate, IC, EPA 300.0	17-May-2019 15:00	10	30-May-2019 16:37	
8260C Gas (NWTPH)	17-May-2019 15:00	10	16-May-2019 16:37	

WORK ORDER

19E0044

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
19E0044-05 BDC-104-190502 [Water] Sampled 02-May-2019 17:07 (GMT-08:00) Pacific Time (US & Canada)				
A = Small OJ, 500 mL	*B = VOA Vial, Clear, 40 mL, HCL*	*C = VOA Vial, Clear, 40 mL, HCL*	*D = VOA Vial, Clear, 40 mL, HCL*	
E = VOA Vial, Clear, 40 mL, HCL	*F = VOA Vial, Clear, 40 mL, HCL*			
8260C Gas (NWTPH)	17-May-2019 15:00	10	16-May-2019 17:07	
8260C VOA	17-May-2019 15:00	10	16-May-2019 17:07	Three versions
Nitrate-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 17:07	
Nitrite-N, IC, EPA 300.0	17-May-2019 15:00	10	04-May-2019 17:07	
Sulfate, IC, EPA 300.0	17-May-2019 15:00	10	30-May-2019 17:07	
19E0044-06 Trip Blanks [Water] Sampled 02-May-2019 15:47 (GMT-08:00) Pacific Time (US & Canada)				
A = VOA Vial, Clear, 40 mL, HCL	*B = VOA Vial, Clear, 40 mL, HCL*	*C = VOA Vial, Clear, 40 mL, HCL*	*D = VOA Vial, Clear, 40 mL, HCL*	
8260C VOA	17-May-2019 15:00	10	16-May-2019 15:47	Three versions
8260C Gas (NWTPH)	17-May-2019 15:00	10	16-May-2019 15:47	

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing Project Name: DC

COC No(s): NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: 19E0044 Tracking No: NA

Preliminary Examination Phase:

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

Were custody papers included with the cooler? YES NO

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

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 1.5 2.3 3.4

Time 1120

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00256S

Cooler Accepted by: [signature] Date: 5/3/19 Time: 1015

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

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

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

How were bottles sealed in plastic bags? Individually Grouped Not

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

Were all bottle labels complete and legible? YES NO

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

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

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

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

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

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

Date VOC Trip Blank was made at ARI NA 4/24/19

Were the sample(s) split by ARI? NA YES Date/Time: Equipment: Split by:

Samples Logged by: JAM Date: 05/03/19 Time: 1235 Labels checked by: JAM

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-101-190502

19E0044-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 15:47

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 00:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-01 D

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-101-190502

19E0044-01 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 05/02/2019 15:47

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 00:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-01 D

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-101-190502

19E0044-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 15:47

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 17:36

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-01 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-101-190502

19E0044-01RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 15:47

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 20:23

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-01RE1 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	10	1.00	1.00	**11.2**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-101-190502

19E0044-01RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 15:47

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 22:32

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-01RE2 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	50	5.00	5.00	**64.5**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-DUP2-190502

19E0044-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 16:00

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 00:35

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-02 C

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*98.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.7*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-DUP2-190502

19E0044-02 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 05/02/2019 16:00

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 00:35

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-02 C

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*98.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.7*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-DUP2-190502

19E0044-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:00

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 18:26

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-02 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-DUP2-190502

19E0044-02RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:00

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 22:04

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-02RE1 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	100	10.0	10.0	**111**	mg/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-DUP2-190502

19E0044-02RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:00

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 21:58

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-02RE2 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	100	10.0	10.0	**161**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-102-190502

19E0044-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 16:17

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 01:01

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-03 B

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.4*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-102-190502

19E0044-03 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 05/02/2019 16:17

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 01:01

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-03 B

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.4*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-102-190502

19E0044-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:17

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 18:43

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-03 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-102-190502

19E0044-03RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:17

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 23:45

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-03RE1 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	5	0.500	0.500	**9.63**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-102-190502

19E0044-03RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:17

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 22:15

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-03RE2 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	50	5.00	5.00	**47.7**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-103-190502

19E0044-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 16:37

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 01:26

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-04 B

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.0*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-103-190502

19E0044-04 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 05/02/2019 16:37

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 01:26

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-04 B

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.0*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-103-190502

19E0044-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 19:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-04 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-103-190502

19E0044-04RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 00:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-04RE1 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	100	10.0	10.0	**113**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-103-190502

19E0044-04RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 23:22

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-04RE2 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	100	10.0	10.0	**160**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-104-190502

19E0044-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 17:07

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 01:52

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-05 B

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.1*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-104-190502

19E0044-05 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 05/02/2019 17:07

Instrument: NT3 Analyst: PKC — Analyzed: 05/04/2019 01:52

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-05 B

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-104-190502

19E0044-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 17:07

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 19:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-05 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-104-190502

19E0044-05RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 17:07

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 02:50

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-05RE1 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	10	1.00	1.00	**17.6**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

BDC-104-190502

19E0044-05RE6 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 17:07

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/17/2019 16:17

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0044-05RE6 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	50	5.00	5.00	**44.6**	mg/L	D

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Trip Blanks

19E0044-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 15:47
Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 19:22

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-06 B
Preparation Batch: BHE0110 — Sample Size: 10 mL
Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.9*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Trip Blanks

19E0044-06 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 05/02/2019 15:47
Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 19:22

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0044-06 B
Preparation Batch: BHE0110 — Sample Size: 10 mL
Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.9*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Volatile Organic Compounds - Quality Control

Batch BHE0110 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0110-BLK1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 17:12						
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Surrogate: Toluene-d8	5.16		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.70		ug/L	*5.00*		*93.9*	*80-120*			
Blank (BHE0110-BLK2)				Prepared: 03-May-2019 Analyzed: 03-May-2019 17:12						
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	5.16		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.70		ug/L	*5.00*		*93.9*	*80-120*			
LCS (BHE0110-BS1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 15:02						
Benzene	9.83	0.20	ug/L	10.0		98.3	80-120			
Toluene	10.1	0.20	ug/L	10.0		101	80-120			
Ethylbenzene	10.0	0.20	ug/L	10.0		100	80-120			
m,p-Xylene	20.3	0.40	ug/L	20.0		101	80-121			
o-Xylene	10.1	0.20	ug/L	10.0		101	80-121			
Xylenes, total	30.3	0.60	ug/L	30.0		101	76-127			
Surrogate: Toluene-d8	5.09		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.89		ug/L	*5.00*		*97.8*	*80-120*			
LCS (BHE0110-BS2)				Prepared: 03-May-2019 Analyzed: 03-May-2019 15:54						
Gasoline Range Organics (Tol-Nap)	893	100	ug/L	1000		89.3	72-128			
Surrogate: Toluene-d8	5.12		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.84		ug/L	*5.00*		*96.9*	*80-120*			
LCS Dup (BHE0110-BSD1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 15:28						
Benzene	10.3	0.20	ug/L	10.0		103	80-120	4.58	30	
Toluene	10.6	0.20	ug/L	10.0		106	80-120	4.99	30	
Ethylbenzene	10.6	0.20	ug/L	10.0		106	80-120	5.41	30	
m,p-Xylene	21.4	0.40	ug/L	20.0		107	80-121	5.60	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Volatile Organic Compounds - Quality Control

Batch BHE0110 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0110-BSD1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 15:28						
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121	5.83	30	
Xylenes, total	32.1	0.60	ug/L	30.0		107	76-127	5.67	30	
Surrogate: Toluene-d8	5.16		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.98		ug/L	*5.00*		*99.6*	*80-120*			
LCS Dup (BHE0110-BSD2)				Prepared: 03-May-2019 Analyzed: 03-May-2019 16:20						
Gasoline Range Organics (Tol-Nap)	801	100	ug/L	1000		80.1	72-128	10.90	30	
Surrogate: Toluene-d8	5.05		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.92		ug/L	*5.00*		*98.4*	*80-120*			

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Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Wet Chemistry - Quality Control

Batch BHE0101 - No Prep Wet Chem

Instrument: DX500 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0101-BLK1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 17:02							
Nitrate-N	ND	0.100	0.100	mg/L							U
Nitrite-N	ND	0.100	0.100	mg/L							U
Blank (BHE0101-BLK2)				Prepared: 03-May-2019 Analyzed: 06-May-2019 21:25							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHE0101-BS1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 16:45							
Nitrate-N	1.40	0.100	0.100	mg/L	1.50		93.1	90-110			
Nitrite-N	1.51	0.100	0.100	mg/L	1.50		101	90-110			
LCS (BHE0101-BS2)				Prepared: 03-May-2019 Analyzed: 06-May-2019 21:42							
Sulfate	1.59	0.100	0.100	mg/L	1.50		106	90-110			
Duplicate (BHE0101-DUP1)		**Source: 19E0044-01**		Prepared: 03-May-2019 Analyzed: 03-May-2019 17:52							
Nitrite-N	ND	0.100	0.100	mg/L		ND					U
Duplicate (BHE0101-DUP2)		**Source: 19E0044-01RE1**		Prepared: 03-May-2019 Analyzed: 03-May-2019 20:40							
Nitrate-N	11.3	1.00	1.00	mg/L		11.2			0.97	20	D
Duplicate (BHE0101-DUP3)		**Source: 19E0044-01RE2**		Prepared: 03-May-2019 Analyzed: 06-May-2019 22:49							
Sulfate	61.4	5.00	5.00	mg/L		64.5			4.98	20	D
Matrix Spike (BHE0101-MS1)		**Source: 19E0044-01**		Prepared: 03-May-2019 Analyzed: 03-May-2019 18:09							
Nitrite-N	1.98	0.100	0.100	mg/L	2.00	ND	98.9	90-110			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BHE0101-MS2)		**Source: 19E0044-01RE1**		Prepared: 03-May-2019 Analyzed: 03-May-2019 20:57							
Nitrate-N	30.6	2.00	2.00	mg/L	20.0	11.2	97.1	90-110			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BHE0101-MS6)		**Source: 19E0044-01RE2**		Prepared: 03-May-2019 Analyzed: 09-May-2019 13:18							
Sulfate	110	10.0	10.0	mg/L	100	64.5	45.3	90-110			*, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrite-N	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
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2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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Seattle WA, 98124	Project Manager: Carl Bach	24-May-2019 14:18

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

20 November 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19K0067	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19K0067

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 11/5/19
Page 1 of _____

Turnaround Time:
Standard x
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.034
Project Location/Event AOC-5 / ~~April~~ November 2019
Sampler's Name Devan Brandt / Jered Newcomb
Project Contact Chris Kimmel / Jen Parsons
Send Results To Chris Kimmel / Jen Parsons

5.8° 5.6°
Special Handling Requirements:

Shipment Method: Drop off
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260C)**	Sulfate (E300.0)	Nitrate (300.0)	BETX (8260C) *	TPH-G (NWTPH-G)	Nitrate/Nitrite (300.0) *	Observations/Comments
MW-17A-191105	11/5/19	906	AQ	4	X	X	X				effervescent
MW-21A-191105	11/5/19	947	AQ	1		X	X				
MW-18A-191105	11/5/19	956	AQ	1		X	X				
BDC-101-191105	11/5/19	1051	AQ	6		X		X	X	X	
BDC-102-191105	11/5/19	1236	AQ	6		X		X	X	X	
BDC-104-191105	11/5/19	1311	AQ	6		X		X	X	X	
BDC-103-191105	11/5/19	1346	AQ	6		X		X	X	X	
BDC-DUP2-191105	11/5/19	900	AQ	6		X		X	X	X	
Trip Blanks 1-191105	11/5/19	-	AQ	6	X			X	X		

Testing Parameters

☐ Allow water samples to settle, collect aliquot from clear portion ☐
☐ NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐
☐ Dissolved metal samples were field filtered

Other * 48 hr hold times for Nitrate
** Boeing 69 List

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Jered Newcomb	Printed Name Erin Salle	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 11/5/19 Time 16:28	Date 11/5/19 Time 1628	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative 10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-17A-191105	19K0067-01	Water	05-Nov-2019 09:06	05-Nov-2019 16:28
MW-21A-191105	19K0067-02	Water	05-Nov-2019 09:47	05-Nov-2019 16:28
MW-18A-191105	19K0067-03	Water	05-Nov-2019 09:56	05-Nov-2019 16:28
BDC-101-191105	19K0067-04	Water	05-Nov-2019 10:51	05-Nov-2019 16:28
BDC-102-191105	19K0067-05	Water	05-Nov-2019 12:36	05-Nov-2019 16:28
BDC-104-191105	19K0067-06	Water	05-Nov-2019 13:11	05-Nov-2019 16:28
BDC-103-191105	19K0067-07	Water	05-Nov-2019 13:46	05-Nov-2019 16:28
BDC-DUP2-191105	19K0067-08	Water	05-Nov-2019 09:00	05-Nov-2019 16:28
Trip Blanks 1-191105	19K0067-09	Water	05-Nov-2019 09:00	05-Nov-2019 16:28

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits with the exception of analytes flagged on the associated forrms.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing — Project Name: DC Regional GW

COC No(s): _____ NA — Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19K0067 — Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 5.8 5.6

Time _____

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: D00 5206

Cooler Accepted by: _____ Date: 11/5/19 Time: 1628

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	10/29/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: _____ Date: 11/5/19 Time: 1700 Labels checked by: _____

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

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

Additional Notes, Discrepancies, & Resolutions:

The 1st vial in MW-17A-191105 has an air bubble

By: _____ Date: 11/5/19

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-17A-191105

19K0067-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 09:06

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 19:04

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-01 C

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	**7.98**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.45**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-17A-191105

19K0067-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 09:06

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 19:04

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*115*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*98.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.3*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-17A-191105

19K0067-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:06

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 12:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-01 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.741**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-17A-191105

19K0067-01RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:06

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/11/2019 23:02

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-01RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**2.91**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-21A-191105

19K0067-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:47

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 12:52

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-02 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-21A-191105

19K0067-02RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:47

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/11/2019 23:22

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-02RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**4.35**	mg/L	D

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-18A-191105

19K0067-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:56

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 13:12

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-03 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

MW-18A-191105

19K0067-03RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:56

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/11/2019 23:42

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-03RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**11.5**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-101-191105

19K0067-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 10:51

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 19:30

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-04 C

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.4*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-101-191105

19K0067-04 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/05/2019 10:51

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 19:30

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-04 C

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.4*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-101-191105

19K0067-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 10:51

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 14:51

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-04 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-101-191105

19K0067-04RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 10:51

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/07/2019 01:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-04RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	5	0.500	0.500	**7.73**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-101-191105

19K0067-04RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 10:51

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/12/2019 00:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-04RE2 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	**28.5**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-102-191105

19K0067-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 12:36

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 19:55

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-05 B

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.1*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-102-191105

19K0067-05 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/05/2019 12:36

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 19:55

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-05 B

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.1*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-102-191105

19K0067-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 12:36

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 15:50

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-05 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-102-191105

19K0067-05RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 12:36

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/07/2019 02:15

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-05RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	5	0.500	0.500	**8.12**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-102-191105

19K0067-05RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 12:36

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/12/2019 01:24

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-05RE2 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	**33.8**	mg/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-104-191105

19K0067-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 13:11

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 10:12

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-06 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*95.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.4*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-104-191105

19K0067-06 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/05/2019 13:11

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 10:12

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-06 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*95.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.4*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-104-191105

19K0067-06 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 13:11

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 16:53

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-06 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-104-191105

19K0067-06RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 13:11

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/07/2019 02:35

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-06RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	5	0.500	0.500	**6.30**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-104-191105

19K0067-06RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 13:11

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/12/2019 01:45

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-06RE2 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	**29.5**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-103-191105

19K0067-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 13:46

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 10:32

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-07 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	**13.2**	ug/L	
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**24.8**	ug/L	
m,p-Xylene	179601-23-1	1	0.40	**58.3**	ug/L	
o-Xylene	95-47-6	1	0.20	**0.99**	ug/L	
Xylenes, total	1330-20-7	1	0.60	**59.3**	ug/L	
Surrogate: Toluene-d8			*80-120 %*	*97.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*100*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-103-191105

19K0067-07 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/05/2019 13:46

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 10:32

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-07 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	**1290**	ug/L	
HC ID: GAS						
Surrogate: Toluene-d8			*80-120 %*	*97.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-103-191105

19K0067-07 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 13:46

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 17:13

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-07 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.397**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-103-191105

19K0067-07RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 13:46

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/12/2019 12:32

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-07RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	50	5.00	5.00	**59.6**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-DUP2-191105

19K0067-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 09:00

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 10:52

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-08 D

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	**13.3**	ug/L	
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**25.2**	ug/L	
m,p-Xylene	179601-23-1	1	0.40	**59.4**	ug/L	
o-Xylene	95-47-6	1	0.20	**1.04**	ug/L	
Xylenes, total	1330-20-7	1	0.60	**60.5**	ug/L	
Surrogate: Toluene-d8			*80-120 %*	*97.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*100*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-DUP2-191105

19K0067-08 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/05/2019 09:00

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 10:52

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-08 D

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	**1300**	ug/L	
HC ID: GAS						
Surrogate: Toluene-d8			*80-120 %*	*97.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*100*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-DUP2-191105

19K0067-08 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:00

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/06/2019 17:34

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-08 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

BDC-DUP2-191105

19K0067-08RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 09:00

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/12/2019 12:51

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0067-08RE1 A

Preparation Batch: BHK0110 — Sample Size: 5 mL

Prepared: 06-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	50	5.00	5.00	**58.2**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Trip Blanks 1-191105

19K0067-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 09:00
Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 13:34

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-09 E
Preparation Batch: BHK0129 — Sample Size: 10 mL
Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Trip Blanks 1-191105

19K0067-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 09:00

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 13:34

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*112*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Trip Blanks 1-191105

19K0067-09 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 11/05/2019 09:00
Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 13:34

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0067-09 E
Preparation Batch: BHK0129 — Sample Size: 10 mL
Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.0*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0129-BLK1)			Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 12:17							
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0129-BLK1)			Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 12:17							
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L							U
Naphthalene	ND	0.50	ug/L							U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0129-BLK1)			Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 12:17							
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.42		ug/L	*5.00*		*108*	*80-129*			
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.80		ug/L	*5.00*		*96.0*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.05		ug/L	*5.00*		*101*	*80-120*			
Blank (BHK0129-BLK2)			Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 12:17							
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.80		ug/L	*5.00*		*96.0*	*80-120*			
LCS (BHK0129-BS1)			Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:10							
Chloromethane	11.2	0.50	ug/L	10.0		112	60-138			
Vinyl Chloride	10.9	0.20	ug/L	10.0		109	66-133			
Bromomethane	12.0	1.00	ug/L	10.0		120	72-131			
Chloroethane	14.4	0.20	ug/L	10.0		144	60-155			Q
Trichlorofluoromethane	11.0	0.20	ug/L	10.0		110	80-129			
Acrolein	41.8	5.00	ug/L	50.0		83.6	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.5	0.20	ug/L	10.0		105	76-129			
Acetone	40.7	5.00	ug/L	50.0		81.4	58-142			
1,1-Dichloroethene	10.9	0.20	ug/L	10.0		109	69-135			
Bromoethane	9.60	0.20	ug/L	10.0		96.0	78-128			
Iodomethane	7.69	1.00	ug/L	10.0		76.9	56-147			Q
Methylene Chloride	9.12	1.00	ug/L	10.0		91.2	65-135			
Acrylonitrile	7.72	1.00	ug/L	10.0		77.2	64-134			Q
Carbon Disulfide	10.3	0.20	ug/L	10.0		103	78-125			
trans-1,2-Dichloroethene	9.46	0.20	ug/L	10.0		94.6	78-128			
Vinyl Acetate	9.09	0.20	ug/L	10.0		90.9	55-138			
1,1-Dichloroethane	10.3	0.20	ug/L	10.0		103	76-124			
2-Butanone	40.5	5.00	ug/L	50.0		81.0	61-140			
2,2-Dichloropropane	10.3	0.20	ug/L	10.0		103	78-125			
cis-1,2-Dichloroethene	8.17	0.20	ug/L	10.0		81.7	80-121			
Chloroform	10.0	0.20	ug/L	10.0		100	80-122			
Bromochloromethane	9.43	0.20	ug/L	10.0		94.3	80-121			
1,1,1-Trichloroethane	10.1	0.20	ug/L	10.0		101	79-123			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0129-BS1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:10						
1,1-Dichloropropene	9.74	0.20	ug/L	10.0		97.4	80-120			
Carbon tetrachloride	10.7	0.20	ug/L	10.0		107	53-137			
1,2-Dichloroethane	9.14	0.20	ug/L	10.0		91.4	75-123			
Benzene	10.1	0.20	ug/L	10.0		101	80-120			
Trichloroethene	9.82	0.20	ug/L	10.0		98.2	80-120			
1,2-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120			
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121			
Dibromomethane	9.04	0.20	ug/L	10.0		90.4	80-120			
4-Methyl-2-Pentanone	40.2	5.00	ug/L	50.0		80.3	67-133			
cis-1,3-Dichloropropene	10.3	0.20	ug/L	10.0		103	80-124			
Toluene	10.1	0.20	ug/L	10.0		101	80-120			
trans-1,3-Dichloropropene	10.1	0.20	ug/L	10.0		101	71-127			
2-Hexanone	42.7	5.00	ug/L	50.0		85.4	69-133			
1,1,2-Trichloroethane	8.93	0.20	ug/L	10.0		89.3	80-121			
1,3-Dichloropropane	9.33	0.20	ug/L	10.0		93.3	80-120			
Tetrachloroethene	10.9	0.20	ug/L	10.0		109	80-120			
Dibromochloromethane	10.2	0.20	ug/L	10.0		102	65-135			
1,2-Dibromoethane	8.82	0.20	ug/L	10.0		88.2	80-121			
Chlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
Ethylbenzene	10.9	0.20	ug/L	10.0		109	80-120			
1,1,1,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	80-120			
m,p-Xylene	22.3	0.40	ug/L	20.0		112	80-121			
o-Xylene	10.8	0.20	ug/L	10.0		108	80-121			
Xylenes, total	33.1	0.60	ug/L	30.0		110	76-127			
Styrene	10.9	0.20	ug/L	10.0		109	80-124			
Bromoform	9.68	0.20	ug/L	10.0		96.8	51-134			
1,1,2,2-Tetrachloroethane	8.83	0.20	ug/L	10.0		88.3	77-123			
1,2,3-Trichloropropane	8.45	0.50	ug/L	10.0		84.5	76-125			
trans-1,4-Dichloro 2-Butene	9.24	1.00	ug/L	10.0		92.4	55-129			
n-Propylbenzene	11.6	0.20	ug/L	10.0		116	78-130			
Bromobenzene	10.2	0.20	ug/L	10.0		102	80-120			
Isopropyl Benzene	11.2	0.20	ug/L	10.0		112	80-128			
2-Chlorotoluene	11.0	0.20	ug/L	10.0		110	78-122			
4-Chlorotoluene	10.9	0.20	ug/L	10.0		109	80-121			
t-Butylbenzene	11.5	0.20	ug/L	10.0		115	78-125			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0129-BS1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:10						
1,3,5-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-129			
1,2,4-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-127			
s-Butylbenzene	11.9	0.20	ug/L	10.0		119	78-129			
4-Isopropyl Toluene	12.0	0.20	ug/L	10.0		120	79-130			
1,3-Dichlorobenzene	10.9	0.20	ug/L	10.0		109	80-120			
1,4-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
n-Butylbenzene	12.4	0.20	ug/L	10.0		124	74-129			Q
1,2-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
1,2-Dibromo-3-chloropropane	8.08	0.50	ug/L	10.0		80.8	62-123			
1,2,4-Trichlorobenzene	11.9	0.50	ug/L	10.0		119	64-124			
Hexachloro-1,3-Butadiene	15.4	0.50	ug/L	10.0		154	58-123			*, Q
Naphthalene	9.84	0.50	ug/L	10.0		98.4	50-134			
1,2,3-Trichlorobenzene	11.1	0.50	ug/L	10.0		111	49-133			
Surrogate: 1,2-Dichloroethane-d4	5.03		ug/L	*5.00*		*101*	*80-129*			
Surrogate: Toluene-d8	5.20		ug/L	*5.00*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.06		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.7*	*80-120*			
LCS (BHK0129-BS2)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 11:01						
Gasoline Range Organics (Tol-Nap)	1120	100	ug/L	1000		112	72-128			
Surrogate: Toluene-d8	5.29		ug/L	*5.00*		*106*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.18		ug/L	*5.00*		*104*	*80-120*			
LCS Dup (BHK0129-BSD1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:36						
Chloromethane	11.2	0.50	ug/L	10.0		112	60-138	0.24	30	
Vinyl Chloride	11.0	0.20	ug/L	10.0		110	66-133	0.53	30	
Bromomethane	12.8	1.00	ug/L	10.0		128	72-131	5.81	30	
Chloroethane	14.2	0.20	ug/L	10.0		142	60-155	1.14	30	Q
Trichlorofluoromethane	11.1	0.20	ug/L	10.0		111	80-129	0.75	30	
Acrolein	48.8	5.00	ug/L	50.0		97.6	52-144	15.40	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.2	0.20	ug/L	10.0		102	76-129	2.33	30	
Acetone	48.6	5.00	ug/L	50.0		97.3	58-142	17.70	30	
1,1-Dichloroethene	11.0	0.20	ug/L	10.0		110	69-135	0.99	30	
Bromoethane	9.66	0.20	ug/L	10.0		96.6	78-128	0.67	30	
Iodomethane	8.10	1.00	ug/L	10.0		81.0	56-147	5.09	30	Q

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0129-BSD1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:36						
Methylene Chloride	9.24	1.00	ug/L	10.0		92.4	65-135	1.23	30	
Acrylonitrile	9.30	1.00	ug/L	10.0		93.0	64-134	18.50	30	Q
Carbon Disulfide	10.3	0.20	ug/L	10.0		103	78-125	0.21	30	
trans-1,2-Dichloroethene	9.30	0.20	ug/L	10.0		93.0	78-128	1.68	30	
Vinyl Acetate	10.1	0.20	ug/L	10.0		101	55-138	10.90	30	
1,1-Dichloroethane	10.2	0.20	ug/L	10.0		102	76-124	0.94	30	
2-Butanone	48.9	5.00	ug/L	50.0		97.8	61-140	18.80	30	
2,2-Dichloropropane	10.2	0.20	ug/L	10.0		102	78-125	1.38	30	
cis-1,2-Dichloroethene	8.86	0.20	ug/L	10.0		88.6	80-121	8.12	30	
Chloroform	10.1	0.20	ug/L	10.0		101	80-122	0.15	30	
Bromochloromethane	9.63	0.20	ug/L	10.0		96.3	80-121	2.08	30	
1,1,1-Trichloroethane	10.1	0.20	ug/L	10.0		101	79-123	0.13	30	
1,1-Dichloropropene	9.92	0.20	ug/L	10.0		99.2	80-120	1.84	30	
Carbon tetrachloride	11.0	0.20	ug/L	10.0		110	53-137	2.06	30	
1,2-Dichloroethane	9.79	0.20	ug/L	10.0		97.9	75-123	6.93	30	
Benzene	10.2	0.20	ug/L	10.0		102	80-120	1.17	30	
Trichloroethene	9.72	0.20	ug/L	10.0		97.2	80-120	0.96	30	
1,2-Dichloropropane	10.3	0.20	ug/L	10.0		103	80-120	1.53	30	
Bromodichloromethane	10.7	0.20	ug/L	10.0		107	80-121	3.56	30	
Dibromomethane	9.70	0.20	ug/L	10.0		97.0	80-120	7.06	30	
4-Methyl-2-Pentanone	49.5	5.00	ug/L	50.0		99.0	67-133	20.80	30	
cis-1,3-Dichloropropene	10.7	0.20	ug/L	10.0		107	80-124	3.51	30	
Toluene	10.4	0.20	ug/L	10.0		104	80-120	2.50	30	
trans-1,3-Dichloropropene	11.0	0.20	ug/L	10.0		110	71-127	8.78	30	
2-Hexanone	51.6	5.00	ug/L	50.0		103	69-133	18.80	30	
1,1,2-Trichloroethane	9.81	0.20	ug/L	10.0		98.1	80-121	9.38	30	
1,3-Dichloropropane	10.0	0.20	ug/L	10.0		100	80-120	7.40	30	
Tetrachloroethene	10.6	0.20	ug/L	10.0		106	80-120	2.81	30	
Dibromochloromethane	10.8	0.20	ug/L	10.0		108	65-135	5.65	30	
1,2-Dibromoethane	9.91	0.20	ug/L	10.0		99.1	80-121	11.70	30	
Chlorobenzene	10.2	0.20	ug/L	10.0		102	80-120	1.42	30	
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120	1.98	30	
1,1,1,2-Tetrachloroethane	10.6	0.20	ug/L	10.0		106	80-120	2.18	30	
m,p-Xylene	21.5	0.40	ug/L	20.0		108	80-121	3.57	30	
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121	1.24	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0129-BSD1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:36						
Xylenes, total	32.2	0.60	ug/L	30.0		107	76-127	2.80	30	
Styrene	10.9	0.20	ug/L	10.0		109	80-124	0.22	30	
Bromoform	10.6	0.20	ug/L	10.0		106	51-134	8.85	30	
1,1,2,2-Tetrachloroethane	9.90	0.20	ug/L	10.0		99.0	77-123	11.40	30	
1,2,3-Trichloropropane	9.46	0.50	ug/L	10.0		94.6	76-125	11.20	30	
trans-1,4-Dichloro 2-Butene	10.4	1.00	ug/L	10.0		104	55-129	12.10	30	
n-Propylbenzene	11.1	0.20	ug/L	10.0		111	78-130	4.06	30	
Bromobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.47	30	
Isopropyl Benzene	10.8	0.20	ug/L	10.0		108	80-128	3.25	30	
2-Chlorotoluene	10.7	0.20	ug/L	10.0		107	78-122	2.87	30	
4-Chlorotoluene	10.6	0.20	ug/L	10.0		106	80-121	3.31	30	
t-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-125	2.99	30	
1,3,5-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-129	2.64	30	
1,2,4-Trimethylbenzene	11.0	0.20	ug/L	10.0		110	80-127	3.74	30	
s-Butylbenzene	11.4	0.20	ug/L	10.0		114	78-129	4.29	30	
4-Isopropyl Toluene	11.6	0.20	ug/L	10.0		116	79-130	3.61	30	
1,3-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.31	30	
1,4-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.24	30	
n-Butylbenzene	12.0	0.20	ug/L	10.0		120	74-129	3.19	30	Q
1,2-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	0.70	30	
1,2-Dibromo-3-chloropropane	9.55	0.50	ug/L	10.0		95.5	62-123	16.70	30	
1,2,4-Trichlorobenzene	11.9	0.50	ug/L	10.0		119	64-124	0.23	30	
Hexachloro-1,3-Butadiene	15.2	0.50	ug/L	10.0		152	58-123	1.80	30	*, Q
Naphthalene	11.0	0.50	ug/L	10.0		110	50-134	10.80	30	
1,2,3-Trichlorobenzene	11.7	0.50	ug/L	10.0		117	49-133	4.73	30	
Surrogate: 1,2-Dichloroethane-d4	5.24		ug/L	*5.00*		*105*	*80-129*			
Surrogate: Toluene-d8	5.26		ug/L	*5.00*		*105*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.98		ug/L	*5.00*		*99.6*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.01		ug/L	*5.00*		*100*	*80-120*			
LCS Dup (BHK0129-BSD2)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 11:27						
Gasoline Range Organics (Tol-Nap)	1140	100	ug/L	1000		114	72-128	1.44	30	
Surrogate: Toluene-d8	5.27		ug/L	*5.00*		*105*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.27		ug/L	*5.00*		*105*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0161-BLK1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 09:19						
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.81		ug/L	*5.00*		*96.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	*5.00*		*97.2*	*80-120*			
Blank (BHK0161-BLK2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 09:19						
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Surrogate: Toluene-d8	4.81		ug/L	*5.00*		*96.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	*5.00*		*97.2*	*80-120*			
LCS (BHK0161-BS1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 07:37						
Gasoline Range Organics (Tol-Nap)	1130	100	ug/L	1000		113	72-128			
Surrogate: Toluene-d8	5.05		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.17		ug/L	*5.00*		*103*	*80-120*			
LCS (BHK0161-BS2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 07:57						
Benzene	10.0	0.20	ug/L	10.0		100	80-120			
Toluene	9.93	0.20	ug/L	10.0		99.3	80-120			
Ethylbenzene	10.2	0.20	ug/L	10.0		102	80-120			
m,p-Xylene	21.1	0.40	ug/L	20.0		106	80-121			
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121			
Xylenes, total	31.8	0.60	ug/L	30.0		106	76-127			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*99.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.15		ug/L	*5.00*		*103*	*80-120*			
LCS Dup (BHK0161-BSD1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 08:17						
Gasoline Range Organics (Tol-Nap)	1090	100	ug/L	1000		109	72-128	3.51	30	
Surrogate: Toluene-d8	5.05		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.06		ug/L	*5.00*		*101*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0161-BSD2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 08:38						
Benzene	10.3	0.20	ug/L	10.0		103	80-120	2.55	30	
Toluene	10.1	0.20	ug/L	10.0		101	80-120	1.81	30	
Ethylbenzene	10.2	0.20	ug/L	10.0		102	80-120	0.20	30	
m,p-Xylene	21.6	0.40	ug/L	20.0		108	80-121	2.22	30	
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121	2.05	30	
Xylenes, total	32.5	0.60	ug/L	30.0		108	76-127	2.16	30	
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.11		ug/L	*5.00*		*102*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Wet Chemistry - Quality Control

Batch BHK0110 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0110-BLK1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 11:54							
Nitrate-N	ND	0.100	0.100	mg/L							U
Nitrite-N	ND	0.100	0.100	mg/L							U
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHK0110-BS1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 12:13							
Nitrate-N	1.44	0.100	0.100	mg/L	1.50		95.9	90-110			
Nitrite-N	1.40	0.100	0.100	mg/L	1.50		93.4	90-110			
Sulfate	1.62	0.100	0.100	mg/L	1.50		108	90-110			
Duplicate (BHK0110-DUP1)		**Source: 19K0067-04**		Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 15:10							
Nitrite-N	ND	0.100	0.100	mg/L		ND					U
Duplicate (BHK0110-DUP3)		**Source: 19K0067-04RE1**		Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 01:36							
Nitrate-N	7.79	0.500	0.500	mg/L		7.73			0.70	20	D
Duplicate (BHK0110-DUP8)		**Source: 19K0067-04RE2**		Prepared: 06-Nov-2019 Analyzed: 12-Nov-2019 00:23							
Sulfate	28.1	2.00	2.00	mg/L		28.5			1.35	20	D
Matrix Spike (BHK0110-MS1)		**Source: 19K0067-04**		Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 15:30							
Nitrite-N	1.62	0.100	0.100	mg/L	2.00	ND	81.0	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BHK0110-MS8)		**Source: 19K0067-04RE2**		Prepared: 06-Nov-2019 Analyzed: 12-Nov-2019 00:43							
Sulfate	80.1	5.00	5.00	mg/L	50.0	28.5	103	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BHK0110-MSD8)		**Source: 19K0067-04RE2**		Prepared: 06-Nov-2019 Analyzed: 12-Nov-2019 01:04							
Sulfate	81.2	5.00	5.00	mg/L	50.0	28.5	105	75-125	1.38	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrite-N	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:18

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

20 May 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19E0045	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

LANDAU ASSOCIATES

Chain-of-Custody Record

196-0045

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 5/3/19
Page 1 of 1

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.039
Project Location/Event SWMU-17 / May 2019
Sampler's Name Devan Brandt
Project Contact Chris Kimmel & Jon Parsons
Send Results To Chris Kimmel & Jon Parsons

Special Handling Requirements: Drop off
Shipment Method: _____
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260) PCE/TCE only & EVC	PFAS (RISK SOP - 175 MOD)	TOC (SM5310C)	Sulfate (E300.0)	Total & Dissolved Arsenic & Copper*	Nitrate/Nitrite (300.0)	Observations/Comments
BDC-05-15-190503	5/3/19	0757	AQ	9	X	X	X	X	X		
BDC-0504-190503		0837	AQ	9	X	X	X	X	X	X	
BDC-05-02-190503		0917	AQ	9	X	X	X	X	X		
BDC-05-07-190503		0947	AQ	9	X	X	X	X	X		
BDC-05-05-190503		1017	AQ	7	X		X	X	X		
Trip Blanks	—	—	AQ	4	X	X					

Allow water samples to settle, collect aliquot from clear portion ☐

NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

X Dissolved metal samples were field filtered

Other * Via 200.8 ICP-MS

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Devan Brandt	Printed Name Jacobsmith	Printed Name	Printed Name
Company LAI	Company AM	Company	Company
Date 5/3/19 Time 1050	Date 5/3/19 Time 1050	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDC-05-15-190503	19E0045-01	Water	03-May-2019 07:57	03-May-2019 10:50
BDC-05-15-190503	19E0045-02	Water	03-May-2019 07:57	03-May-2019 10:50
BDC-05-04-190503	19E0045-03	Water	03-May-2019 08:37	03-May-2019 10:50
BDC-05-04-190503	19E0045-04	Water	03-May-2019 08:37	03-May-2019 10:50
BDC-05-02-190503	19E0045-05	Water	03-May-2019 09:17	03-May-2019 10:50
BDC-05-02-190503	19E0045-06	Water	03-May-2019 09:17	03-May-2019 10:50
BDC-05-07-190503	19E0045-07	Water	03-May-2019 09:47	03-May-2019 10:50
BDC-05-07-190503	19E0045-08	Water	03-May-2019 09:47	03-May-2019 10:50
BDC-05-05-190503	19E0045-09	Water	03-May-2019 10:17	03-May-2019 10:50
BDC-05-05-190503	19E0045-10	Water	03-May-2019 10:17	03-May-2019 10:50
Trip Blanks	19E0045-11	Water	03-May-2019 07:57	03-May-2019 10:50

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

The samples were not analyzed from any vials that contained air bubbles.

Total and Dissolved Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Volatile Gases - AMEE by RSK175

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 5/3/2019 1:20:19PM

WORK ORDER

19E0045

Client: The Boeing Company [Developmental Center] | **Project Manager: Kelly Bottem**

Project: Boeing Regional GW Developmental Center | **Project Number: Boeing Regional GW Developmental Center**

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due:	17-May-2019 18:00 (10 day TAT)		
Received By:	Jacob Walter	Date Received:	03-May-2019 10:50
Logged In By:	Jacob Walter	Date Logged In:	03-May-2019 13:14

Samples Received at: **5.8°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	No
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Reviewed By

Date

WORK ORDER

19E0045

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
19E0045-01 BDC-05-15-190503 [Water] Sampled 03-May-2019 07:57				
Met 200.8 - Cu UCT	05/17/2019	10	10/30/2019	
Metals Prep ICPMS	05/17/2019	10	5/2/2020	
Met 200.8 - As UCT	05/17/2019	10	10/30/2019	
Carbon, Organic Total, SM 5310 B-00	05/17/2019	10	5/31/2019	
RSK-175 Dissolved Gases (MEE)	05/17/2019	10	5/10/2019	
8260C VOA	05/17/2019	10	5/17/2019	
Sulfate, IC, EPA 300.0	05/17/2019	10	5/31/2019	
19E0045-02 BDC-05-15-190503 [Water] Sampled 03-May-2019 07:57				
Metals Prep Diss ICPMS	05/17/2019	10	5/2/2020	Field Filtered
Met Diss 200.8 - Cu UCT	05/17/2019	10	10/30/2019	Field Filtered
Met Diss 200.8 - As UCT	05/17/2019	10	10/30/2019	Field Filtered
19E0045-03 BDC-05-04-190503 [Water] Sampled 03-May-2019 08:37				
Carbon, Organic Total, SM 5310 B-00	05/17/2019	10	5/31/2019	
Met 200.8 - Cu UCT	05/17/2019	10	10/30/2019	
8260C VOA	05/17/2019	10	5/17/2019	
Metals Prep ICPMS	05/17/2019	10	5/2/2020	
Nitrate-N, IC, EPA 300.0	05/17/2019	10	5/5/2019	
Nitrite-N, IC, EPA 300.0	05/17/2019	10	5/5/2019	
RSK-175 Dissolved Gases (MEE)	05/17/2019	10	5/10/2019	
Sulfate, IC, EPA 300.0	05/17/2019	10	5/31/2019	
Met 200.8 - As UCT	05/17/2019	10	10/30/2019	
19E0045-04 BDC-05-04-190503 [Water] Sampled 03-May-2019 08:37				
Met Diss 200.8 - Cu UCT	05/17/2019	10	10/30/2019	Field Filtered
Met Diss 200.8 - As UCT	05/17/2019	10	10/30/2019	Field Filtered
Metals Prep Diss ICPMS	05/17/2019	10	5/2/2020	Field Filtered
19E0045-05 BDC-05-02-190503 [Water] Sampled 03-May-2019 09:17				Three versions
8260C VOA	05/17/2019	10	5/17/2019	
Met 200.8 - Cu UCT	05/17/2019	10	10/30/2019	
Sulfate, IC, EPA 300.0	05/17/2019	10	5/31/2019	
Metals Prep ICPMS	05/17/2019	10	5/2/2020	
RSK-175 Dissolved Gases (MEE)	05/17/2019	10	5/10/2019	
Met 200.8 - As UCT	05/17/2019	10	10/30/2019	
Carbon, Organic Total, SM 5310 B-00	05/17/2019	10	5/31/2019	
19E0045-06 BDC-05-02-190503 [Water] Sampled 03-May-2019 09:17				
Metals Prep Diss ICPMS	05/17/2019	10	5/2/2020	Field Filtered
Met Diss 200.8 - Cu UCT	05/17/2019	10	10/30/2019	Field Filtered
Met Diss 200.8 - As UCT	05/17/2019	10	10/30/2019	Field Filtered
19E0045-07 BDC-05-07-190503 [Water] Sampled 03-May-2019 09:47				Three versions

Reviewed By

Date

WORK ORDER

19E0045

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
8260C VOA	05/17/2019	10	5/17/2019	
Carbon, Organic Total, SM 5310 B-00	05/17/2019	10	5/31/2019	
Met 200.8 - As UCT	05/17/2019	10	10/30/2019	
Met 200.8 - Cu UCT	05/17/2019	10	10/30/2019	
Metals Prep ICPMS	05/17/2019	10	5/2/2020	
RSK-175 Dissolved Gases (MEE)	05/17/2019	10	5/10/2019	
Sulfate, IC, EPA 300.0	05/17/2019	10	5/31/2019	
19E0045-08 BDC-05-07-190503 [Water] Sampled 03-May-2019 09:47				
Metals Prep Diss ICPMS	05/17/2019	10	5/2/2020	Field Filtered
Met Diss 200.8 - Cu UCT	05/17/2019	10	10/30/2019	Field Filtered
Met Diss 200.8 - As UCT	05/17/2019	10	10/30/2019	Field Filtered
19E0045-09 BDC-05-05-190503 [Water] Sampled 03-May-2019 10:17				
Carbon, Organic Total, SM 5310 B-00	05/17/2019	10	5/31/2019	
Met 200.8 - As UCT	05/17/2019	10	10/30/2019	
Met 200.8 - Cu UCT	05/17/2019	10	10/30/2019	
Metals Prep ICPMS	05/17/2019	10	5/2/2020	
Sulfate, IC, EPA 300.0	05/17/2019	10	5/31/2019	
8260C VOA	05/17/2019	10	5/10/2019	
19E0045-10 BDC-05-05-190503 [Water] Sampled 03-May-2019 10:17				
Met Diss 200.8 - As UCT	05/17/2019	10	10/30/2019	Field Filtered
Met Diss 200.8 - Cu UCT	05/17/2019	10	10/30/2019	Field Filtered
Metals Prep Diss ICPMS	05/17/2019	10	5/2/2020	Field Filtered
19E0045-11 Trip Blanks [Water] Sampled 03-May-2019 07:57				
RSK-175 Dissolved Gases (MEE)	05/17/2019	10	5/17/2019	
8260C VOA	05/17/2019	10	5/17/2019	

Reviewed By

Date

WORK ORDER

19E0045

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH	
19E0045-01 A	Small OJ, 500 mL		
19E0045-01 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19E0045-01 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0045-01 D	VOA Vial, Clear, 40 mL, HCL	-	
19E0045-01 E	VOA Vial, Clear, 40 mL, HCL	-	
19E0045-01 F	VOA Vial, Clear, 40 mL	-	
19E0045-01 G	VOA Vial, Clear, 40 mL	-	
19E0045-01 H	VOA Vial, Clear, 40 mL	-	
19E0045-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19E0045-03 A	Small OJ, 500 mL		
19E0045-03 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19E0045-03 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0045-03 D	VOA Vial, Clear, 40 mL, HCL	-	
19E0045-03 E	VOA Vial, Clear, 40 mL, HCL	-	
19E0045-03 F	VOA Vial, Clear, 40 mL	-	
19E0045-03 G	VOA Vial, Clear, 40 mL	-	
19E0045-03 H	VOA Vial, Clear, 40 mL	-	
19E0045-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19E0045-05 A	Small OJ, 500 mL		
19E0045-05 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19E0045-05 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0045-05 D	VOA Vial, Clear, 40 mL, HCL	Bubble	
19E0045-05 E	VOA Vial, Clear, 40 mL, HCL	Bubble	
19E0045-05 F	VOA Vial, Clear, 40 mL	Bubble	
19E0045-05 G	VOA Vial, Clear, 40 mL	Bubble	
19E0045-05 H	VOA Vial, Clear, 40 mL		
19E0045-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19E0045-07 A	Small OJ, 500 mL		
19E0045-07 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19E0045-07 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0045-07 D	VOA Vial, Clear, 40 mL, HCL	-	
19E0045-07 E	VOA Vial, Clear, 40 mL, HCL	-	
19E0045-07 F	VOA Vial, Clear, 40 mL	Bubble	
19E0045-07 G	VOA Vial, Clear, 40 mL	Bubble	
19E0045-07 H	VOA Vial, Clear, 40 mL	-	

Reviewed By

Date

WORK ORDER

19E0045

Client: The Boeing Company [Developmental Center]		**Project Manager: Kelly Bottem**	
Project: Boeing Regional GW Developmental Center		**Project Number: Boeing Regional GW Developmental Center**	
19E0045-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19E0045-09 A	Small OJ, 500 mL		
19E0045-09 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19E0045-09 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19E0045-09 D	VOA Vial, Clear, 40 mL		
19E0045-09 E	VOA Vial, Clear, 40 mL		
19E0045-09 F	VOA Vial, Clear, 40 mL		
19E0045-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19E0045-11 A	VOA Vial, Clear, 40 mL, HCL		
19E0045-11 B	VOA Vial, Clear, 40 mL, HCL		
19E0045-11 C	VOA Vial, Clear, 40 mL, HCL		
19E0045-11 D	VOA Vial, Clear, 40 mL, HCL		

JSw
Preservation Confirmed By

05/03/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: London / Boeing Project Name: DC Regional Gun

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 196005 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1050 5.8°C

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 5206

Cooler Accepted by: JBw Date: 5/3/19 Time: 1050

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	4/24/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JBw Date: 05/03/19 Time: 1313 Labels checked by: JBw

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

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

Additional Notes, Discrepancies, & Resolutions:

vials w/ air bubbles marked on preservation sheet.
Lab to determine sizes.

By: JBw Date: 05/03/19

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-15-190503

19E0045-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/03/2019 07:57

Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 21:59

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0045-01 G

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.21**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.6*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*97.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-15-190503

19E0045-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/03/2019 07:57

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 14:28

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0045-01 H

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**26000**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*99.7*	*%*	

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-15-190503

19E0045-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 07:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 22:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-01 C 01

Preparation Batch: BHE0193 — Sample Size: 25 mL

Prepared: 08-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**45.5**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.530**	ug/L	

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-15-190503

19E0045-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/03/2019 07:57

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 19:27

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-01 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.164**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-15-190503

19E0045-01 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/03/2019 07:57

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/14/2019 23:02

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-01 B

Preparation Batch: BHE0347 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**23.15**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-15-190503

19E0045-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 07:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/09/2019 19:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-02 A 02

Preparation Batch: BHE0233 — Sample Size: 25 mL

Prepared: 09-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**45.4**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/03/2019 08:37

Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 22:25

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0045-03 G

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**2.02**	ug/L	
Trichloroethene	79-01-6	1	0.20	**0.21**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.1*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/03/2019 08:37

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 08:50

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0045-03 H

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**13300**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*121*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 08:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 23:26

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-03 C 01

Preparation Batch: BHE0193 — Sample Size: 25 mL

Prepared: 08-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0440	0.400	**15.3**	ug/L	D
Copper	7440-50-8	2	0.680	1.00	**5.61**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/03/2019 08:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/03/2019 20:07

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-03 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-03 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/03/2019 08:37

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 00:11

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-03 B

Preparation Batch: BHE0347 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**101.0**	mg/L	D

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-03RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/03/2019 08:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 19:10

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-03RE1 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**8.21**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-04-190503

19E0045-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 08:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/13/2019 17:34

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-04 A 02

Preparation Batch: BHE0233 — Sample Size: 25 mL

Prepared: 09-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**11.8**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-02-190503

19E0045-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/03/2019 09:17

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 13:19

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0045-05 H

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.10**	ug/L	
Trichloroethene	79-01-6	1	0.20	**0.21**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	**0.41**	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*100*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-02-190503

19E0045-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/03/2019 09:17

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 09:04

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0045-05 G

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**15700**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*105*	*%*	

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-02-190503

19E0045-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 09:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/09/2019 20:02

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-05 C 01

Preparation Batch: BHE0193 — Sample Size: 25 mL

Prepared: 08-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.440	4.00	**41.3**	ug/L	D
Copper	7440-50-8	20	6.80	10.0	**17.6**	ug/L	D

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-02-190503

19E0045-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/03/2019 09:17

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 19:44

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-05 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**6.21**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-02-190503

19E0045-05 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/03/2019 09:17

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 00:37

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-05 B

Preparation Batch: BHE0347 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**1360**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-02-190503

19E0045-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 09:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/09/2019 20:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-06 A 02

Preparation Batch: BHE0233 — Sample Size: 25 mL

Prepared: 09-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	20	0.440	4.00	**36.3**	ug/L	D
Copper, Dissolved	7440-50-8	20	6.80	10.0	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-07-190503

19E0045-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/03/2019 09:47

Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 23:19

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0045-07 H

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.93**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.90**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.7*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*97.5*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.1*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-07-190503

19E0045-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/03/2019 09:47

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 09:18

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0045-07 G

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**21700**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*121*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-07-190503

19E0045-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 09:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 23:31

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-07 C 01

Preparation Batch: BHE0193 — Sample Size: 25 mL

Prepared: 08-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.110	1.00	**2.90**	ug/L	D
Copper	7440-50-8	5	1.70	2.50	**4.80**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-07-190503

19E0045-07 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/03/2019 09:47

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 20:01

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-07 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**0.261**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-07-190503

19E0045-07 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/03/2019 09:47

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 01:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-07 B

Preparation Batch: BHE0347 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**158.6**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-07-190503

19E0045-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 09:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/13/2019 17:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-08 A 02

Preparation Batch: BHE0233 — Sample Size: 25 mL

Prepared: 09-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**2.40**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.502**	ug/L	

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Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-05-190503

19E0045-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/03/2019 10:17

Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 23:44

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0045-09 E

Preparation Batch: BHE0110 — Sample Size: 10 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	**0.70**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	**0.41**	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*107*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-05-190503

19E0045-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 10:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 22:24

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-09 C 01

Preparation Batch: BHE0193 — Sample Size: 25 mL

Prepared: 08-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**0.774**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**2.66**	ug/L	

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Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-05-190503

19E0045-09 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/03/2019 10:17

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 01:27

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-09 B

Preparation Batch: BHE0347 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**1.85**	mg/L	

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-05-190503

19E0045-09RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/03/2019 10:17

Instrument: DX500 Analyst: KOTT — Analyzed: 05/08/2019 23:22

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0045-09RE2 A

Preparation Batch: BHE0101 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	**36.3**	mg/L	D

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Analytical Report

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

BDC-05-05-190503

19E0045-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/03/2019 10:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/09/2019 19:26

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0045-10 A 02

Preparation Batch: BHE0233 — Sample Size: 25 mL

Prepared: 09-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**0.330**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**2.01**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Trip Blanks

19E0045-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/03/2019 07:57
Instrument: NT3 Analyst: PKC — Analyzed: 05/03/2019 18:56

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0045-11 B
Preparation Batch: BHE0110 — Sample Size: 10 mL
Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Volatile Organic Compounds - Quality Control

Batch BHE0110 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0110-BLK1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 17:12						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.25		ug/L	*5.00*		*105*	*80-129*			
Surrogate: Toluene-d8	5.16		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.70		ug/L	*5.00*		*93.9*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.07		ug/L	*5.00*		*101*	*80-120*			
LCS (BHE0110-BS1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 15:02						
Vinyl Chloride	8.98	0.20	ug/L	10.0		89.8	66-133			
cis-1,2-Dichloroethene	9.79	0.20	ug/L	10.0		97.9	80-121			
Trichloroethene	9.98	0.20	ug/L	10.0		99.8	80-120			
Tetrachloroethene	10.0	0.20	ug/L	10.0		100	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.99		ug/L	*5.00*		*99.9*	*80-129*			
Surrogate: Toluene-d8	5.09		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.89		ug/L	*5.00*		*97.8*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.7*	*80-120*			
LCS Dup (BHE0110-BSD1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 15:28						
Vinyl Chloride	9.98	0.20	ug/L	10.0		99.8	66-133	10.60	30	
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121	4.41	30	
Trichloroethene	10.4	0.20	ug/L	10.0		104	80-120	4.14	30	
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120	3.06	30	
Surrogate: 1,2-Dichloroethane-d4	5.13		ug/L	*5.00*		*103*	*80-129*			
Surrogate: Toluene-d8	5.16		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.98		ug/L	*5.00*		*99.6*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.10		ug/L	*5.00*		*102*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Volatile Organic Compounds - Quality Control

Batch BHE0120 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0120-BLK1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 11:33						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.27		ug/L	*5.00*		*105*	*80-129*			
Surrogate: Toluene-d8	4.85		ug/L	*5.00*		*96.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.83		ug/L	*5.00*		*96.7*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	*5.00*		*101*	*80-120*			
LCS (BHE0120-BS1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 09:23						
Vinyl Chloride	9.14	0.20	ug/L	10.0		91.4	66-133			
cis-1,2-Dichloroethene	10.0	0.20	ug/L	10.0		100	80-121			
Trichloroethene	9.97	0.20	ug/L	10.0		99.7	80-120			
Tetrachloroethene	10.1	0.20	ug/L	10.0		101	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.01		ug/L	*5.00*		*100*	*80-129*			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.03		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	*5.00*		*101*	*80-120*			
LCS Dup (BHE0120-BSD1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 09:48						
Vinyl Chloride	10.3	0.20	ug/L	10.0		103	66-133	11.70	30	
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121	2.31	30	
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120	2.95	30	
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120	3.43	30	
Surrogate: 1,2-Dichloroethane-d4	5.00		ug/L	*5.00*		*100*	*80-129*			
Surrogate: Toluene-d8	5.09		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.99		ug/L	*5.00*		*99.7*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.09		ug/L	*5.00*		*102*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Dissolved Gases - Quality Control

Batch BHE0190 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0190-BLK1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:45						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	1850		ug/L	*1800*		*103*	*72-122*			
LCS (BHE0190-BS1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:17						
Methane	700	0.65	ug/L	656		107	80-120			
Ethane	1320	1.23	ug/L	1230		107	80-120			
Ethene	1250	1.14	ug/L	1150		109	80-120			
Acetylene	1080	1.06	ug/L	1060		102	73-123			E
Surrogate: Propane	1890		ug/L	*1800*		*105*	*62-122*			
LCS Dup (BHE0190-BSD1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:31						
Methane	701	0.65	ug/L	656		107	80-120	0.11	30	
Ethane	1320	1.23	ug/L	1230		107	80-120	0.23	30	
Ethene	1250	1.14	ug/L	1150		109	80-120	0.28	30	
Acetylene	1060	1.06	ug/L	1060		99.9	73-123	2.04	30	
Surrogate: Propane	1850		ug/L	*1800*		*103*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Metals and Metallic Compounds - Quality Control

Batch BHE0193 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0193-BLK1)					Prepared: 08-May-2019 Analyzed: 08-May-2019 15:18							
Arsenic	75a	ND	0.0220	0.200	ug/L							U
Copper	63	ND	0.340	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
LCS (BHE0193-BS1)					Prepared: 08-May-2019 Analyzed: 08-May-2019 15:23							
Arsenic	75a	25.5	0.0220	0.200	ug/L	25.0		102	80-120			
Copper	63	26.6	0.340	0.500	ug/L	25.0		106	80-120			
Copper	65	26.5	0.350	0.500	ug/L	25.0		106	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHE0233 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0233-BLK1)					Prepared: 09-May-2019 Analyzed: 09-May-2019 14:50							
Arsenic, Dissolved	75a	ND	0.0220	0.200	ug/L							U
Copper, Dissolved	63	ND	0.340	0.500	ug/L							U
Copper, Dissolved	65	ND	0.350	0.500	ug/L							U
LCS (BHE0233-BS1)					Prepared: 09-May-2019 Analyzed: 09-May-2019 14:54							
Arsenic, Dissolved	75a	26.0	0.0220	0.200	ug/L	25.0		104	80-120			
Copper, Dissolved	63	26.7	0.340	0.500	ug/L	25.0		107	80-120			
Copper, Dissolved	65	26.6	0.350	0.500	ug/L	25.0		107	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Wet Chemistry - Quality Control

Batch BHE0101 - No Prep Wet Chem

Instrument: DX500 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0101-BLK1)	Prepared: 03-May-2019 Analyzed: 03-May-2019 17:02										
Nitrate-N	ND	0.100	0.100	mg/L							U
Nitrite-N	ND	0.100	0.100	mg/L							U
Blank (BHE0101-BLK2)	Prepared: 03-May-2019 Analyzed: 06-May-2019 21:25										
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHE0101-BS1)	Prepared: 03-May-2019 Analyzed: 03-May-2019 16:45										
Nitrate-N	1.40	0.100	0.100	mg/L	1.50		93.1	90-110			
Nitrite-N	1.51	0.100	0.100	mg/L	1.50		101	90-110			
LCS (BHE0101-BS2)	Prepared: 03-May-2019 Analyzed: 06-May-2019 21:42										
Sulfate	1.59	0.100	0.100	mg/L	1.50		106	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Wet Chemistry - Quality Control

Batch BHE0347 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0347-BLK1)				Prepared: 14-May-2019 Analyzed: 14-May-2019 16:27							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHE0347-BS1)				Prepared: 14-May-2019 Analyzed: 14-May-2019 16:49							
Total Organic Carbon	20.10	0.50	0.50	mg/L	20.00		101	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrite-N	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
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Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-May-2019 08:31

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

23 May 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19E0051	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in it entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19E0051

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ **Seattle/Edmonds** (425) 778-0907 ☐ **Spokane** (509) 327-9737
☐ **Tacoma** (253) 926-2493 ☐ **Portland** (503) 542-1080
☐ _____

Date 5/2/19
Page 1 of _____

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.039
Project Location/Event SWMU-17 / May 2019
Sampler's Name Devan Brandt & Brittany McManus
Project Contact Chris Kimmel & Jen Parsons
Send Results To Chris Kimmel & Jen Parsons

Special Handling Requirements: _____
Shipment Method: Pick up
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260) + TCE, VC, EDC & EDB	AMEE (RSK-SOP-175 MOD)	TOC (SM5310C)	Sulfate (E300.0)	Nitrate + Nitrite (300.0)	Total & Dissolved Arsenic & Copper *	Observations/Comments
BDC-05-16-190502	5/2/19	0837	AQ	9	X	X	X	X		X	
BDC-05-14-190502		0841	AQ	9	X	X	X	X		X	
BDC-05-17-190502		0947	AQ	9	X	X	X	X		X	
BDC-05-13-190502		0951	AQ	9	X	X	X	X		X	
BDC-05-20-190502		1037	AQ	9	X	X	X	X		X	
BDC-05-24-190502		1041	AQ	9	X	X	X	X		X	
BDC-05-22-190502		1127	AQ	7	X		X	X		X	
BDC-05-19-190502		1151	AQ	9	X	X	X	X		X	
BDC-05-23-190502		1217	AQ	7	X		X	X		X	
BDC-05-12-190502		1241	AQ	9	X	X	X	X		X	
BDC-05-18-190502		1307	AQ	9	X	X	X	X		X	
BDC-DUP3-190502		1330	AQ	9	X	X	X	X		X	
BDC-05-03-190502		1425	AQ	9	X	X	X	X		X	
BDC-05-21-190502		1427	AQ	9	X	X	X	X		X	
BDC-05-08-190502		1525	AQ	7	X		X	X		X	
BDC-05-11-190502		1625	AQ	9	X	X	X	X		X	
BDC-05-10-190502		1711	AQ	9	X	X	X	X		X	
BDC-05-09-190502		1755	AQ	9	X	X	X	X		X	
TripBlanks	—	—	AQ	4	X	X					

☐ Allow water samples to settle, collect aliquot from clear portion ☐
NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐
X Dissolved metal samples were field filtered

Other * via 200.8 ICP-MS

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Devan Brandt	Printed Name Erin Sale	Printed Name	Printed Name
Company ARI	Company ARI	Company	Company
Date 5/2/19 Time 1910	Date 5/3/19 Time 1015	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative 10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDC-05-16-190502	19E0051-01	Water	02-May-2019 08:37	03-May-2019 10:15
BDC-05-16-190502	19E0051-02	Water	02-May-2019 08:37	03-May-2019 10:15
BDC-05-14-190502	19E0051-03	Water	02-May-2019 08:41	03-May-2019 10:15
BDC-05-14-190502	19E0051-04	Water	02-May-2019 08:41	03-May-2019 10:15
BDC-05-17-190502	19E0051-05	Water	02-May-2019 09:47	03-May-2019 10:15
BDC-05-17-190502	19E0051-06	Water	02-May-2019 09:47	03-May-2019 10:15
BDC-05-13-190502	19E0051-07	Water	02-May-2019 09:51	03-May-2019 10:15
BDC-05-13-190502	19E0051-08	Water	02-May-2019 09:51	03-May-2019 10:15
BDC-05-20-190502	19E0051-09	Water	02-May-2019 10:37	03-May-2019 10:15
BDC-05-20-190502	19E0051-10	Water	02-May-2019 10:37	03-May-2019 10:15
BDC-05-24-190502	19E0051-11	Water	02-May-2019 10:41	03-May-2019 10:15
BDC-05-24-190502	19E0051-12	Water	02-May-2019 10:41	03-May-2019 10:15
BDC-05-22-190502	19E0051-13	Water	02-May-2019 11:27	03-May-2019 10:15
BDC-05-22-190502	19E0051-14	Water	02-May-2019 11:27	03-May-2019 10:15
BDC-05-19-190502	19E0051-15	Water	02-May-2019 11:51	03-May-2019 10:15
BDC-05-19-190502	19E0051-16	Water	02-May-2019 11:51	03-May-2019 10:15
BDC-05-23-190502	19E0051-17	Water	02-May-2019 12:17	03-May-2019 10:15
BDC-05-23-190502	19E0051-18	Water	02-May-2019 12:17	03-May-2019 10:15
BDC-05-12-190502	19E0051-19	Water	02-May-2019 12:41	03-May-2019 10:15
BDC-05-12-190502	19E0051-20	Water	02-May-2019 12:41	03-May-2019 10:15
BDC-05-18-190502	19E0051-21	Water	02-May-2019 13:07	03-May-2019 10:15
BDC-05-18-190502	19E0051-22	Water	02-May-2019 13:07	03-May-2019 10:15
BDC-DUP3-190502	19E0051-23	Water	02-May-2019 13:30	03-May-2019 10:15
BDC-DUP3-190502	19E0051-24	Water	02-May-2019 13:30	03-May-2019 10:15
BDC-05-03-190502	19E0051-25	Water	02-May-2019 14:25	03-May-2019 10:15
BDC-05-03-190502	19E0051-26	Water	02-May-2019 14:25	03-May-2019 10:15
BDC-05-21-190502	19E0051-27	Water	02-May-2019 14:27	03-May-2019 10:15
BDC-05-21-190502	19E0051-28	Water	02-May-2019 14:27	03-May-2019 10:15
BDC-05-08-190502	19E0051-29	Water	02-May-2019 15:25	03-May-2019 10:15
BDC-05-08-190502	19E0051-30	Water	02-May-2019 15:25	03-May-2019 10:15
BDC-05-11-190502	19E0051-31	Water	02-May-2019 16:25	03-May-2019 10:15
BDC-05-11-190502	19E0051-32	Water	02-May-2019 16:25	03-May-2019 10:15
BDC-05-10-190502	19E0051-33	Water	02-May-2019 17:11	03-May-2019 10:15
BDC-05-10-190502	19E0051-34	Water	02-May-2019 17:11	03-May-2019 10:15
BDC-05-09-190502	19E0051-35	Water	02-May-2019 17:55	03-May-2019 10:15
BDC-05-09-190502	19E0051-36	Water	02-May-2019 17:55	03-May-2019 10:15
TripBlanks	19E0051-37	Water	02-May-2019 00:00	03-May-2019 10:15

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Sample 19E0051-25 contained a peabubble at the time of the analysis.

Volatile Gases - AMEE by RSK175

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

Total and Dissolved Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits.

Wet Chemistry

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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WORK ORDER

19E0051

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH
19E0051-01 A	Small OJ, 500 mL	
19E0051-01 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
19E0051-01 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2 pass
19E0051-01 D	VOA Vial, Clear, 40 mL	
19E0051-01 E	VOA Vial, Clear, 40 mL	
19E0051-01 F	VOA Vial, Clear, 40 mL	
19E0051-01 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-01 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
19E0051-03 A	Small OJ, 500 mL	
19E0051-03 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
19E0051-03 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2 pass
19E0051-03 D	VOA Vial, Clear, 40 mL	
19E0051-03 E	VOA Vial, Clear, 40 mL	
19E0051-03 F	VOA Vial, Clear, 40 mL	
19E0051-03 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-03 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
19E0051-05 A	Small OJ, 500 mL	
19E0051-05 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
19E0051-05 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2 pass
19E0051-05 D	VOA Vial, Clear, 40 mL	
19E0051-05 E	VOA Vial, Clear, 40 mL	
19E0051-05 F	VOA Vial, Clear, 40 mL	
19E0051-05 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-05 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
19E0051-07 A	Small OJ, 500 mL	
19E0051-07 B	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
19E0051-07 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2 pass
19E0051-07 D	VOA Vial, Clear, 40 mL	
19E0051-07 E	VOA Vial, Clear, 40 mL	
19E0051-07 F	VOA Vial, Clear, 40 mL	
19E0051-07 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-07 H	VOA Vial, Clear, 40 mL, HCL	

Reviewed By Date

WORK ORDER

19E0051

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19E0051-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-09 A	Small OJ, 500 mL	
19E0051-09 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-09 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-09 D	VOA Vial, Clear, 40 mL	
19E0051-09 E	VOA Vial, Clear, 40 mL	
19E0051-09 F	VOA Vial, Clear, 40 mL	
19E0051-09 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-09 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-11 A	Small OJ, 500 mL	
19E0051-11 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-11 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-11 D	VOA Vial, Clear, 40 mL	
19E0051-11 E	VOA Vial, Clear, 40 mL	
19E0051-11 F	VOA Vial, Clear, 40 mL	
19E0051-11 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-11 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-13 A	Small OJ, 500 mL	
19E0051-13 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-13 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-13 D	VOA Vial, Clear, 40 mL	
19E0051-13 E	VOA Vial, Clear, 40 mL	
19E0051-13 F	VOA Vial, Clear, 40 mL	
19E0051-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-15 A	Small OJ, 500 mL	
19E0051-15 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-15 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-15 D	VOA Vial, Clear, 40 mL	
19E0051-15 E	VOA Vial, Clear, 40 mL	
19E0051-15 F	VOA Vial, Clear, 40 mL	
19E0051-15 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-15 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-17 A	Small OJ, 500 mL	
19E0051-17 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass

Reviewed By

Date

WORK ORDER

19E0051

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19E0051-17 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-17 D	VOA Vial, Clear, 40 mL	
19E0051-17 E	VOA Vial, Clear, 40 mL	
19E0051-17 F	VOA Vial, Clear, 40 mL	
19E0051-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-19 A	Small OJ, 500 mL	
19E0051-19 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-19 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-19 D	VOA Vial, Clear, 40 mL	
19E0051-19 E	VOA Vial, Clear, 40 mL	
19E0051-19 F	VOA Vial, Clear, 40 mL	
19E0051-19 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-19 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-21 A	Small OJ, 500 mL	
19E0051-21 B	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
19E0051-21 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-21 D	VOA Vial, Clear, 40 mL	
19E0051-21 E	VOA Vial, Clear, 40 mL	
19E0051-21 F	VOA Vial, Clear, 40 mL	
19E0051-21 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-21 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-22 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-23 A	Small OJ, 500 mL	
19E0051-23 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-23 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-23 D	VOA Vial, Clear, 40 mL	
19E0051-23 E	VOA Vial, Clear, 40 mL	
19E0051-23 F	VOA Vial, Clear, 40 mL	
19E0051-23 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-23 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-24 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-25 A	Small OJ, 500 mL	
19E0051-25 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-25 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2 pass
19E0051-25 D	VOA Vial, Clear, 40 mL	
19E0051-25 E	VOA Vial, Clear, 40 mL	

Reviewed By

Date

WORK ORDER

19E0051

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19E0051-25 F	VOA Vial, Clear, 40 mL	
19E0051-25 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-25 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-26 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-27 A	Small OJ, 500 mL	
19E0051-27 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-27 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-27 D	VOA Vial, Clear, 40 mL	
19E0051-27 E	VOA Vial, Clear, 40 mL	
19E0051-27 F	VOA Vial, Clear, 40 mL	
19E0051-27 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-27 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-28 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-29 A	Small OJ, 500 mL	
19E0051-29 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-29 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-29 D	VOA Vial, Clear, 40 mL	
19E0051-29 E	VOA Vial, Clear, 40 mL	
19E0051-29 F	VOA Vial, Clear, 40 mL	
19E0051-30 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-31 A	Small OJ, 500 mL	
19E0051-31 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-31 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-31 D	VOA Vial, Clear, 40 mL	
19E0051-31 E	VOA Vial, Clear, 40 mL	
19E0051-31 F	VOA Vial, Clear, 40 mL	
19E0051-31 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-31 H	VOA Vial, Clear, 40 mL, HCL	
19E0051-32 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-33 A	Small OJ, 500 mL	
19E0051-33 B	HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-33 C	Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-33 D	VOA Vial, Clear, 40 mL	
19E0051-33 E	VOA Vial, Clear, 40 mL	
19E0051-33 F	VOA Vial, Clear, 40 mL	
19E0051-33 G	VOA Vial, Clear, 40 mL, HCL	
19E0051-33 H	VOA Vial, Clear, 40 mL, HCL	

Reviewed By

Date

WORK ORDER

19E0051

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19E0051-34 A		HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
19E0051-35 A		Small OJ, 500 mL	
19E0051-35 B		HDPE NM, 500 mL, 1:1 HNO3	L2pass
19E0051-35 C		Glass NM, Amber, 250 mL, 9N H2SO4	L2pass
19E0051-35 D		VOA Vial, Clear, 40 mL	
19E0051-35 E		VOA Vial, Clear, 40 mL	
19E0051-35 F		VOA Vial, Clear, 40 mL	
19E0051-35 G		VOA Vial, Clear, 40 mL, HCL	
19E0051-35 H		VOA Vial, Clear, 40 mL, HCL	
19E0051-36 A		HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2pass
19E0051-37 A		VOA Vial, Clear, 40 mL, HCL	
19E0051-37 B	-	VOA Vial, Clear, 40 mL, HCL	
19E0051-37 C	-	VOA Vial, Clear, 40 mL, HCL	
19E0051-37 D	-	VOA Vial, Clear, 40 mL, HCL	

SG

Preservation Confirmed By

5-3-19

Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing Project Name: DC

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19E00051 Tracking No: _____ NA

Preliminary Examination Phase:

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

Were custody papers included with the cooler? ..... YES NO

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

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 1.5 2.3 3.4

Time 1120

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00256S

Cooler Accepted by: [signature] Date: 5/3/19 Time: 1015

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ..... YES NO

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

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

How were bottles sealed in plastic bags? ..... Individually Grouped Not

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

Were all bottle labels complete and legible? ..... YES NO

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

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

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

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

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

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

Date VOC Trip Blank was made at ARI..... NA 4-24-19

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: Sef Date: 5-3-19 Time: 1546 Labels checked by: Sef

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

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

Additional Notes, Discrepancies, & Resolutions: 3 VOAs from trip blank has air bubbles. Air bubbles Marked on preservation sheet

By: Sef Date: 5-3-19

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-16-190502

19E0051-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 08:37

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 14:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-01 D

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.49**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*105*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-16-190502

19E0051-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 08:37

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 09:31

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-01 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**22600**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*101*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-16-190502

19E0051-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 08:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 16:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-01 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**27.2**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.371**	ug/L	J

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-16-190502

19E0051-01 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 08:37

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 04:58

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-01 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**16.15**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-16-190502

19E0051-01RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 08:37

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/15/2019 22:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-01RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.103**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-16-190502

19E0051-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 08:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 16:24

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-02 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**25.8**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-14-190502

19E0051-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 08:41

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 14:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-03 F

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.30**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*113*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-14-190502

19E0051-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 08:41

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 09:45

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-03 E

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**20300**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-14-190502

19E0051-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 08:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:09

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-03 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**30.1**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-14-190502

19E0051-03 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 08:41

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 05:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-03 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**18.43**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-14-190502

19E0051-03RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 08:41

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/15/2019 23:20

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-03RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**2.82**	mg/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-14-190502

19E0051-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 08:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-04 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**31.1**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-17-190502

19E0051-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 09:47

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 15:01

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-05 E

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.58**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*104*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*105*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-17-190502

19E0051-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 09:47

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 17:00

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-05 H

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**16700**	ug/L	
Ethane	74-84-0	1	1.23	**1.26**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*88.8*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-17-190502

19E0051-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 09:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:14

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-05 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**32.1**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.526**	ug/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-17-190502

19E0051-05 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 09:47

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 05:44

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-05 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**17.81**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-17-190502

19E0051-05RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 09:47

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/17/2019 17:20

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-05RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.986**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-17-190502

19E0051-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 09:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:34

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-06 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**31.1**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-13-190502

19E0051-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 09:51

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 15:27

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-07 D

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.41**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*102*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-13-190502

19E0051-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 09:51

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 16:33

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-07 G

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**19600**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*88.7*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-13-190502

19E0051-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 09:51

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-07 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**23.0**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.405**	ug/L	J

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-13-190502

19E0051-07 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 09:51

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 06:05

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-07 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**23.23**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-13-190502

19E0051-07RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 09:51

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/15/2019 23:40

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-07RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.254**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-13-190502

19E0051-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 09:51

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-08 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**22.8**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-20-190502

19E0051-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 10:37

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 15:53

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-09 D

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.86**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*110*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-20-190502

19E0051-09 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 10:37

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 15:10

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-09 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**22900**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*94.2*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-20-190502

19E0051-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 10:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:23

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-09 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**27.7**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-20-190502

19E0051-09 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 10:37

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 06:26

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-09 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**11.96**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-20-190502

19E0051-09RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 10:37

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/16/2019 00:01

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-09RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	ND	mg/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-20-190502

19E0051-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 10:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-10 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**26.6**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-24-190502

19E0051-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 10:41

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 16:18

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-11 D

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.42**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*107*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-24-190502

19E0051-11 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 10:41

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 15:24

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-11 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**12700**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*98.7*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-24-190502

19E0051-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 10:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:27

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-11 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**1.27**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-24-190502

19E0051-11 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 10:41

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 07:24

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-11 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**11.40**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-24-190502

19E0051-11RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 10:41

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/16/2019 11:51

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-11RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.379**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-24-190502

19E0051-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 10:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-12 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**1.30**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-22-190502

19E0051-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 11:27

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 16:44

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-13 E

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**1.02**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**6.48**	ug/L	
Trichloroethene	79-01-6	1	0.20	**0.54**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*105*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*105*	*%*	

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BDC-05-22-190502

19E0051-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 11:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:32

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-13 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**42.8**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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BDC-05-22-190502

19E0051-13 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 11:27

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 07:43

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-13 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**9.83**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-22-190502

19E0051-13RE4 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 11:27

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/16/2019 12:10

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-13RE4 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**2.43**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-22-190502

19E0051-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 11:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:21

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-14 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**39.2**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-19-190502

19E0051-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 11:51

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 17:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-15 F

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*111*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-19-190502

19E0051-15 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 11:51

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 15:37

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-15 D

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**19700**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*97.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-19-190502

19E0051-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 11:51

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:36

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-15 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**12.1**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.546**	ug/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-19-190502

19E0051-15 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 11:51

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 08:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-15 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**15.61**	mg/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-19-190502

19E0051-15RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 11:51

Instrument: DX500 Analyst: KOTT — Analyzed: 05/07/2019 21:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-15RE2 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.232**	mg/L	

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BDC-05-19-190502

19E0051-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 11:51

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:26

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-16 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**10.6**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-23-190502

19E0051-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 12:17

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 17:35

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-17 F

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**1.30**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**2.00**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-23-190502

19E0051-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 12:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:41

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-17 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**35.3**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**1.05**	ug/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-23-190502

19E0051-17 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 12:17

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 09:12

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-17 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**6.27**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-23-190502

19E0051-17RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 12:17

Instrument: DX500 Analyst: KOTT — Analyzed: 05/07/2019 21:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-17RE2 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	**12.7**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-23-190502

19E0051-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 12:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-18 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**27.9**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-12-190502

19E0051-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 12:41

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 18:01

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-19 F

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*105*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-12-190502

19E0051-19 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 12:41

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 15:51

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-19 D

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**20700**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*99.1*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-12-190502

19E0051-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 12:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:45

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-19 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**8.57**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-12-190502

19E0051-19 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 12:41

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 09:35

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-19 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**17.66**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-12-190502

19E0051-19RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 12:41

Instrument: DX500 Analyst: KOTT — Analyzed: 05/07/2019 21:50

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-19RE2 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.107**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-12-190502

19E0051-20 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 12:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-20 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**8.88**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-18-190502

19E0051-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 13:07

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 18:27

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-21 D

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.60**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**2.10**	ug/L	
Trichloroethene	79-01-6	1	0.20	**1.47**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	**2.81**	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*104*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-18-190502

19E0051-21 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 13:07

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 16:05

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-21 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4710**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-18-190502

19E0051-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 13:07

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 19:50

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-21 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**2.11**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.789**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-18-190502

19E0051-21 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 13:07

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 09:59

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-21 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**1.94**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-18-190502

19E0051-21RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 13:07

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 10:11

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-21RE1 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**7.20**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-18-190502

19E0051-22 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 13:07

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-22 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**0.483**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.399**	ug/L	J

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Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-DUP3-190502

19E0051-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 13:30

Instrument: NT3 Analyst: PKC — Analyzed: 05/06/2019 18:52

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-23 E

Preparation Batch: BHE0120 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*107*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-DUP3-190502

19E0051-23 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 13:30

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 16:19

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-23 D

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**22100**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*97.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-DUP3-190502

19E0051-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 13:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:07

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-23 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**8.12**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-DUP3-190502

19E0051-23 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 13:30

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 10:18

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-23 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**16.52**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-DUP3-190502

19E0051-23RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 13:30

Instrument: DX500 Analyst: KOTT — Analyzed: 05/07/2019 22:07

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-23RE2 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.135**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-DUP3-190502

19E0051-24 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 13:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-24 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**8.83**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-03-190502

19E0051-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 14:25

Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 13:15

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-25 E

Preparation Batch: BHE0132 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**1.86**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**4.08**	ug/L	
Trichloroethene	79-01-6	1	0.20	**0.22**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*122*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*102*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.8*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-03-190502

19E0051-25 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 14:25

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 13:06

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-25 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**10100**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*90.0*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-03-190502

19E0051-25 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 14:25

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 23:47

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-25 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.440	4.00	**33.5**	ug/L	D
Copper	7440-50-8	20	6.80	10.0	**45.4**	ug/L	D

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-03-190502

19E0051-25 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 14:25

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 10:49

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-25 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**573.5**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-03-190502

19E0051-25RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 14:25

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 10:28

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-25RE1 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	ND	mg/L	Y1, U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-03-190502

19E0051-26 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 14:25

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/09/2019 19:57

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-26 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	0.220	2.00	**26.3**	ug/L	D
Copper, Dissolved	7440-50-8	10	3.40	5.00	**8.05**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-21-190502

19E0051-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 14:27

Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 13:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-27 F

Preparation Batch: BHE0132 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.50**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*120*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.0*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-21-190502

19E0051-27 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 14:27

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 13:20

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-27 E

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**5060**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*100*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-21-190502

19E0051-27 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 14:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-27 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**9.23**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-21-190502

19E0051-27 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 14:27

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 11:17

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-27 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**4.62**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-21-190502

19E0051-27RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 14:27

Instrument: DX500 Analyst: KOTT — Analyzed: 05/07/2019 22:23

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-27RE2 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**2.19**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-21-190502

19E0051-28 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 14:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-28 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**8.93**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-08-190502

19E0051-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 15:25

Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 13:56

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-29 E

Preparation Batch: BHE0132 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*124*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-08-190502

19E0051-29 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 15:25

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:16

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-29 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0440	0.400	**18.1**	ug/L	D
Copper	7440-50-8	2	0.680	1.00	**10.4**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-08-190502

19E0051-29 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 15:25

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 11:36

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-29 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**5.29**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-08-190502

19E0051-29RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 15:25

Instrument: DX500 Analyst: KOTT — Analyzed: 05/07/2019 22:40

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-29RE2 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.211**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-08-190502

19E0051-30 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 15:25

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:53

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-30 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**7.79**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-11-190502

19E0051-31 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 16:25

Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 14:16

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-31 E

Preparation Batch: BHE0132 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.41**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-11-190502

19E0051-31 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 16:25

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 13:33

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-31 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**18900**	ug/L	
Ethane	74-84-0	1	1.23	**2.02**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*96.5*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-11-190502

19E0051-31 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 16:25

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:21

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-31 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**13.6**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**1.07**	ug/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-11-190502

19E0051-31 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 16:25

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 11:55

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-31 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**22.88**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-11-190502

19E0051-31RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 16:25

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 10:45

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-31RE1 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.652**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-11-190502

19E0051-32 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 16:25

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 21:57

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-32 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**12.4**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-10-190502

19E0051-33 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 17:11

Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 14:37

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-33 D

Preparation Batch: BHE0132 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**2.01**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.16**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-10-190502

19E0051-33 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 17:11

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 13:47

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-33 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**19300**	ug/L	
Ethane	74-84-0	1	1.23	**2.68**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*97.4*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-10-190502

19E0051-33 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 17:11

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 23:36

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-33 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.110	1.00	**13.4**	ug/L	D
Copper	7440-50-8	5	1.70	2.50	**48.2**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-10-190502

19E0051-33 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 17:11

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 12:21

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-33 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**105.1**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-10-190502

19E0051-33RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 17:11

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 11:01

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-33RE1 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**1.85**	mg/L	Y1, D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-10-190502

19E0051-34 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 17:11

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/09/2019 19:53

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-34 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	**8.76**	ug/L	D
Copper, Dissolved	7440-50-8	2	0.680	1.00	**1.17**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-09-190502

19E0051-35 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 17:55

Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 14:57

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-35 D

Preparation Batch: BHE0132 — Sample Size: 10 mL

Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**2.35**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.37**	ug/L	
Trichloroethene	79-01-6	1	0.20	**0.21**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*124*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*88.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-09-190502

19E0051-35 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/02/2019 17:55

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 14:01

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0051-35 F

Preparation Batch: BHE0190 — Sample Size: 10 mL

Prepared: 08-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**8630**	ug/L	
Ethane	74-84-0	1	1.23	**4.35**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*97.2*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-09-190502

19E0051-35 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 17:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 20:25

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-35 B 01

Preparation Batch: BHE0162 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**7.13**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-09-190502

19E0051-35 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/02/2019 17:55

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/15/2019 12:46

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-35 C

Preparation Batch: BHE0353 — Sample Size: 20 mL

Prepared: 14-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**26.23**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-09-190502

19E0051-35RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/02/2019 17:55

Instrument: DX2100 Analyst: KOTT — Analyzed: 05/16/2019 12:30

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0051-35RE1 A

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	**7.19**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

BDC-05-09-190502

19E0051-36 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 05/02/2019 17:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 05/08/2019 22:02

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19E0051-36 A 01

Preparation Batch: BHE0163 — Sample Size: 25 mL

Prepared: 07-May-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**6.61**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

TripBlanks

19E0051-37 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/02/2019 00:00
Instrument: NT2 Analyst: PKC — Analyzed: 05/06/2019 12:14

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0051-37 A
Preparation Batch: BHE0132 — Sample Size: 10 mL
Prepared: 06-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*118*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.5*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Volatile Organic Compounds - Quality Control

Batch BHE0120 - EPA 5030 (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0120-BLK1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 11:33						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.27		ug/L	*5.00*		*105*	*80-129*			
Surrogate: Toluene-d8	4.85		ug/L	*5.00*		*96.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.83		ug/L	*5.00*		*96.7*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	*5.00*		*101*	*80-120*			
LCS (BHE0120-BS1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 09:23						
Vinyl Chloride	9.14	0.20	ug/L	10.0		91.4	66-133			
cis-1,2-Dichloroethene	10.0	0.20	ug/L	10.0		100	80-121			
Trichloroethene	9.97	0.20	ug/L	10.0		99.7	80-120			
Tetrachloroethene	10.1	0.20	ug/L	10.0		101	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.01		ug/L	*5.00*		*100*	*80-129*			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.03		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	*5.00*		*101*	*80-120*			
LCS Dup (BHE0120-BSD1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 09:48						
Vinyl Chloride	10.3	0.20	ug/L	10.0		103	66-133	11.70	30	
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121	2.31	30	
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120	2.95	30	
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120	3.43	30	
Surrogate: 1,2-Dichloroethane-d4	5.00		ug/L	*5.00*		*100*	*80-129*			
Surrogate: Toluene-d8	5.09		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.99		ug/L	*5.00*		*99.7*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.09		ug/L	*5.00*		*102*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Volatile Organic Compounds - Quality Control

Batch BHE0132 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0132-BLK1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 11:54						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.59		ug/L	*5.00*		*112*	*80-129*			
Surrogate: Toluene-d8	5.06		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.64		ug/L	*5.00*		*92.7*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.02		ug/L	*5.00*		*100*	*80-120*			
LCS (BHE0132-BS1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 11:14						
Vinyl Chloride	10.2	0.20	ug/L	10.0		102	66-133			
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121			
Trichloroethene	10.4	0.20	ug/L	10.0		104	80-120			
Tetrachloroethene	9.99	0.20	ug/L	10.0		99.9	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.49		ug/L	*5.00*		*110*	*80-129*			
Surrogate: Toluene-d8	5.21		ug/L	*5.00*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.83		ug/L	*5.00*		*96.5*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.7*	*80-120*			
LCS Dup (BHE0132-BSD1)				Prepared: 06-May-2019 Analyzed: 06-May-2019 11:34						
Vinyl Chloride	10.4	0.20	ug/L	10.0		104	66-133	2.12	30	
cis-1,2-Dichloroethene	10.5	0.20	ug/L	10.0		105	80-121	0.85	30	
Trichloroethene	10.5	0.20	ug/L	10.0		105	80-120	0.75	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	3.27	30	
Surrogate: 1,2-Dichloroethane-d4	5.39		ug/L	*5.00*		*108*	*80-129*			
Surrogate: Toluene-d8	5.21		ug/L	*5.00*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.89		ug/L	*5.00*		*97.7*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	*5.00*		*101*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Dissolved Gases - Quality Control

Batch BHE0190 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0190-BLK1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:45						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	1850		ug/L	*1800*		*103*	*72-122*			
LCS (BHE0190-BS1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:17						
Methane	700	0.65	ug/L	656		107	80-120			
Ethane	1320	1.23	ug/L	1230		107	80-120			
Ethene	1250	1.14	ug/L	1150		109	80-120			
Acetylene	1080	1.06	ug/L	1060		102	73-123			E
Surrogate: Propane	1890		ug/L	*1800*		*105*	*62-122*			
LCS Dup (BHE0190-BSD1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:31						
Methane	701	0.65	ug/L	656		107	80-120	0.11	30	
Ethane	1320	1.23	ug/L	1230		107	80-120	0.23	30	
Ethene	1250	1.14	ug/L	1150		109	80-120	0.28	30	
Acetylene	1060	1.06	ug/L	1060		99.9	73-123	2.04	30	
Surrogate: Propane	1850		ug/L	*1800*		*103*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Metals and Metallic Compounds - Quality Control

Batch BHE0162 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0162-BLK1)					Prepared: 07-May-2019 Analyzed: 08-May-2019 16:06							
Arsenic	75a	ND	0.0220	0.200	ug/L							U
Copper	63	ND	0.340	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
LCS (BHE0162-BS1)					Prepared: 07-May-2019 Analyzed: 08-May-2019 16:11							
Arsenic	75a	25.9	0.0220	0.200	ug/L	25.0		104	80-120			
Copper	63	26.4	0.340	0.500	ug/L	25.0		106	80-120			
Copper	65	27.4	0.350	0.500	ug/L	25.0		110	80-120			
Duplicate (BHE0162-DUP1)			**Source: 19E0051-01**		Prepared: 07-May-2019 Analyzed: 08-May-2019 16:43							
Arsenic	75a	27.4	0.0220	0.200	ug/L		27.2			0.51	20	
Copper	63	0.380	0.340	0.500	ug/L		0.371			2.40	20	J
Matrix Spike (BHE0162-MS1)			**Source: 19E0051-01**		Prepared: 07-May-2019 Analyzed: 08-May-2019 16:47							
Arsenic	75a	52.7	0.0220	0.200	ug/L	25.0	27.2	102	75-125			
Copper	63	25.6	0.340	0.500	ug/L	25.0	0.371	101	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHE0163 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0163-BLK1)					Prepared: 07-May-2019 Analyzed: 08-May-2019 16:15							
Arsenic, Dissolved	75a	ND	0.0220	0.200	ug/L							U
Copper, Dissolved	63	ND	0.340	0.500	ug/L							U
Copper, Dissolved	65	ND	0.350	0.500	ug/L							U
LCS (BHE0163-BS1)					Prepared: 07-May-2019 Analyzed: 08-May-2019 16:20							
Arsenic, Dissolved	75a	26.1	0.0220	0.200	ug/L	25.0		104	80-120			
Copper, Dissolved	63	27.1	0.340	0.500	ug/L	25.0		108	80-120			
Copper, Dissolved	65	27.5	0.350	0.500	ug/L	25.0		110	80-120			
Duplicate (BHE0163-DUP1)			**Source: 19E0051-02**		Prepared: 07-May-2019 Analyzed: 08-May-2019 16:29							
Arsenic, Dissolved	75a	26.1	0.0220	0.200	ug/L		25.8			1.21	20	
Copper, Dissolved	63	ND	0.340	0.500	ug/L		ND					U
Matrix Spike (BHE0163-MS1)			**Source: 19E0051-02**		Prepared: 07-May-2019 Analyzed: 08-May-2019 16:33							
Arsenic, Dissolved	75a	52.4	0.0220	0.200	ug/L	25.0	25.8	107	75-125			
Copper, Dissolved	63	25.3	0.340	0.500	ug/L	25.0	ND	101	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Wet Chemistry - Quality Control

Batch BHE0111 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BHE0111-DUP5)	**Source: 19E0051-01RE4**			Prepared: 03-May-2019 Analyzed: 15-May-2019 22:39							
Sulfate	ND	0.100	0.100	mg/L		0.103					U
Matrix Spike (BHE0111-MS5)	**Source: 19E0051-01RE4**			Prepared: 03-May-2019 Analyzed: 15-May-2019 22:59							
Sulfate	2.06	0.100	0.100	mg/L	2.00	0.103	98.0	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: DX500 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0111-BLK3)				Prepared: 03-May-2019 Analyzed: 06-May-2019 18:37							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHE0111-BS3)				Prepared: 03-May-2019 Analyzed: 06-May-2019 18:54							
Sulfate	1.65	0.100	0.100	mg/L	1.50		110	90-110			

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Wet Chemistry - Quality Control

Batch BHE0353 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0353-BLK1)				Prepared: 14-May-2019 Analyzed: 15-May-2019 03:31							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHE0353-BS1)				Prepared: 14-May-2019 Analyzed: 15-May-2019 03:53							
Total Organic Carbon	19.98	0.50	0.50	mg/L	20.00		99.9	90-110			
Duplicate (BHE0353-DUP1)		**Source: 19E0051-09**		Prepared: 14-May-2019 Analyzed: 15-May-2019 06:45							
Total Organic Carbon	12.08	0.50	0.50	mg/L		11.96			1.00	20	
Matrix Spike (BHE0353-MS1)		**Source: 19E0051-09**		Prepared: 14-May-2019 Analyzed: 15-May-2019 07:04							
Total Organic Carbon	33.29	0.50	0.50	mg/L	20.01	11.96	107	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	23-May-2019 13:25

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
Y1	Raised reporting limit due to interference
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

20 November 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19K0070	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19K0070

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 11/5/19
Page 1 of _____

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.039
Project Location/Event SWMU-17/November 2019
Sampler's Name Devan Brandt/Jered Newcomb
Project Contact Chris Kimmel & Jennifer Parsons
Send Results To

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260) PCE TCE cDCE & VC	AMEE (RSK 507-175 MOD)	TOC (SM 5310C)	Sulfate (E300.0)	Total & Dissolved Arsenic & Copper *
BDC-05-23-191105	11/5/19	1037	AQ	7	X		X	X	X
BDC-05-09-191105	11/5/19	1456	AQ	7	X		X	X	X
~~BDC-05-244~~ dr									
BDC-05-24-191105	11/5/19	1457	AQ	9	X	X	X	X	X
BDC-05-19-191105	11/5/19	1546	AQ	9	X	X	X	X	X
BDC-05-14-191105	11/5/19	1547	AQ	9	X	X	X	X	X
Trip Blanks 2-191105	11/5/19	—	AQ	4	X	X			

5.6°C 5.8°

Special Handling Requirements:

Shipment Method:

Stored on ice: (Yes) / No

Observations/Comments

☐ Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

X Dissolved metal samples were field filtered

Other * 200.8 ICP-MS

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Jered Newcomb	Printed Name Erin Salle	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 11/5/19 Time 16:29	Date 11/5/19 Time 1629	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDC-05-23-191105	19K0070-01	Water	05-Nov-2019 10:37	05-Nov-2019 16:29
BDC-05-23-191105	19K0070-02	Water	05-Nov-2019 10:37	05-Nov-2019 16:29
BDC-05-05-191105	19K0070-03	Water	05-Nov-2019 14:56	05-Nov-2019 16:29
BDC-05-05-191105	19K0070-04	Water	05-Nov-2019 14:56	05-Nov-2019 16:29
BDC-05-24-191105	19K0070-05	Water	05-Nov-2019 14:57	05-Nov-2019 16:29
BDC-05-24-191105	19K0070-06	Water	05-Nov-2019 14:57	05-Nov-2019 16:29
BDC-05-19-191105	19K0070-07	Water	05-Nov-2019 15:46	05-Nov-2019 16:29
BDC-05-19-191105	19K0070-08	Water	05-Nov-2019 15:46	05-Nov-2019 16:29
BDC-05-14-191105	19K0070-09	Water	05-Nov-2019 15:47	05-Nov-2019 16:29
BDC-05-14-191105	19K0070-10	Water	05-Nov-2019 15:47	05-Nov-2019 16:29
Trip Blanks 2-191105	19K0070-11	Water	05-Nov-2019 15:47	05-Nov-2019 16:29

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Total and Dissolved Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Volatile Gases - MEE by RSK175

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

The method blank(s) were clean at the reporting limits.

WORK ORDER

19K0070

Client: The Boeing Company [Developmental Center] | **Project Manager: Kelly Bottem**

Project: Boeing Regional GW Developmental Center | **Project Number: Boeing Regional GW Developmental Center**

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due:	20-Nov-2019 18:00 (10 day TAT)		
Received By:	Erin I. Salle	Date Received:	05-Nov-2019 16:29
Logged In By:	Kenny Dang	Date Logged In:	06-Nov-2019 08:10

Samples Received at: **5.8°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Reviewed By

Date

WORK ORDER

19K0070

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
19K0070-01 BDC-05-23-191105 [Water] Sampled 05-Nov-2019 10:37				
Carbon, Organic Total, SM 5310 B-00	11/20/2019	10	12/3/2019	
8260C VOA	11/20/2019	10	11/12/2019	
Sulfate, IC, EPA 300.0	11/20/2019	10	12/3/2019	
Metals Prep ICPMS	11/20/2019	10	11/4/2020	
Met 200.8 - Cu UCT	11/20/2019	10	5/3/2020	
Met 200.8 - As UCT	11/20/2019	10	5/3/2020	
19K0070-02 BDC-05-23-191105 [Water] Sampled 05-Nov-2019 10:37				
Metals Prep Diss ICPMS	11/20/2019	10	11/4/2020	Diss. Metals are FF
Met Diss 200.8 - Cu UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Met Diss 200.8 - As UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
19K0070-03 BDC-05-05-191105 [Water] Sampled 05-Nov-2019 14:56				
Sulfate, IC, EPA 300.0	11/20/2019	10	12/3/2019	
Met 200.8 - Cu UCT	11/20/2019	10	5/3/2020	
Carbon, Organic Total, SM 5310 B-00	11/20/2019	10	12/3/2019	
8260C VOA	11/20/2019	10	11/12/2019	
Met 200.8 - As UCT	11/20/2019	10	5/3/2020	
Metals Prep ICPMS	11/20/2019	10	11/4/2020	
19K0070-04 BDC-05-05-191105 [Water] Sampled 05-Nov-2019 14:56				
Metals Prep Diss ICPMS	11/20/2019	10	11/4/2020	Diss. Metals are FF
Met Diss 200.8 - Cu UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Met Diss 200.8 - As UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
19K0070-05 BDC-05-24-191105 [Water] Sampled 05-Nov-2019 14:57				
Metals Prep ICPMS	11/20/2019	10	11/4/2020	
Met 200.8 - Cu UCT	11/20/2019	10	5/3/2020	
Met 200.8 - As UCT	11/20/2019	10	5/3/2020	
Carbon, Organic Total, SM 5310 B-00	11/20/2019	10	12/3/2019	
8260C VOA	11/20/2019	10	11/12/2019	
RSK-175 Dissolved Gases (MEE)	11/20/2019	10	11/19/2019	
Sulfate, IC, EPA 300.0	11/20/2019	10	12/3/2019	
19K0070-06 BDC-05-24-191105 [Water] Sampled 05-Nov-2019 14:57				
Met Diss 200.8 - Cu UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Metals Prep Diss ICPMS	11/20/2019	10	11/4/2020	Diss. Metals are FF
Met Diss 200.8 - As UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
19K0070-07 BDC-05-19-191105 [Water] Sampled 05-Nov-2019 15:46				
RSK-175 Dissolved Gases (MEE)	11/20/2019	10	11/19/2019	
Met 200.8 - As UCT	11/20/2019	10	5/3/2020	
8260C VOA	11/20/2019	10	11/12/2019	
Carbon, Organic Total, SM 5310 B-00	11/20/2019	10	12/3/2019	

Reviewed By Date

WORK ORDER

19K0070

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
Sulfate, IC, EPA 300.0	11/20/2019	10	12/3/2019	
Metals Prep ICPMS	11/20/2019	10	11/4/2020	
Met 200.8 - Cu UCT	11/20/2019	10	5/3/2020	
19K0070-08 BDC-05-19-191105 [Water] Sampled 05-Nov-2019 15:46				
Met Diss 200.8 - Cu UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Met Diss 200.8 - As UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Metals Prep Diss ICPMS	11/20/2019	10	11/4/2020	Diss. Metals are FF
19K0070-09 BDC-05-14-191105 [Water] Sampled 05-Nov-2019 15:47				Three versions
8260C VOA	11/20/2019	10	11/12/2019	
Met 200.8 - As UCT	11/20/2019	10	5/3/2020	
Met 200.8 - Cu UCT	11/20/2019	10	5/3/2020	
Carbon, Organic Total, SM 5310 B-00	11/20/2019	10	12/3/2019	
Metals Prep ICPMS	11/20/2019	10	11/4/2020	
RSK-175 Dissolved Gases (MEE)	11/20/2019	10	11/19/2019	
Sulfate, IC, EPA 300.0	11/20/2019	10	12/3/2019	
19K0070-10 BDC-05-14-191105 [Water] Sampled 05-Nov-2019 15:47				
Met Diss 200.8 - As UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Met Diss 200.8 - Cu UCT	11/20/2019	10	5/3/2020	Diss. Metals are FF
Metals Prep Diss ICPMS	11/20/2019	10	11/4/2020	Diss. Metals are FF
19K0070-11 Trip Blanks 2-191105 [Water] Sampled 05-Nov-2019 15:47				Three versions
8260C VOA	11/20/2019	10	11/19/2019	
RSK-175 Dissolved Gases (MEE)	11/20/2019	10	11/19/2019	

Reviewed By

Date

WORK ORDER

19K0070

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH	
19K0070-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19K0070-01 B	Small OJ, 500 mL		
19K0070-01 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19K0070-01 D	VOA Vial, Clear, 40 mL		
19K0070-01 E	VOA Vial, Clear, 40 mL		
19K0070-01 F	VOA Vial, Clear, 40 mL		
19K0070-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19K0070-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19K0070-03 B	Small OJ, 500 mL		
19K0070-03 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19K0070-03 D	VOA Vial, Clear, 40 mL		
19K0070-03 E	VOA Vial, Clear, 40 mL		
19K0070-03 F	VOA Vial, Clear, 40 mL		
19K0070-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19K0070-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19K0070-05 B	Small OJ, 500 mL		
19K0070-05 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19K0070-05 D	VOA Vial, Clear, 40 mL, HCL		
19K0070-05 E	VOA Vial, Clear, 40 mL, HCL		
19K0070-05 F	VOA Vial, Clear, 40 mL		
19K0070-05 G	VOA Vial, Clear, 40 mL		
19K0070-05 H	VOA Vial, Clear, 40 mL		
19K0070-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19K0070-07 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19K0070-07 B	Small OJ, 500 mL		
19K0070-07 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19K0070-07 D	VOA Vial, Clear, 40 mL, HCL		
19K0070-07 E	VOA Vial, Clear, 40 mL, HCL		
19K0070-07 F	VOA Vial, Clear, 40 mL		
19K0070-07 G	VOA Vial, Clear, 40 mL		
19K0070-07 H	VOA Vial, Clear, 40 mL		
19K0070-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19K0070-09 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19K0070-09 B	Small OJ, 500 mL		
19K0070-09 C	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass

Reviewed By

Date

WORK ORDER

19K0070

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19K0070-09 D	VOA Vial, Clear, 40 mL, HCL	
19K0070-09 E	VOA Vial, Clear, 40 mL, HCL	
19K0070-09 F	VOA Vial, Clear, 40 mL	
19K0070-09 G	VOA Vial, Clear, 40 mL	
19K0070-09 H	VOA Vial, Clear, 40 mL	
19K0070-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 Pass
19K0070-11 A	VOA Vial, Clear, 40 mL, HCL	
19K0070-11 B	VOA Vial, Clear, 40 mL, HCL	
19K0070-11 C	VOA Vial, Clear, 40 mL, HCL	
19K0070-11 D	VOA Vial, Clear, 40 mL, HCL	

KD
Preservation Confirmed By

11/6/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing

Project Name: DC Regional GW

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19K0070

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1629 5.8 5.6 ____ ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO5206

Cooler Accepted by: _____ Date: 11/5/19 Time: 1629

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	10/29/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: KD Date: 11/6/19 Time: 0810 Labels checked by: KD

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-23-191105

19K0070-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 10:37

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 16:57

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0070-01 D

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**1.46**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.42**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*118*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-23-191105

19K0070-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 10:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 22:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-01 A 01

Preparation Batch: BHK0204 — Sample Size: 25 mL

Prepared: 08-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**21.3**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-23-191105

19K0070-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 10:37

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/15/2019 00:58

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-01 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**4.07**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-23-191105

19K0070-01 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/05/2019 10:37

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 12:42

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-01 C

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**6.92**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-23-191105

19K0070-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 10:37

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 23:05

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-02 A 01

Preparation Batch: BHK0157 — Sample Size: 25 mL

Prepared: 07-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**21.7**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-05-191105

19K0070-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 14:56

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 17:22

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0070-03 D

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	**1.04**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	**0.66**	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*116*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-05-191105

19K0070-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 14:56

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 22:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-03 A 01

Preparation Batch: BHK0204 — Sample Size: 25 mL

Prepared: 08-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**0.649**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**2.55**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-05-191105

19K0070-03 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/05/2019 14:56

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 13:08

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-03 C

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**2.52**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-05-191105

19K0070-03RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 14:56

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/15/2019 14:14

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-03RE2 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	**33.6**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-05-191105

19K0070-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 14:56

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 23:10

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-04 A 01

Preparation Batch: BHK0157 — Sample Size: 25 mL

Prepared: 07-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**0.407**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**2.80**	ug/L	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-24-191105

19K0070-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 14:57

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 17:48

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0070-05 F

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.39**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*117*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-24-191105

19K0070-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/05/2019 14:57

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 14:48

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0070-05 D

Preparation Batch: BHK0137 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**8920**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*92.9*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-24-191105

19K0070-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 14:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 22:48

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-05 A 01

Preparation Batch: BHK0204 — Sample Size: 25 mL

Prepared: 08-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**1.69**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.381**	ug/L	J

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-24-191105

19K0070-05 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/05/2019 14:57

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 13:30

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-05 C

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**11.80**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-24-191105

19K0070-05RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 14:57

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/15/2019 12:53

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-05RE1 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.515**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-24-191105

19K0070-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 14:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 23:15

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-06 A 01

Preparation Batch: BHK0157 — Sample Size: 25 mL

Prepared: 07-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**1.56**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-19-191105

19K0070-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 15:46

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 18:13

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0070-07 F

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-19-191105

19K0070-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/05/2019 15:46

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 15:03

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0070-07 E

Preparation Batch: BHK0137 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**14800**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*92.1*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-19-191105

19K0070-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 15:46

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 22:53

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-07 A 01

Preparation Batch: BHK0204 — Sample Size: 25 mL

Prepared: 08-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**6.19**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.485**	ug/L	J

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-19-191105

19K0070-07 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/05/2019 15:46

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 14:02

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-07 C

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**16.51**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-19-191105

19K0070-07RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 15:46

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/15/2019 13:13

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-07RE1 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.496**	mg/L	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-19-191105

19K0070-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 15:46

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 23:20

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-08 A 01

Preparation Batch: BHK0157 — Sample Size: 25 mL

Prepared: 07-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**4.70**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-14-191105

19K0070-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 15:47

Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 18:39

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0070-09 F

Preparation Batch: BHK0129 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.29**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*125*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*107*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-14-191105

19K0070-09 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/05/2019 15:47

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 15:17

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0070-09 E

Preparation Batch: BHK0137 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**14600**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*85.0*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-14-191105

19K0070-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 15:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 22:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-09 A 01

Preparation Batch: BHK0204 — Sample Size: 25 mL

Prepared: 08-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**28.8**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-14-191105

19K0070-09 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/05/2019 15:47

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 14:23

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-09 C

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**19.80**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-14-191105

19K0070-09RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/05/2019 15:47

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/15/2019 13:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0070-09RE1 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**3.30**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

BDC-05-14-191105

19K0070-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/05/2019 15:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/08/2019 23:26

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0070-10 A 01

Preparation Batch: BHK0157 — Sample Size: 25 mL

Prepared: 07-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**28.7**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Trip Blanks 2-191105

19K0070-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/05/2019 15:47
Instrument: NT7 Analyst: PKC — Analyzed: 11/06/2019 13:08

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0070-11 A
Preparation Batch: BHK0129 — Sample Size: 10 mL
Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*110*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Trip Blanks 2-191105

19K0070-11 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/05/2019 15:47
Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 13:08

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHK0137; Prepared: 07-Nov-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19K0070-11 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*106*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Volatile Organic Compounds - Quality Control

Batch BHK0129 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0129-BLK1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 12:17						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.42		ug/L	*5.00*		*108*	*80-129*			
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.80		ug/L	*5.00*		*96.0*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.05		ug/L	*5.00*		*101*	*80-120*			
LCS (BHK0129-BS1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:10						
Vinyl Chloride	10.9	0.20	ug/L	10.0		109	66-133			
cis-1,2-Dichloroethene	8.17	0.20	ug/L	10.0		81.7	80-121			
Trichloroethene	9.82	0.20	ug/L	10.0		98.2	80-120			
Tetrachloroethene	10.9	0.20	ug/L	10.0		109	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.03		ug/L	*5.00*		*101*	*80-129*			
Surrogate: Toluene-d8	5.20		ug/L	*5.00*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.06		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.7*	*80-120*			
LCS Dup (BHK0129-BSD1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 10:36						
Vinyl Chloride	11.0	0.20	ug/L	10.0		110	66-133	0.53	30	
cis-1,2-Dichloroethene	8.86	0.20	ug/L	10.0		88.6	80-121	8.12	30	
Trichloroethene	9.72	0.20	ug/L	10.0		97.2	80-120	0.96	30	
Tetrachloroethene	10.6	0.20	ug/L	10.0		106	80-120	2.81	30	
Surrogate: 1,2-Dichloroethane-d4	5.24		ug/L	*5.00*		*105*	*80-129*			
Surrogate: Toluene-d8	5.26		ug/L	*5.00*		*105*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.98		ug/L	*5.00*		*99.6*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.01		ug/L	*5.00*		*100*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Dissolved Gases - Quality Control

Batch BHK0137 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0137-BLK1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 12:18						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	1660		ug/L	*1800*		*92.1*	*72-122*			
LCS (BHK0137-BS1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 11:36						
Methane	714		ug/L	656		109	80-120			
Ethane	1270		ug/L	1230		103	80-120			
Ethene	1150		ug/L	1150		99.9	80-120			
Acetylene	880		ug/L	1060		83.0	73-123			
Surrogate: Propane	1670		ug/L	*1800*		*93.0*	*62-122*			
LCS Dup (BHK0137-BSD1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 11:50						
Methane	704		ug/L	656		107	80-120	1.42	30	
Ethane	1250		ug/L	1230		102	80-120	1.61	30	
Ethene	1120		ug/L	1150		97.5	80-120	2.39	30	
Acetylene	834		ug/L	1060		78.7	73-123	5.41	30	
Surrogate: Propane	1760		ug/L	*1800*		*97.7*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Metals and Metallic Compounds - Quality Control

Batch BHK0204 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0204-BLK1)					Prepared: 08-Nov-2019 Analyzed: 08-Nov-2019 17:46							
Arsenic	75a	ND	0.0220	0.200	ug/L							U
Copper	63	ND	0.340	0.500	ug/L							U
LCS (BHK0204-BS1)					Prepared: 08-Nov-2019 Analyzed: 08-Nov-2019 17:50							
Arsenic	75a	25.6	0.0220	0.200	ug/L	25.0		102	80-120			
Copper	63	26.0	0.340	0.500	ug/L	25.0		104	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHK0157 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0157-BLK1)					Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 17:42							
Arsenic, Dissolved	75a	ND	0.0220	0.200	ug/L							U
Copper, Dissolved	63	ND	0.340	0.500	ug/L							U
LCS (BHK0157-BS1)					Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 17:47							
Arsenic, Dissolved	75a	24.4	0.0220	0.200	ug/L	25.0		97.7	80-120			
Copper, Dissolved	63	25.5	0.340	0.500	ug/L	25.0		102	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Wet Chemistry - Quality Control

Batch BHK0122 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0122-BLK1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 04:23							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHK0122-BS1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 04:43							
Total Organic Carbon	20.41	0.50	0.50	mg/L	20.00		102	90-110			

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Wet Chemistry - Quality Control

Batch BHK0354 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0354-BLK1)				Prepared: 14-Nov-2019 Analyzed: 14-Nov-2019 13:05							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHK0354-BS1)				Prepared: 14-Nov-2019 Analyzed: 14-Nov-2019 13:24							
Sulfate	1.53	0.100	0.100	mg/L	1.50		102	90-110			

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	20-Nov-2019 12:50

Notes and Definitions

B	This analyte was detected in the method blank.
D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

04 December 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19K0096	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19K0096

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 11/6/19
Page 1 of 1

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.039
Project Location/Event SWMU-17/November 2019
Sampler's Name Devan Brandt & Jered Newcomb
Project Contact Chris Kimmel & Jennifer Parsons
Send Results To " "

Testing Parameters

2.2°, 2.7° 2.3°

Special Handling Requirements:
Drop off

Shipment Method:

Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260) PCE-TCE	AMEE (RSK507-IPSMod) & DCE & VC	TOC (SM5310C)	Sulfate (E 300.0)	TBD Arsenic & Copper *	Nitrite/Nitrate (300.0)								Observations/Comments
BDC-05-02-191106	11/6/19	0901	AQ	9	X	X	X	X	X					Effervescent				
BDC-05-18-191106		0927		9	X	X	X	X	X									
BDC-05-09-191106		0951		9	X	X	X	X	X									
BDC-05-~~01~~ 21-191106		1017		9	X	X	X	X	X									
BDC-05-07-191106		1041		9	X	X	X	X	X									
BDC-05-22-191106		1057		7	X		X	X	X									
BDC-05-10-191106		1131		9	X	X	X	X	X									
BDC-05-20-191106		1157		9	X	X	X	X	X									
BDC-05-08-191106		1246		7	X		X	X	X									
BDC-05-03-191106		1321		9	X	X	X	X	X					Effervescent				
BDC-05-12-191106		1426		9	X	X	X	X	X									
BDC-DUP3-191106		0830		9	X	X	X	X	X									
BDC-05-17-191106		1517		9	X	X	X	X	X									
BDC-05-15-191106		1516		9	X	X	X	X	X									
BDC-05-16-191106		1547		9	X	X	X	X	X									
BDC-05-13-191106		1611		9	X	X	X	X	X									
BDC-05-04-191106		1627		9	X	X	X	X	X	X								
BDC-05-11-191106		1701		9	X	X	X	X	X									
TripBlanks 1-191106	↓	—	↓	4	X	X												

Observations/Comments

☐ Allow water samples to settle, collect aliquot from clear portion

☐ NWTPH-Dx - Acid wash cleanup
- Silica gel cleanup

A Dissolved metal samples were field filtered

Other * 200.8 ICP-MS

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Devan Brandt	Printed Name Erin Sallee	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 11/7/19 Time 0738	Date 11/7/19 Time 0738	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative 10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BDC-05-02-191106	19K0096-01	Water	06-Nov-2019 09:01	07-Nov-2019 07:38
BDC-05-02-191106	19K0096-02	Water	06-Nov-2019 09:01	07-Nov-2019 07:38
BDC-05-18-191106	19K0096-03	Water	06-Nov-2019 09:27	07-Nov-2019 07:38
BDC-05-18-191106	19K0096-04	Water	06-Nov-2019 09:27	07-Nov-2019 07:38
BDC-05-09-191106	19K0096-05	Water	06-Nov-2019 09:51	07-Nov-2019 07:38
BDC-05-09-191106	19K0096-06	Water	06-Nov-2019 09:51	07-Nov-2019 07:38
BDC-05-21-191106	19K0096-07	Water	06-Nov-2019 10:17	07-Nov-2019 07:38
BDC-05-21-191106	19K0096-08	Water	06-Nov-2019 10:17	07-Nov-2019 07:38
BDC-05-07-191106	19K0096-09	Water	06-Nov-2019 10:41	07-Nov-2019 07:38
BDC-05-07-191106	19K0096-10	Water	06-Nov-2019 10:41	07-Nov-2019 07:38
BDC-05-22-191106	19K0096-11	Water	06-Nov-2019 10:57	07-Nov-2019 07:38
BDC-05-22-191106	19K0096-12	Water	06-Nov-2019 10:57	07-Nov-2019 07:38
BDC-05-10-191106	19K0096-13	Water	06-Nov-2019 11:31	07-Nov-2019 07:38
BDC-05-10-191106	19K0096-14	Water	06-Nov-2019 11:31	07-Nov-2019 07:38
BDC-05-20-191106	19K0096-15	Water	06-Nov-2019 11:57	07-Nov-2019 07:38
BDC-05-20-191106	19K0096-16	Water	06-Nov-2019 11:57	07-Nov-2019 07:38
BDC-05-08-191106	19K0096-17	Water	06-Nov-2019 12:46	07-Nov-2019 07:38
BDC-05-08-191106	19K0096-18	Water	06-Nov-2019 12:46	07-Nov-2019 07:38
BDC-05-03-191106	19K0096-19	Water	06-Nov-2019 13:21	07-Nov-2019 07:38
BDC-05-03-191106	19K0096-20	Water	06-Nov-2019 13:21	07-Nov-2019 07:38
BDC-05-12-191106	19K0096-21	Water	06-Nov-2019 14:26	07-Nov-2019 07:38
BDC-05-12-191106	19K0096-22	Water	06-Nov-2019 14:26	07-Nov-2019 07:38
BDC-DUP3-191106	19K0096-23	Water	06-Nov-2019 08:30	07-Nov-2019 07:38
BDC-DUP3-191106	19K0096-24	Water	06-Nov-2019 08:30	07-Nov-2019 07:38
BDC-05-17-191106	19K0096-25	Water	06-Nov-2019 15:17	07-Nov-2019 07:38
BDC-05-17-191106	19K0096-26	Water	06-Nov-2019 15:17	07-Nov-2019 07:38
BDC-05-15-191106	19K0096-27	Water	06-Nov-2019 15:16	07-Nov-2019 07:38
BDC-05-15-191106	19K0096-28	Water	06-Nov-2019 15:16	07-Nov-2019 07:38
BDC-05-16-191106	19K0096-29	Water	06-Nov-2019 15:47	07-Nov-2019 07:38
BDC-05-16-191106	19K0096-30	Water	06-Nov-2019 15:47	07-Nov-2019 07:38
BDC-05-13-191106	19K0096-31	Water	06-Nov-2019 16:11	07-Nov-2019 07:38
BDC-05-13-191106	19K0096-32	Water	06-Nov-2019 16:11	07-Nov-2019 07:38
BDC-05-04-191106	19K0096-33	Water	06-Nov-2019 16:27	07-Nov-2019 07:38
BDC-05-04-191106	19K0096-34	Water	06-Nov-2019 16:27	07-Nov-2019 07:38
BDC-05-11-191106	19K0096-35	Water	06-Nov-2019 17:01	07-Nov-2019 07:38
BDC-05-11-191106	19K0096-36	Water	06-Nov-2019 17:01	07-Nov-2019 07:38
TripBlanks1-191106	19K0096-37	Water	06-Nov-2019 08:30	07-Nov-2019 07:38

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Work Order Case Narrative

Total and Dissolved Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The matrix spike/matrix spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Volatile Gases - MEE by RSK175

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits with the exception of surrogates flagged on the associated forms.
Samples were re-analyzed
with the same matrix effects.

The method blank(s) were clean at the reporting limits.

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

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WORK ORDER

19K0096

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH	
19K0096-01 A	Small OJ, 500 mL		
19K0096-01 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass (P)
19K0096-01 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-01 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-01 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-01 F	VOA Vial, Clear, 40 mL	Bubble	
19K0096-01 G	VOA Vial, Clear, 40 mL	Bubble	
19K0096-01 H	VOA Vial, Clear, 40 mL		
19K0096-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-03 A	Small OJ, 500 mL		
19K0096-03 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-03 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-03 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-03 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-03 F	VOA Vial, Clear, 40 mL		
19K0096-03 G	VOA Vial, Clear, 40 mL		
19K0096-03 H	VOA Vial, Clear, 40 mL		
19K0096-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-05 A	Small OJ, 500 mL		
19K0096-05 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-05 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-05 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-05 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-05 F	VOA Vial, Clear, 40 mL		
19K0096-05 G	VOA Vial, Clear, 40 mL		
19K0096-05 H	VOA Vial, Clear, 40 mL		
19K0096-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-07 A	Small OJ, 500 mL		
19K0096-07 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-07 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-07 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-07 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-07 F	VOA Vial, Clear, 40 mL		
19K0096-07 G	VOA Vial, Clear, 40 mL		
19K0096-07 H	VOA Vial, Clear, 40 mL		

Reviewed By

Date

WORK ORDER

19K0096

Client: The Boeing Company |Developmental Center| **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19K0096-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-09 A	Small OJ, 500 mL		
19K0096-09 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-09 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-09 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-09 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-09 F	VOA Vial, Clear, 40 mL		
19K0096-09 G	VOA Vial, Clear, 40 mL		
19K0096-09 H	VOA Vial, Clear, 40 mL		
19K0096-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-11 A	Small OJ, 500 mL		
19K0096-11 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-11 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-11 D	VOA Vial, Clear, 40 mL		
19K0096-11 E	VOA Vial, Clear, 40 mL		
19K0096-11 F	VOA Vial, Clear, 40 mL		
19K0096-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-13 A	Small OJ, 500 mL		
19K0096-13 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-13 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-13 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-13 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-13 F	VOA Vial, Clear, 40 mL		
19K0096-13 G	VOA Vial, Clear, 40 mL		
19K0096-13 H	VOA Vial, Clear, 40 mL		
19K0096-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-15 A	Small OJ, 500 mL		
19K0096-15 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-15 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-15 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-15 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-15 F	VOA Vial, Clear, 40 mL		
19K0096-15 G	VOA Vial, Clear, 40 mL		
19K0096-15 H	VOA Vial, Clear, 40 mL		
19K0096-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-17 A	Small OJ, 500 mL		
19K0096-17 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P

Reviewed By

Date

WORK ORDER

19K0096

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19K0096-17 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-17 D	VOA Vial, Clear, 40 mL		
19K0096-17 E	VOA Vial, Clear, 40 mL		
19K0096-17 F	VOA Vial, Clear, 40 mL		
19K0096-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-19 A	Small OJ, 500 mL		
19K0096-19 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-19 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-19 D	VOA Vial, Clear, 40 mL, HCL	Bubble	
19K0096-19 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-19 F	VOA Vial, Clear, 40 mL	Bubble	
19K0096-19 G	VOA Vial, Clear, 40 mL	Bubble	
19K0096-19 H	VOA Vial, Clear, 40 mL	Bubble	
19K0096-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-21 A	Small OJ, 500 mL		
19K0096-21 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-21 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-21 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-21 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-21 F	VOA Vial, Clear, 40 mL		
19K0096-21 G	VOA Vial, Clear, 40 mL		
19K0096-21 H	VOA Vial, Clear, 40 mL		
19K0096-22 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-23 A	Small OJ, 500 mL		
19K0096-23 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-23 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-23 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-23 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-23 F	VOA Vial, Clear, 40 mL		
19K0096-23 G	VOA Vial, Clear, 40 mL		
19K0096-23 H	VOA Vial, Clear, 40 mL		
19K0096-24 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-25 A	Small OJ, 500 mL		
19K0096-25 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-25 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-25 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-25 E	VOA Vial, Clear, 40 mL, HCL		

Reviewed By

Date

WORK ORDER

19K0096

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19K0096-25 F	VOA Vial, Clear, 40 mL		
19K0096-25 G	VOA Vial, Clear, 40 mL		
19K0096-25 H	VOA Vial, Clear, 40 mL		
19K0096-26 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-27 A	Small OJ, 500 mL		
19K0096-27 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-27 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-27 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-27 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-27 F	VOA Vial, Clear, 40 mL		
19K0096-27 G	VOA Vial, Clear, 40 mL		
19K0096-27 H	VOA Vial, Clear, 40 mL		
19K0096-28 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-29 A	Small OJ, 500 mL		
19K0096-29 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-29 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-29 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-29 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-29 F	VOA Vial, Clear, 40 mL		
19K0096-29 G	VOA Vial, Clear, 40 mL		
19K0096-29 H	VOA Vial, Clear, 40 mL		
19K0096-30 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-31 A	Small OJ, 500 mL		
19K0096-31 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-31 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-31 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-31 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-31 F	VOA Vial, Clear, 40 mL		
19K0096-31 G	VOA Vial, Clear, 40 mL		
19K0096-31 H	VOA Vial, Clear, 40 mL		
19K0096-32 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-33 A	Small OJ, 500 mL		
19K0096-33 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-33 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-33 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-33 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-33 F	VOA Vial, Clear, 40 mL		

Reviewed By

Date

WORK ORDER

19K0096

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19K0096-33 G	VOA Vial, Clear, 40 mL		
19K0096-33 H	VOA Vial, Clear, 40 mL		
19K0096-34 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-35 A	Small OJ, 500 mL		
19K0096-35 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
19K0096-35 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
19K0096-35 D	VOA Vial, Clear, 40 mL, HCL		
19K0096-35 E	VOA Vial, Clear, 40 mL, HCL		
19K0096-35 F	VOA Vial, Clear, 40 mL		
19K0096-35 G	VOA Vial, Clear, 40 mL		
19K0096-35 H	VOA Vial, Clear, 40 mL		
19K0096-36 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
19K0096-37 A	VOA Vial, Clear, 40 mL, HCL		
19K0096-37 B	VOA Vial, Clear, 40 mL, HCL		
19K0096-37 C	VOA Vial, Clear, 40 mL, HCL		
19K0096-37 D	VOA Vial, Clear, 40 mL, HCL		

JAM
Preservation Confirmed By

11/07/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing DC
COC No(s): NA
Assigned ARI Job No: 19K0096

Project Name: Regional GW
Delivered by: Fed-Ex UPS Courier Hand Delivered Other:
Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 0738 2.2°C 2.7°C 2.3°C

If cooler temperature is out of compliance fill out form 00070F
Temp Gun ID#: D00520 6

Cooler Accepted by: ES Date: 11/07/19 Time: 0738

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:
Was sufficient ice used (if appropriate)? NA YES NO
How were bottles sealed in plastic bags? Individually Grouped Not
Did all bottles arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did the number of containers listed on COC match with the number of containers received? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA YES NO
Were all VOC vials free of air bubbles? NA YES NO
Was sufficient amount of sample sent in each bottle? YES NO
Date VOC Trip Blank was made at ARI NA 10/29/19
Were the sample(s) split by ARI? NA YES Date/Time: Equipment: Split by:

Samples Logged by: JBw Date: 11/07/19 Time: 0948 Labels checked by: JBw

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

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

Additional Notes, Discrepancies, & Resolutions:

vials w/ air bubbles marked on preservation sheet. Lab to determine sizes.

By: JBw Date: 11/07/19

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-02-191106

19K0096-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 09:01

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 13:27

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-01 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.70**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*104*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*102*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-02-191106

19K0096-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 09:01

Instrument: FID6 Analyst: LH — Analyzed: 11/13/2019 09:27

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-01 E

Preparation Batch: BHK0308 — Sample Size: 10 mL

Prepared: 13-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4350**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*80.6*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-02-191106

19K0096-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 09:01

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 06:14

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-01 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.440	4.00	**24.5**	ug/L	D
Copper	7440-50-8	20	6.80	10.0	**15.8**	ug/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-02-191106

19K0096-01 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 09:01

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/18/2019 21:32

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-01 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**1233**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-02-191106

19K0096-01RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 09:01

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 18:02

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-01RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**1.52**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-02-191106

19K0096-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 09:01

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 09:05

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-02 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	20	0.440	4.00	**24.5**	ug/L	D
Copper, Dissolved	7440-50-8	20	6.80	10.0	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-18-191106

19K0096-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 09:27

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 13:48

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-03 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.52**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.42**	ug/L	
Trichloroethene	79-01-6	1	0.20	**1.42**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	**3.41**	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*103*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-18-191106

19K0096-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 09:27

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 17:11

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-03 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**2430**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*88.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-18-191106

19K0096-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 09:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 02:51

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-03 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**6.18**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**1.78**	ug/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-18-191106

19K0096-03 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 09:27

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/18/2019 22:53

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-03 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**2.59**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-18-191106

19K0096-03RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 09:27

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 20:43

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-03RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**9.24**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-18-191106

19K0096-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 09:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 03:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-04 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**0.332**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.766**	ug/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-09-191106

19K0096-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 09:51

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 14:08

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-05 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**1.62**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.21**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*105*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-09-191106

19K0096-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 09:51

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 17:25

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-05 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**7450**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*85.2*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-09-191106

19K0096-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 09:51

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 04:33

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-05 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0440	0.400	**6.17**	ug/L	D
Copper	7440-50-8	2	0.680	1.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-09-191106

19K0096-05 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 09:51

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/18/2019 23:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-05 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**30.69**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-09-191106

19K0096-05RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 09:51

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 21:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-05RE2 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**2.59**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-09-191106

19K0096-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 09:51

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 05:07

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-06 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	**6.18**	ug/L	D
Copper, Dissolved	7440-50-8	2	0.680	1.00	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-21-191106

19K0096-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 10:17

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 14:28

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-07 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.32**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*105*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-21-191106

19K0096-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 10:17

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 17:40

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-07 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**5140**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*79.4*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-21-191106

19K0096-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 10:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 02:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-07 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**9.41**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-21-191106

19K0096-07 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 10:17

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/18/2019 23:42

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-07 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**6.95**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-21-191106

19K0096-07RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 10:17

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 21:23

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-07RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**1.97**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-21-191106

19K0096-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 10:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 04:02

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-08 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**10.5**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-07-191106

19K0096-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 10:41

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 14:49

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-09 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.47**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.88**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*108*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-07-191106

19K0096-09 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 10:41

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 17:54

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-09 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**12200**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*81.2*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-07-191106

19K0096-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 10:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 05:45

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-09 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.110	1.00	**2.31**	ug/L	D
Copper	7440-50-8	5	1.70	2.50	**7.47**	ug/L	D

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BDC-05-07-191106

19K0096-09 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 10:41

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 00:52

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-09 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**94.54**	mg/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-07-191106

19K0096-09RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 10:41

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 21:43

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-09RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.657**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-07-191106

19K0096-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 10:41

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 05:17

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-10 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	0.110	1.00	**1.98**	ug/L	D
Copper, Dissolved	7440-50-8	5	1.70	2.50	ND	ug/L	U

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BDC-05-22-191106

19K0096-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 10:57

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 15:09

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-11 E

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.69**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**4.87**	ug/L	
Trichloroethene	79-01-6	1	0.20	**0.35**	ug/L	
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
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BDC-05-22-191106

19K0096-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 10:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:06

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-11 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**42.5**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-22-191106

19K0096-11 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 10:57

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 01:13

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-11 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**9.35**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-22-191106

19K0096-11RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 10:57

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 22:04

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-11RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**1.12**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-22-191106

19K0096-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 10:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 03:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-12 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**42.5**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-10-191106

19K0096-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 11:31

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 15:29

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-13 G

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.92**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.58**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*110*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-10-191106

19K0096-13 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 11:31

Instrument: FID6 Analyst: LH — Analyzed: 11/13/2019 09:42

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-13 E

Preparation Batch: BHK0308 — Sample Size: 10 mL

Prepared: 13-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**6680**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*90.2*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-10-191106

19K0096-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 11:31

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 04:47

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-13 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0440	0.400	**9.89**	ug/L	D
Copper	7440-50-8	2	0.680	1.00	**22.1**	ug/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-10-191106

19K0096-13 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 11:31

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 01:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-13 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**53.47**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-10-191106

19K0096-13RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 11:31

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 22:24

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-13RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.403**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-10-191106

19K0096-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 11:31

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 05:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-14 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	**8.99**	ug/L	D
Copper, Dissolved	7440-50-8	2	0.680	1.00	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-20-191106

19K0096-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 11:57

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 15:50

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-15 F

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.78**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-20-191106

19K0096-15 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 11:57

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 18:23

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-15 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**20800**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*87.2*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-20-191106

19K0096-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 11:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:13

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-15 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**24.7**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.478**	ug/L	J

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-20-191106

19K0096-15 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 11:57

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 01:54

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-15 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**12.30**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-20-191106

19K0096-15RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 11:57

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 22:44

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-15RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.196**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-20-191106

19K0096-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 11:57

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 03:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-16 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**26.2**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-08-191106

19K0096-17 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 12:46

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 16:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-17 D

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*110*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-08-191106

19K0096-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 12:46

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 04:55

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-17 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0440	0.400	**16.1**	ug/L	D
Copper	7440-50-8	2	0.680	1.00	**11.4**	ug/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-08-191106

19K0096-17 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 12:46

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 02:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-17 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	**9.31**	mg/L	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-08-191106

19K0096-17RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 12:46

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 23:05

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-17RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.495**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-08-191106

19K0096-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 12:46

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 03:49

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-18 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**5.62**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.537**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-19 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 13:21

Instrument: NT2 Analyst: PKC — Analyzed: 11/07/2019 16:30

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-19 G

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**2.56**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.87**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*97.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-19 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 13:21

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 18:37

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-19 E

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**10600**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*35.7*	*%*	*

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 13:21

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 05:59

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-19 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.220	2.00	**15.8**	ug/L	D
Copper	7440-50-8	10	3.40	5.00	**39.4**	ug/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-19 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 13:21

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 02:44

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-19 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**432.6**	mg/L	D

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-19RE1 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 13:21

Instrument: FID6 Analyst: LH — Analyzed: 11/13/2019 09:56

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-19RE1 D

Preparation Batch: BHK0308 — Sample Size: 10 mL

Prepared: 13-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**5770**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*65.5*	*%*	*

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-19RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 13:21

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 23:25

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-19RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.361**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-03-191106

19K0096-20 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 13:21

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 08:56

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-20 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	0.220	2.00	**10.4**	ug/L	D
Copper, Dissolved	7440-50-8	10	3.40	5.00	**3.87**	ug/L	J, D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-12-191106

19K0096-21 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 14:26

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 14:38

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-21 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*121*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*98.0*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.7*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-12-191106

19K0096-21 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 14:26

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 19:05

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-21 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**17400**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.1*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-12-191106

19K0096-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 14:26

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:21

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-21 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**4.78**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.621**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-12-191106

19K0096-21 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 14:26

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 03:10

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-21 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		5	2.50	2.50	**13.49**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-12-191106

19K0096-21RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 14:26

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/03/2019 23:46

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-21RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.726**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-12-191106

19K0096-22 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 14:26

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 03:53

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-22 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**5.16**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.456**	ug/L	J

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-DUP3-191106

19K0096-23 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 08:30

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 15:04

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-23 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*122*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-DUP3-191106

19K0096-23 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 08:30

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 19:20

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-23 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**17300**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*87.3*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-DUP3-191106

19K0096-23 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 08:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:28

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-23 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**4.89**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-DUP3-191106

19K0096-23 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 08:30

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 03:42

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-23 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		5	2.50	2.50	**12.94**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-DUP3-191106

19K0096-23RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 08:30

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 01:08

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-23RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.350**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-DUP3-191106

19K0096-24 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 08:30

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 03:58

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-24 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**5.42**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-17-191106

19K0096-25 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 15:17

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 15:29

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-25 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.54**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*126*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*88.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*107*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-17-191106

19K0096-25 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 15:17

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 19:34

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-25 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**16200**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*79.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-17-191106

19K0096-25 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 15:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:36

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-25 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**30.3**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.635**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-17-191106

19K0096-25 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 15:17

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 04:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-25 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		5	2.50	2.50	**20.00**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-17-191106

19K0096-25RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 15:17

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 01:28

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-25RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.213**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-17-191106

19K0096-26 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 15:17

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 04:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-26 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**31.8**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-27 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 15:16

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 15:55

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-27 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.25**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*126*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-27 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 15:16

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 19:48

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-27 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**19400**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*70.9*	*%*	*

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-27 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 15:16

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:43

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-27 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**49.1**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.347**	ug/L	J

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-27 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 15:16

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 04:25

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-27 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**24.89**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-27RE1 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 15:16

Instrument: FID6 Analyst: LH — Analyzed: 11/13/2019 10:10

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-27RE1 E

Preparation Batch: BHK0308 — Sample Size: 10 mL

Prepared: 13-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**9620**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*71.0*	*%*	*

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-27RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 15:16

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 01:47

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-27RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.269**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-15-191106

19K0096-28 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 15:16

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 04:42

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-28 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**50.1**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.679**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-16-191106

19K0096-29 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 15:47

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 16:20

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-29 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.51**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*121*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*102*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-16-191106

19K0096-29 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 15:47

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 20:02

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-29 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**19900**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.5*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-16-191106

19K0096-29 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 15:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 03:50

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-29 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**26.5**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.869**	ug/L	

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-16-191106

19K0096-29 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 15:47

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 05:31

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-29 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		5	2.50	2.50	**20.08**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-16-191106

19K0096-29RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 15:47

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 02:07

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-29RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.285**	mg/L	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-16-191106

19K0096-30 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 15:47

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 04:47

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-30 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**26.9**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**1.14**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-13-191106

19K0096-31 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 16:11

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 16:45

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-31 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.41**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-13-191106

19K0096-31 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 16:11

Instrument: FID6 Analyst: LH — Analyzed: 11/13/2019 10:25

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-31 E

Preparation Batch: BHK0308 — Sample Size: 10 mL

Prepared: 13-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**9980**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*84.7*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-13-191106

19K0096-31 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 16:11

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 04:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-31 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**22.5**	ug/L	
Copper	7440-50-8	1	0.340	0.500	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-13-191106

19K0096-31 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 16:11

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 05:58

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-31 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		5	2.50	2.50	**19.70**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-13-191106

19K0096-31RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 16:11

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 02:26

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-31RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.122**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-13-191106

19K0096-32 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 16:11

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 04:51

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-32 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**25.4**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**2.02**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-33 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 16:27

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 17:11

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-33 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.48**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	**2.08**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-33 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 16:27

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 20:31

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-33 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**8160**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*87.1*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-33 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 16:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 05:10

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-33 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0440	0.400	**16.9**	ug/L	D
Copper	7440-50-8	2	0.680	1.00	**4.22**	ug/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-33 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 16:27

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/07/2019 21:04

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-33 A

Preparation Batch: BHK0179 — Sample Size: 5 mL

Prepared: 07-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-33 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 16:27

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 06:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-33 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**48.80**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-33RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 16:27

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 02:46

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-33RE2 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**4.68**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-04-191106

19K0096-34 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 16:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 04:56

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-34 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**12.2**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	ND	ug/L	U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-11-191106

19K0096-35 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 17:01

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 17:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-35 F

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	**0.29**	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*122*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*105*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-11-191106

19K0096-35 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 17:01

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 20:45

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-35 D

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**16400**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*84.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-11-191106

19K0096-35 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 17:01

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/12/2019 04:25

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-35 C 01

Preparation Batch: BHK0245 — Sample Size: 25 mL

Prepared: 11-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0220	0.200	**7.74**	ug/L	
Copper	7440-50-8	1	0.340	0.500	**0.650**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-11-191106

19K0096-35 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 17:01

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 06:45

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-35 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		5	2.50	2.50	**13.05**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-11-191106

19K0096-35RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 17:01

Instrument: DX2100 Analyst: KOTT — Analyzed: 12/04/2019 03:06

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0096-35RE1 A

Preparation Batch: BHL0056 — Sample Size: 5 mL

Prepared: 03-Dec-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.226**	mg/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

BDC-05-11-191106

19K0096-36 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 11/06/2019 17:01

Instrument: ICPMS2 Analyst: MCB — Analyzed: 11/19/2019 05:01

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19K0096-36 A 02

Preparation Batch: BHK0436 — Sample Size: 25 mL

Prepared: 18-Nov-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**7.84**	ug/L	
Copper, Dissolved	7440-50-8	1	0.340	0.500	**0.807**	ug/L	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

TripBlanks1-191106

19K0096-37 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 08:30

Instrument: NT7 Analyst: PKC — Analyzed: 11/07/2019 14:13

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0096-37 B

Preparation Batch: BHK0180 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*116*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.8*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

TripBlanks1-191106

19K0096-37 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 08:30

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 16:43

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0096-37 C

Preparation Batch: BHK0181 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*94.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0161-BLK2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 09:19						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.98		ug/L	*5.00*		*99.6*	*80-129*			
Surrogate: Toluene-d8	4.81		ug/L	*5.00*		*96.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	*5.00*		*97.2*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.02		ug/L	*5.00*		*100*	*80-120*			
LCS (BHK0161-BS2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 07:57						
Vinyl Chloride	9.90	0.20	ug/L	10.0		99.0	66-133			
cis-1,2-Dichloroethene	9.95	0.20	ug/L	10.0		99.5	80-121			
Trichloroethene	10.0	0.20	ug/L	10.0		100	80-120			
Tetrachloroethene	9.97	0.20	ug/L	10.0		99.7	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.71		ug/L	*5.00*		*94.2*	*80-129*			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*99.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.15		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.01		ug/L	*5.00*		*100*	*80-120*			
LCS Dup (BHK0161-BSD2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 08:38						
Vinyl Chloride	9.96	0.20	ug/L	10.0		99.6	66-133	0.61	30	
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121	3.68	30	
Trichloroethene	10.2	0.20	ug/L	10.0		102	80-120	2.22	30	
Tetrachloroethene	10.0	0.20	ug/L	10.0		100	80-120	0.60	30	
Surrogate: 1,2-Dichloroethane-d4	4.82		ug/L	*5.00*		*96.4*	*80-129*			
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.11		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.02		ug/L	*5.00*		*100*	*80-120*			

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Volatile Organic Compounds - Quality Control

Batch BHK0180 - EPA 5030 (Purge and Trap)

Instrument: NT7 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0180-BLK1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 13:47						
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.52		ug/L	*5.00*		*110*	*80-129*			
Surrogate: Toluene-d8	4.99		ug/L	*5.00*		*99.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.64		ug/L	*5.00*		*92.9*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.05		ug/L	*5.00*		*101*	*80-120*			
LCS (BHK0180-BS1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 11:40						
Vinyl Chloride	11.0	0.20	ug/L	10.0		110	66-133			
cis-1,2-Dichloroethene	9.00	0.20	ug/L	10.0		90.0	80-121			
Trichloroethene	9.60	0.20	ug/L	10.0		96.0	80-120			
Tetrachloroethene	10.7	0.20	ug/L	10.0		107	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.19		ug/L	*5.00*		*104*	*80-129*			
Surrogate: Toluene-d8	5.27		ug/L	*5.00*		*105*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.95		ug/L	*5.00*		*99.0*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.94		ug/L	*5.00*		*98.8*	*80-120*			
LCS Dup (BHK0180-BSD1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 12:06						
Vinyl Chloride	11.3	0.20	ug/L	10.0		113	66-133	3.01	30	
cis-1,2-Dichloroethene	9.16	0.20	ug/L	10.0		91.6	80-121	1.68	30	
Trichloroethene	9.48	0.20	ug/L	10.0		94.8	80-120	1.21	30	
Tetrachloroethene	10.5	0.20	ug/L	10.0		105	80-120	2.02	30	
Surrogate: 1,2-Dichloroethane-d4	5.76		ug/L	*5.00*		*115*	*80-129*			
Surrogate: Toluene-d8	5.22		ug/L	*5.00*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.13		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.10		ug/L	*5.00*		*102*	*80-120*			

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Dissolved Gases - Quality Control

Batch BHK0181 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0181-BLK1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 16:28						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	1860		ug/L	*1800*		*103*	*72-122*			
LCS (BHK0181-BS1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 16:00						
Methane	705		ug/L	656		108	80-120			
Ethane	1260		ug/L	1230		103	80-120			
Ethene	1130		ug/L	1150		98.6	80-120			
Acetylene	872		ug/L	1060		82.3	73-123			
Surrogate: Propane	1920		ug/L	*1800*		*106*	*62-122*			
LCS Dup (BHK0181-BSD1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 16:14						
Methane	727		ug/L	656		111	80-120	2.94	30	
Ethane	1300		ug/L	1230		106	80-120	2.83	30	
Ethene	1160		ug/L	1150		101	80-120	2.62	30	
Acetylene	897		ug/L	1060		84.6	73-123	2.81	30	
Surrogate: Propane	1860		ug/L	*1800*		*103*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Dissolved Gases - Quality Control

Batch BHK0308 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0308-BLK1)				Prepared: 13-Nov-2019 Analyzed: 13-Nov-2019 08:05						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	1820		ug/L	*1800*		*101*	*72-122*			
LCS (BHK0308-BS1)				Prepared: 13-Nov-2019 Analyzed: 13-Nov-2019 07:36						
Methane	718	0.65	ug/L	656		109	80-120			
Ethane	1280	1.23	ug/L	1230		104	80-120			
Ethene	1170	1.14	ug/L	1150		102	80-120			
Acetylene	1090	1.06	ug/L	1060		102	73-123			E
Surrogate: Propane	1730		ug/L	*1800*		*96.2*	*62-122*			
LCS Dup (BHK0308-BSD1)				Prepared: 13-Nov-2019 Analyzed: 13-Nov-2019 07:51						
Methane	759	0.65	ug/L	656		116	80-120	5.57	30	
Ethane	1300	1.23	ug/L	1230		105	80-120	1.39	30	
Ethene	1200	1.14	ug/L	1150		104	80-120	1.74	30	
Acetylene	1110	1.06	ug/L	1060		105	73-123	2.57	30	E
Surrogate: Propane	1820		ug/L	*1800*		*101*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Metals and Metallic Compounds - Quality Control

Batch BHK0245 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0245-BLK1)					Prepared: 11-Nov-2019 Analyzed: 11-Nov-2019 23:02							
Arsenic	75a	ND	0.0220	0.200	ug/L							U
Copper	63	ND	0.340	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
LCS (BHK0245-BS1)					Prepared: 11-Nov-2019 Analyzed: 11-Nov-2019 23:07							
Arsenic	75a	23.8	0.0220	0.200	ug/L	25.0		95.2	80-120			
Copper	63	26.8	0.340	0.500	ug/L	25.0		107	80-120			
Copper	65	26.4	0.350	0.500	ug/L	25.0		105	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHK0436 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0436-BLK1)					Prepared: 18-Nov-2019 Analyzed: 19-Nov-2019 00:18							
Arsenic, Dissolved	75a	ND	0.0220	0.200	ug/L							U
Copper, Dissolved	63	ND	0.340	0.500	ug/L							U
Copper, Dissolved	65	ND	0.350	0.500	ug/L							U
LCS (BHK0436-BS1)					Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 18:22							
Arsenic, Dissolved	75a	25.8	0.0220	0.200	ug/L	25.0		103	80-120			
Copper, Dissolved	63	26.7	0.340	0.500	ug/L	25.0		107	80-120			
Copper, Dissolved	65	26.6	0.350	0.500	ug/L	25.0		106	80-120			
Duplicate (BHK0436-DUP1)			**Source: 19K0096-08**		Prepared: 18-Nov-2019 Analyzed: 19-Nov-2019 04:07							
Arsenic, Dissolved	75a	10.3	0.0220	0.200	ug/L		10.5			2.17	20	
Copper, Dissolved	63	ND	0.340	0.500	ug/L		ND					U
Matrix Spike (BHK0436-MS1)			**Source: 19K0096-08**		Prepared: 18-Nov-2019 Analyzed: 19-Nov-2019 04:12							
Arsenic, Dissolved	75a	35.1	0.0220	0.200	ug/L	25.0	10.5	98.2	75-125			
Copper, Dissolved	63	24.1	0.340	0.500	ug/L	25.0	ND	96.3	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Wet Chemistry - Quality Control

Batch BHK0179 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0179-BLK1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 21:45							
Nitrate-N	ND	0.100	0.100	mg/L							U
Nitrite-N	ND	0.100	0.100	mg/L							U
LCS (BHK0179-BS1)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 22:06							
Nitrate-N	1.42	0.100	0.100	mg/L	1.50		94.5	90-110			
Nitrite-N	1.38	0.100	0.100	mg/L	1.50		92.2	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Wet Chemistry - Quality Control

Batch BHK0450 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0450-BLK1)				Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 20:47							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHK0450-BS1)				Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 21:06							
Total Organic Carbon	19.54	0.50	0.50	mg/L	20.00		97.7	90-110			
Duplicate (BHK0450-DUP1)		**Source: 19K0096-01**		Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 21:57							
Total Organic Carbon	1241	25.00	25.00	mg/L		1233			0.65	20	D
Matrix Spike (BHK0450-MS1)		**Source: 19K0096-01**		Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 22:28							
Total Organic Carbon	1322	25.00	25.00	mg/L	200.0	1233	44.5	75-125			*, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BHK0450-MS2)		**Source: 19K0096-01**		Prepared: 18-Nov-2019 Analyzed: 20-Nov-2019 18:36							
Total Organic Carbon	1639	25.00	25.00	mg/L	500.0	1233	81.2	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Wet Chemistry - Quality Control

Batch BHL0056 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHL0056-BLK1)				Prepared: 03-Dec-2019 Analyzed: 03-Dec-2019 19:22							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHL0056-BS1)				Prepared: 03-Dec-2019 Analyzed: 03-Dec-2019 19:42							
Sulfate	1.51	0.100	0.100	mg/L	1.50		101	90-110			
Duplicate (BHL0056-DUP1)		**Source: 19K0096-01RE1**		Prepared: 03-Dec-2019 Analyzed: 03-Dec-2019 18:23							
Sulfate	1.52	0.100	0.100	mg/L		1.52			0.07	20	
Matrix Spike (BHL0056-MS1)		**Source: 19K0096-01RE1**		Prepared: 03-Dec-2019 Analyzed: 03-Dec-2019 18:42							
Sulfate	3.66	0.200	0.200	mg/L	2.00	1.52	107	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrite-N	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:24

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
J	Estimated concentration value detected below the reporting limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

14 May 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19E0012	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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Cert# 100006

PJLA Testing
Accreditation # 66169

19E0012

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 5/1/19
Page 1 of 1

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW Project No. 025217.099.039
Project Location/Event SWMU-20 / May 2019
Sampler's Name Devan Brandt & Brittany McManus
Project Contact Chris Kimmel & Jen Parsons
Send Results To Chris Kimmel & Jen Parsons

Special Handling Requirements: _____
Shipment Method: Drop off
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: VOCs (8260C)	MEE (RSK-SOP-175 Mod)*	TOC (SM5310C)	Sulfate (E300.0)	Observations/Comments
MW-16C-190501	5/1/19	0957	AQ	3	X				Foamy
MW-16A-190501		1001	AQ	3	X				
MW-13C-190501		1041	AQ	3	X				
MW-13A-190501		1047	AQ	3	X				
BDC-DUP1-190501		1050	AQ	7	X	X	X	X	
MW-14C-190501		1121	AQ	3	X				
MW-9A-190501		1127	AQ	7	X	X	X	X	
MW-20C-190501		1201	AQ	3	X				
MW-10C-190501		1217	AQ	3	X				
MW-11A-190501		1251	AQ	3	X				
MW-15C-190501		1257	AQ	3	X				
MW-22A-190501		1337	AQ	7	X	X	X	X	
MW-6A-190501		1457	AQ	7	X	X	X	X	
MW-6B-190501		1537	AQ	7	X	X	X	X	
TripBlanks	—	—	AQ	4	X	X			

Allow water samples to settle, collect aliquot from clear portion ☐
NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐
Dissolved metal samples were field filtered

Other * Methane, Ethane & Ethene

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature Stephanie Fisher	Signature	Signature
Printed Name Devan Brandt	Printed Name Stephanie Fisher	Printed Name	Printed Name
Company LAI	Company AEI	Company	Company
Date 5/1/19 Time 1650	Date 5-1-19 Time 1650	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-16C-190501	19E0012-01	Water	01-May-2019 09:57	01-May-2019 16:50
MW-16A-190501	19E0012-02	Water	01-May-2019 10:01	01-May-2019 16:50
MW-13C-190501	19E0012-03	Water	01-May-2019 10:41	01-May-2019 16:50
MW-13A-190501	19E0012-04	Water	01-May-2019 10:47	01-May-2019 16:50
BDC-DUP1-190501	19E0012-05	Water	01-May-2019 10:50	01-May-2019 16:50
MW-14C-190501	19E0012-06	Water	01-May-2019 11:21	01-May-2019 16:50
MW-9A-190501	19E0012-07	Water	01-May-2019 11:27	01-May-2019 16:50
MW-20C-190501	19E0012-08	Water	01-May-2019 12:01	01-May-2019 16:50
MW-10C-190501	19E0012-09	Water	01-May-2019 12:17	01-May-2019 16:50
MW-11A-190501	19E0012-10	Water	01-May-2019 12:51	01-May-2019 16:50
MW-15C-190501	19E0012-11	Water	01-May-2019 12:57	01-May-2019 16:50
MW-22A-190501	19E0012-12	Water	01-May-2019 13:37	01-May-2019 16:50
MW-6A-190501	19E0012-13	Water	01-May-2019 14:57	01-May-2019 16:50
MW-6B-190501	19E0012-14	Water	01-May-2019 15:37	01-May-2019 16:50
Trip Blanks	19E0012-15	Water	01-May-2019 09:57	01-May-2019 16:50

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control high in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits with the exception of analytes flagged on the associated forms.

Volatile Gases - MEE by RSK175

The sample(s) were run within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits with the exception of the surrogate propane which is out of control low
in the original analysis of sample 19E0012-07. The sample was re-analyzed with surrogate recovery in control.

The method blank(s) were clean at the reporting limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits with the exception of the TOC method blank. All of the associated samples had ten times
the blank concentration and have been flagged with a "B" qualifer.

The LCS percent recoveries were within control limits.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 5/2/2019 9:06:02AM

WORK ORDER

19E0012

Client: The Boeing Company [Developmental Center]
Project: Boeing Regional GW Developmental Center

Project Manager: Kelly Bottem
Project Number: Boeing Regional GW Developmental Center

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due:	16-May-2019 18:00 (10 day TAT)		
Received By:	Stephanie Fishel	Date Received:	01-May-2019 16:50
Logged In By:	Erin I. Salle	Date Logged In:	02-May-2019 08:39

Samples Received at: **13.7°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	No	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	No
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Reviewed By

Date

WORK ORDER

19E0012

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
19E0012-01 MW-16C-190501 [Water] Sampled 01-May-2019 09:57				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-02 MW-16A-190501 [Water] Sampled 01-May-2019 10:01				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-03 MW-13C-190501 [Water] Sampled 01-May-2019 10:41				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-04 MW-13A-190501 [Water] Sampled 01-May-2019 10:47				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-05 BDC-DUP1-190501 [Water] Sampled 01-May-2019 10:50				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
Sulfate, IC, EPA 300.0	05/16/2019	10	5/29/2019	
RSK-175 Dissolved Gases (MEE)	05/16/2019	10	5/8/2019	
Carbon, Organic Total, SM 5310 B-00	05/16/2019	10	5/29/2019	
19E0012-06 MW-14C-190501 [Water] Sampled 01-May-2019 11:21				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-07 MW-9A-190501 [Water] Sampled 01-May-2019 11:27				
Carbon, Organic Total, SM 5310 B-00	05/16/2019	10	5/29/2019	
8260C VOA	05/16/2019	10	5/15/2019	
Sulfate, IC, EPA 300.0	05/16/2019	10	5/29/2019	
RSK-175 Dissolved Gases (MEE)	05/16/2019	10	5/8/2019	
19E0012-08 MW-20C-190501 [Water] Sampled 01-May-2019 12:01				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-09 MW-10C-190501 [Water] Sampled 01-May-2019 12:17				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-10 MW-11A-190501 [Water] Sampled 01-May-2019 12:51				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-11 MW-15C-190501 [Water] Sampled 01-May-2019 12:57				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-12 MW-22A-190501 [Water] Sampled 01-May-2019 13:37				
Sulfate, IC, EPA 300.0	05/16/2019	10	5/29/2019	
RSK-175 Dissolved Gases (MEE)	05/16/2019	10	5/8/2019	
Carbon, Organic Total, SM 5310 B-00	05/16/2019	10	5/29/2019	
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-13 MW-6A-190501 [Water] Sampled 01-May-2019 14:57				
Carbon, Organic Total, SM 5310 B-00	05/16/2019	10	5/29/2019	
Sulfate, IC, EPA 300.0	05/16/2019	10	5/29/2019	
RSK-175 Dissolved Gases (MEE)	05/16/2019	10	5/8/2019	
8260C VOA	05/16/2019	10	5/15/2019	

Reviewed By

Date

WORK ORDER

19E0012

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Analysis	Due	TAT	Expires	Comments
19E0012-14 MW-6B-190501 [Water] Sampled 01-May-2019 15:37				
Sulfate, IC, EPA 300.0	05/16/2019	10	5/29/2019	
RSK-175 Dissolved Gases (MEE)	05/16/2019	10	5/8/2019	
Carbon, Organic Total, SM 5310 B-00	05/16/2019	10	5/29/2019	
8260C VOA	05/16/2019	10	5/15/2019	
19E0012-15 Trip Blanks [Water] Sampled 01-May-2019 09:57				Three versions
8260C VOA	05/16/2019	10	5/15/2019	
RSK-175 Dissolved Gases (MEE)	05/16/2019	10	5/8/2019	

Reviewed By

Date

WORK ORDER

19E0012

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH	
19E0012-01 A	VOA Vial, Clear, 40 mL		
19E0012-01 B	VOA Vial, Clear, 40 mL		
19E0012-01 C	VOA Vial, Clear, 40 mL		
19E0012-02 A	VOA Vial, Clear, 40 mL		
19E0012-02 B	VOA Vial, Clear, 40 mL		
19E0012-02 C	VOA Vial, Clear, 40 mL		
19E0012-03 A	VOA Vial, Clear, 40 mL		
19E0012-03 B	VOA Vial, Clear, 40 mL		
19E0012-03 C	VOA Vial, Clear, 40 mL		
19E0012-04 A	VOA Vial, Clear, 40 mL		
19E0012-04 B	VOA Vial, Clear, 40 mL		
19E0012-04 C	VOA Vial, Clear, 40 mL		
19E0012-05 A	VOA Vial, Clear, 40 mL		
19E0012-05 B	VOA Vial, Clear, 40 mL		
19E0012-05 C	VOA Vial, Clear, 40 mL		
19E0012-05 D	VOA Vial, Clear, 40 mL, HCL		
19E0012-05 E	VOA Vial, Clear, 40 mL, HCL		
19E0012-05 F	Glass NM, Amber, 250 mL, 9N H2SO4	<2	pass
19E0012-05 G	Small OJ, 500 mL		
19E0012-06 A	VOA Vial, Clear, 40 mL		
19E0012-06 B	VOA Vial, Clear, 40 mL		
19E0012-06 C	VOA Vial, Clear, 40 mL		
19E0012-07 A	VOA Vial, Clear, 40 mL		
19E0012-07 B	VOA Vial, Clear, 40 mL		
19E0012-07 C	VOA Vial, Clear, 40 mL		
19E0012-07 D	VOA Vial, Clear, 40 mL, HCL		
19E0012-07 E	VOA Vial, Clear, 40 mL, HCL		
19E0012-07 F	Glass NM, Amber, 250 mL, 9N H2SO4	<2	pass
19E0012-07 G	Small OJ, 500 mL		
19E0012-08 A	VOA Vial, Clear, 40 mL		
19E0012-08 B	VOA Vial, Clear, 40 mL		
19E0012-08 C	VOA Vial, Clear, 40 mL		
19E0012-09 A	VOA Vial, Clear, 40 mL		
19E0012-09 B	VOA Vial, Clear, 40 mL		
19E0012-09 C	VOA Vial, Clear, 40 mL		

Reviewed By

Date

WORK ORDER

19E0012

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

19E0012-10 A	VOA Vial, Clear, 40 mL		
19E0012-10 B	VOA Vial, Clear, 40 mL		
19E0012-10 C	VOA Vial, Clear, 40 mL		
19E0012-11 A	VOA Vial, Clear, 40 mL		
19E0012-11 B	VOA Vial, Clear, 40 mL		
19E0012-11 C	VOA Vial, Clear, 40 mL		
19E0012-12 A	VOA Vial, Clear, 40 mL		
19E0012-12 B	VOA Vial, Clear, 40 mL		
19E0012-12 C	VOA Vial, Clear, 40 mL		
19E0012-12 D	VOA Vial, Clear, 40 mL, HCL		
19E0012-12 E	VOA Vial, Clear, 40 mL, HCL		
19E0012-12 F	Glass NM, Amber, 250 mL, 9N H2SO4	<2	pass
19E0012-12 G	Small OJ, 500 mL		
19E0012-13 A	VOA Vial, Clear, 40 mL		
19E0012-13 B	VOA Vial, Clear, 40 mL		
19E0012-13 C	VOA Vial, Clear, 40 mL		
19E0012-13 D	VOA Vial, Clear, 40 mL, HCL		
19E0012-13 E	VOA Vial, Clear, 40 mL, HCL		
19E0012-13 F	Glass NM, Amber, 250 mL, 9N H2SO4	<2	pass
19E0012-13 G	Small OJ, 500 mL		
19E0012-14 A	VOA Vial, Clear, 40 mL		
19E0012-14 B	VOA Vial, Clear, 40 mL		
19E0012-14 C	VOA Vial, Clear, 40 mL		
19E0012-14 D	VOA Vial, Clear, 40 mL, HCL		
19E0012-14 E	VOA Vial, Clear, 40 mL, HCL		
19E0012-14 F	Glass NM, Amber, 250 mL, 9N H2SO4	<2	pass
19E0012-14 G	Small OJ, 500 mL		
19E0012-15 A	VOA Vial, Clear, 40 mL, HCL		
19E0012-15 B	VOA Vial, Clear, 40 mL, HCL		
19E0012-15 C	VOA Vial, Clear, 40 mL, HCL		
19E0012-15 D	VOA Vial, Clear, 40 mL, HCL		

Preservation Confirmed By

5/2/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

COC No(s): _____ (NA)

Assigned ARI Job No: 19E0012

Project Name: DC Regional GW

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1650 — 13.7

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D00256C

Cooler Accepted by: SCF Date: 5-1-19 Time: 1650

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: BOX		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)	4/24/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [signature] Date: 5/2/19 Time: 0839 Labels checked by: JBW

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

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

Additional Notes, Discrepancies, & Resolutions:

air bubbles found in ; 19E0012-01C and 19E0012-03C

By: Date:

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

ARI Work Order: 19E0012

Cooler#: 1 **Temperature(°C):** 13.7

Sample ID	Bottle Count	Bottle Type
Samples received above 6°		

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Completed by: SAF Date: 5-1-19 Time: 1650

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-16C-190501

19E0012-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 09:57

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 13:34

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-01 B

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.33**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.41**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-16C-190501

19E0012-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 09:57

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 13:34

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*113*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*98.9*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-16A-190501

19E0012-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 13:54

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-02 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.35**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.22**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-16A-190501

19E0012-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 13:54

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*116*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*99.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.8*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-13C-190501

19E0012-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:41

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 14:15

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-03 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.22**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.27**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-13C-190501

19E0012-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:41

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 14:15

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	**3.08**	ug/L	
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**0.53**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*117*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-13A-190501

19E0012-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:47

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 14:35

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-04 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	**0.22**	ug/L	
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-13A-190501

19E0012-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:47

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 14:35

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	**1.03**	ug/L	
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*114*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

BDC-DUP1-190501

19E0012-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:50

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 14:55

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-05 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.22**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

BDC-DUP1-190501

19E0012-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 10:50

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 14:55

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	**0.23**	ug/L	
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**1.56**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*118*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

BDC-DUP1-190501

19E0012-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 10:50

Instrument: FID6 Analyst: LH — Analyzed: 05/02/2019 14:00

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0012-05 C

Preparation Batch: BHE0065 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**10600**	ug/L	
Ethane	74-84-0	1	1.23	**205**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

BDC-DUP1-190501

19E0012-05 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/01/2019 10:50

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/09/2019 02:56

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-05 F

Preparation Batch: BHE0100 — Sample Size: 20 mL

Prepared: 03-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**32.33**	mg/L	B, D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

BDC-DUP1-190501

19E0012-05RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 10:50

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 18:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-05RE1 G

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-14C-190501

19E0012-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 11:21

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 15:15

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-06 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-14C-190501

19E0012-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 11:21

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 15:15

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*116*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-9A-190501

19E0012-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 11:27

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 15:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-07 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.29**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-9A-190501

19E0012-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 11:27

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 15:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	**0.23**	ug/L	
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**3.26**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*118*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-9A-190501

19E0012-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 11:27
Instrument: FID6 Analyst: LH — Analyzed: 05/02/2019 14:14

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0012-07 B
Preparation Batch: BHE0065 — Sample Size: 10 mL
Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**11100**	ug/L	
Ethane	74-84-0	1	1.23	**247**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*65.3*	*%*	*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-9A-190501

19E0012-07 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 11:27

Instrument: DX500 Analyst: KOTT — Analyzed: 05/04/2019 09:38

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-07 G

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	ND	mg/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-9A-190501

19E0012-07 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/01/2019 11:27

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/09/2019 03:17

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-07 F

Preparation Batch: BHE0100 — Sample Size: 20 mL

Prepared: 03-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		20	10.00	10.00	**33.17**	mg/L	B, D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-9A-190501

19E0012-07RE1 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 11:27

Instrument: FID6 Analyst: LH — Analyzed: 05/08/2019 12:11

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHE0190; Prepared: 08-May-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19E0012-07RE1 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**9420**	ug/L	
Ethane	74-84-0	1	1.23	**186**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*100*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-20C-190501

19E0012-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 15:56

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-08 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.28**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.14**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-20C-190501

19E0012-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:01

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 15:56

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*119*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-10C-190501

19E0012-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:17

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 16:16

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-09 B

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.46**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.53**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-10C-190501

19E0012-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:17

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 16:16

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*116*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-11A-190501

19E0012-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:51

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 16:36

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-10 A

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.29**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.28**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**10.8**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	**0.21**	ug/L	
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-11A-190501

19E0012-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:51

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 16:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*116*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.7*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-15C-190501

19E0012-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:57

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 16:57

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-11 B

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.29**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.57**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.20**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-15C-190501

19E0012-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 12:57

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 16:57

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*118*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.2*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 13:37

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 17:17

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-12 B

Preparation Batch: BHE0041 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.52**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	**0.51**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**2.11**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 13:37

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 17:17

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**4.62**	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	**5.26**	ug/L	
o-Xylene	95-47-6	1	0.20	**5.19**	ug/L	
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	**0.50**	ug/L	
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	**3.08**	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.20	**10.1**	ug/L	
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	**0.23**	ug/L	
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**247**	ug/L	E
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*118*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*103*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 13:37

Instrument: FID6 Analyst: LH — Analyzed: 05/02/2019 14:28

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0012-12 A

Preparation Batch: BHE0065 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**14400**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*78.0*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/01/2019 13:37

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/09/2019 03:57

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-12 F

Preparation Batch: BHE0100 — Sample Size: 20 mL

Prepared: 03-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**179.4**	mg/L	B, D

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 13:37

Instrument: NT2 Analyst: PKC — Analyzed: 05/03/2019 17:25

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-12RE1 C

Preparation Batch: BHE0092 — Sample Size: 0.4 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	12.5	ND	ug/L	U
Vinyl Chloride	75-01-4	1	5.00	ND	ug/L	U
Bromomethane	74-83-9	1	25.0	ND	ug/L	U
Chloroethane	75-00-3	1	5.00	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	5.00	ND	ug/L	U
Acrolein	107-02-8	1	125	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	5.00	ND	ug/L	U
Acetone	67-64-1	1	125	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	5.00	ND	ug/L	U
Bromoethane	74-96-4	1	5.00	ND	ug/L	U
Iodomethane	74-88-4	1	25.0	ND	ug/L	U
Methylene Chloride	75-09-2	1	25.0	ND	ug/L	U
Acrylonitrile	107-13-1	1	25.0	ND	ug/L	U
Carbon Disulfide	75-15-0	1	5.00	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	5.00	ND	ug/L	U
Vinyl Acetate	108-05-4	1	5.00	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	5.00	ND	ug/L	U
2-Butanone	78-93-3	1	125	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	5.00	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	5.00	ND	ug/L	U
Chloroform	67-66-3	1	5.00	ND	ug/L	U
Bromochloromethane	74-97-5	1	5.00	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	5.00	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	5.00	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	5.00	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	5.00	ND	ug/L	U
Benzene	71-43-2	1	5.00	ND	ug/L	U
Trichloroethene	79-01-6	1	5.00	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	5.00	ND	ug/L	U
Bromodichloromethane	75-27-4	1	5.00	ND	ug/L	U
Dibromomethane	74-95-3	1	5.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	125	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	5.00	ND	ug/L	U
Toluene	108-88-3	1	5.00	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	5.00	ND	ug/L	U
2-Hexanone	591-78-6	1	125	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 13:37

Instrument: NT2 Analyst: PKC — Analyzed: 05/03/2019 17:25

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	5.00	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	5.00	ND	ug/L	U
Tetrachloroethene	127-18-4	1	5.00	ND	ug/L	U
Dibromochloromethane	124-48-1	1	5.00	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	5.00	ND	ug/L	U
Chlorobenzene	108-90-7	1	5.00	ND	ug/L	U
Ethylbenzene	100-41-4	1	5.00	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	5.00	ND	ug/L	U
m,p-Xylene	179601-23-1	1	10.0	ND	ug/L	U
o-Xylene	95-47-6	1	5.00	ND	ug/L	U
Styrene	100-42-5	1	5.00	ND	ug/L	U
Bromoform	75-25-2	1	5.00	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	5.00	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	12.5	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	25.0	ND	ug/L	U
n-Propylbenzene	103-65-1	1	5.00	ND	ug/L	U
Bromobenzene	108-86-1	1	5.00	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	5.00	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	5.00	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	5.00	ND	ug/L	U
t-Butylbenzene	98-06-6	1	5.00	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	5.00	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	5.00	**7.33**	ug/L	
s-Butylbenzene	135-98-8	1	5.00	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	5.00	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	5.00	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	5.00	ND	ug/L	U
n-Butylbenzene	104-51-8	1	5.00	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	5.00	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	12.5	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	12.5	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	12.5	ND	ug/L	U
Naphthalene	91-20-3	1	12.5	**783**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	12.5	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*124*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*105*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-22A-190501

19E0012-12RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 13:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 16:39

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-12RE1 G

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**0.510**	mg/L	D

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6A-190501

19E0012-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 14:57
Instrument: NT2 Analyst: PKC — Analyzed: 05/03/2019 17:45

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-13 C
Preparation Batch: BHE0092 — Sample Size: 10 mL
Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6A-190501

19E0012-13 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 14:57

Instrument: NT2 Analyst: PKC — Analyzed: 05/03/2019 17:45

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*122*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6A-190501

19E0012-13 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 14:57

Instrument: FID6 Analyst: LH — Analyzed: 05/02/2019 14:42

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0012-13 A

Preparation Batch: BHE0065 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4220**	ug/L	
Ethane	74-84-0	1	1.23	**1.80**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6A-190501

19E0012-13 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/01/2019 14:57

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/09/2019 05:05

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-13 F

Preparation Batch: BHE0100 — Sample Size: 20 mL

Prepared: 03-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**102.7**	mg/L	B, D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6A-190501

19E0012-13RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 14:57

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 17:30

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-13RE1 G

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	2	0.200	0.200	**1.09**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6B-190501

19E0012-14 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 15:37

Instrument: NT2 Analyst: PKC — Analyzed: 05/03/2019 18:05

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-14 A

Preparation Batch: BHE0092 — Sample Size: 1 mL

Prepared: 03-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	5.00	ND	ug/L	U
Vinyl Chloride	75-01-4	1	2.00	ND	ug/L	U
Bromomethane	74-83-9	1	10.0	ND	ug/L	U
Chloroethane	75-00-3	1	2.00	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	2.00	ND	ug/L	U
Acrolein	107-02-8	1	50.0	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	2.00	ND	ug/L	U
Acetone	67-64-1	1	50.0	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	2.00	ND	ug/L	U
Bromoethane	74-96-4	1	2.00	ND	ug/L	U
Iodomethane	74-88-4	1	10.0	ND	ug/L	U
Methylene Chloride	75-09-2	1	10.0	ND	ug/L	U
Acrylonitrile	107-13-1	1	10.0	ND	ug/L	U
Carbon Disulfide	75-15-0	1	2.00	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	2.00	ND	ug/L	U
Vinyl Acetate	108-05-4	1	2.00	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	2.00	ND	ug/L	U
2-Butanone	78-93-3	1	50.0	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	2.00	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	2.00	ND	ug/L	U
Chloroform	67-66-3	1	2.00	ND	ug/L	U
Bromochloromethane	74-97-5	1	2.00	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	2.00	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	2.00	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	2.00	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	2.00	ND	ug/L	U
Benzene	71-43-2	1	2.00	ND	ug/L	U
Trichloroethene	79-01-6	1	2.00	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	2.00	ND	ug/L	U
Bromodichloromethane	75-27-4	1	2.00	ND	ug/L	U
Dibromomethane	74-95-3	1	2.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	50.0	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	2.00	ND	ug/L	U
Toluene	108-88-3	1	2.00	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	2.00	ND	ug/L	U
2-Hexanone	591-78-6	1	50.0	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6B-190501

19E0012-14 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 15:37

Instrument: NT2 Analyst: PKC — Analyzed: 05/03/2019 18:05

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	2.00	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	2.00	ND	ug/L	U
Tetrachloroethene	127-18-4	1	2.00	ND	ug/L	U
Dibromochloromethane	124-48-1	1	2.00	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	2.00	ND	ug/L	U
Chlorobenzene	108-90-7	1	2.00	ND	ug/L	U
Ethylbenzene	100-41-4	1	2.00	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	2.00	ND	ug/L	U
m,p-Xylene	179601-23-1	1	4.00	ND	ug/L	U
o-Xylene	95-47-6	1	2.00	ND	ug/L	U
Styrene	100-42-5	1	2.00	ND	ug/L	U
Bromoform	75-25-2	1	2.00	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	2.00	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	5.00	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	10.0	ND	ug/L	U
n-Propylbenzene	103-65-1	1	2.00	ND	ug/L	U
Bromobenzene	108-86-1	1	2.00	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	2.00	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	2.00	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	2.00	ND	ug/L	U
t-Butylbenzene	98-06-6	1	2.00	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	2.00	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	2.00	ND	ug/L	U
s-Butylbenzene	135-98-8	1	2.00	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	2.00	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	2.00	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	2.00	ND	ug/L	U
n-Butylbenzene	104-51-8	1	2.00	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	2.00	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	5.00	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	5.00	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	5.00	ND	ug/L	U
Naphthalene	91-20-3	1	5.00	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*124*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*102*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6B-190501

19E0012-14 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 15:37

Instrument: FID6 Analyst: LH — Analyzed: 05/02/2019 14:56

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0012-14 D

Preparation Batch: BHE0065 — Sample Size: 10 mL

Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4510**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*75.6*	*%*	

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6B-190501

19E0012-14 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 05/01/2019 15:37

Instrument: TOC-LCSH Analyst: BF — Analyzed: 05/09/2019 05:41

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-14 F

Preparation Batch: BHE0100 — Sample Size: 20 mL

Prepared: 03-May-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**4692**	mg/L	B, D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

MW-6B-190501

19E0012-14RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 05/01/2019 15:37

Instrument: DX500 Analyst: KOTT — Analyzed: 05/06/2019 17:47

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19E0012-14RE1 G

Preparation Batch: BHE0111 — Sample Size: 5 mL

Prepared: 03-May-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**7.87**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Trip Blanks

19E0012-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 09:57
Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 12:13

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19E0012-15 A
Preparation Batch: BHE0041 — Sample Size: 10 mL
Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Trip Blanks

19E0012-15 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 05/01/2019 09:57

Instrument: NT2 Analyst: LH — Analyzed: 05/02/2019 12:13

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*112*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Trip Blanks

19E0012-15 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 05/01/2019 09:57
Instrument: FID6 Analyst: LH — Analyzed: 05/02/2019 13:47

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19E0012-15 B
Preparation Batch: BHE0065 — Sample Size: 10 mL
Prepared: 02-May-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**1.02**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0041-BLK1)	Prepared: 02-May-2019 Analyzed: 02-May-2019 10:06									
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0041-BLK1)	Prepared: 02-May-2019 Analyzed: 02-May-2019 10:06									
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L							U
Naphthalene	ND	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0041-BLK1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 10:06						
Surrogate: 1,2-Dichloroethane-d4	5.60		ug/L	*5.00*		*112*	*80-129*			
Surrogate: Toluene-d8	4.95		ug/L	*5.00*		*99.1*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.61		ug/L	*5.00*		*92.3*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.07		ug/L	*5.00*		*101*	*80-120*			
LCS (BHE0041-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 08:45						
Chloromethane	8.43	0.50	ug/L	10.0		84.3	60-138			
Vinyl Chloride	9.41	0.20	ug/L	10.0		94.1	66-133			
Bromomethane	11.0	1.00	ug/L	10.0		110	72-131			
Chloroethane	13.1	0.20	ug/L	10.0		131	60-155			Q
Trichlorofluoromethane	10.7	0.20	ug/L	10.0		107	80-129			
Acrolein	62.9	5.00	ug/L	50.0		126	52-144			Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.5	0.20	ug/L	10.0		115	76-129			
Acetone	55.8	5.00	ug/L	50.0		112	58-142			
1,1-Dichloroethene	11.5	0.20	ug/L	10.0		115	69-135			
Bromoethane	10.9	0.20	ug/L	10.0		109	78-128			
Iodomethane	10.5	1.00	ug/L	10.0		105	56-147			
Methylene Chloride	10.9	1.00	ug/L	10.0		109	65-135			
Acrylonitrile	11.2	1.00	ug/L	10.0		112	64-134			
Carbon Disulfide	10.7	0.20	ug/L	10.0		107	78-125			
trans-1,2-Dichloroethene	11.2	0.20	ug/L	10.0		112	78-128			
Vinyl Acetate	9.87	0.20	ug/L	10.0		98.7	55-138			
1,1-Dichloroethane	11.3	0.20	ug/L	10.0		113	76-124			
2-Butanone	53.0	5.00	ug/L	50.0		106	61-140			
2,2-Dichloropropane	9.85	0.20	ug/L	10.0		98.5	78-125			
cis-1,2-Dichloroethene	11.0	0.20	ug/L	10.0		110	80-121			
Chloroform	11.4	0.20	ug/L	10.0		114	80-122			
Bromochloromethane	11.3	0.20	ug/L	10.0		113	80-121			
1,1,1-Trichloroethane	12.1	0.20	ug/L	10.0		121	79-123			Q
1,1-Dichloropropene	11.2	0.20	ug/L	10.0		112	80-120			
Carbon tetrachloride	9.76	0.20	ug/L	10.0		97.6	53-137			
1,2-Dichloroethane	11.2	0.20	ug/L	10.0		112	75-123			
Benzene	11.2	0.20	ug/L	10.0		112	80-120			
Trichloroethene	10.7	0.20	ug/L	10.0		107	80-120			
1,2-Dichloropropane	11.2	0.20	ug/L	10.0		112	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0041-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 08:45						
Bromodichloromethane	12.1	0.20	ug/L	10.0		121	80-121			Q
Dibromomethane	11.0	0.20	ug/L	10.0		110	80-120			
4-Methyl-2-Pentanone	53.0	5.00	ug/L	50.0		106	67-133			
cis-1,3-Dichloropropene	10.5	0.20	ug/L	10.0		105	80-124			
Toluene	11.0	0.20	ug/L	10.0		110	80-120			
trans-1,3-Dichloropropene	9.86	0.20	ug/L	10.0		98.6	71-127			
2-Hexanone	53.5	5.00	ug/L	50.0		107	69-133			
1,1,2-Trichloroethane	11.2	0.20	ug/L	10.0		112	80-121			
1,3-Dichloropropane	11.1	0.20	ug/L	10.0		111	80-120			
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120			
Dibromochloromethane	9.84	0.20	ug/L	10.0		98.4	65-135			
1,2-Dibromoethane	11.7	0.20	ug/L	10.0		117	80-121			
Chlorobenzene	10.9	0.20	ug/L	10.0		109	80-120			
Ethylbenzene	11.1	0.20	ug/L	10.0		111	80-120			
1,1,1,2-Tetrachloroethane	9.93	0.20	ug/L	10.0		99.3	80-120			
m,p-Xylene	22.6	0.40	ug/L	20.0		113	80-121			
o-Xylene	11.1	0.20	ug/L	10.0		111	80-121			
Styrene	11.3	0.20	ug/L	10.0		113	80-124			
Bromoform	8.69	0.20	ug/L	10.0		86.9	51-134			
1,1,2,2-Tetrachloroethane	11.3	0.20	ug/L	10.0		113	77-123			
1,2,3-Trichloropropane	10.9	0.50	ug/L	10.0		109	76-125			
trans-1,4-Dichloro 2-Butene	8.54	1.00	ug/L	10.0		85.4	55-129			
n-Propylbenzene	11.3	0.20	ug/L	10.0		113	78-130			
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120			
Isopropyl Benzene	11.4	0.20	ug/L	10.0		114	80-128			
2-Chlorotoluene	11.0	0.20	ug/L	10.0		110	78-122			
4-Chlorotoluene	11.0	0.20	ug/L	10.0		110	80-121			
t-Butylbenzene	11.1	0.20	ug/L	10.0		111	78-125			
1,3,5-Trimethylbenzene	11.5	0.20	ug/L	10.0		115	80-129			
1,2,4-Trimethylbenzene	11.3	0.20	ug/L	10.0		113	80-127			
s-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-129			
4-Isopropyl Toluene	11.3	0.20	ug/L	10.0		113	79-130			
1,3-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120			
1,4-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
n-Butylbenzene	11.2	0.20	ug/L	10.0		112	74-129			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0041-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 08:45						
1,2-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,2-Dibromo-3-chloropropane	9.33	0.50	ug/L	10.0		93.3	62-123			
1,2,4-Trichlorobenzene	10.5	0.50	ug/L	10.0		105	64-124			
Hexachloro-1,3-Butadiene	10.2	0.50	ug/L	10.0		102	58-123			
Naphthalene	11.9	0.50	ug/L	10.0		119	50-134			
1,2,3-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	49-133			
Surrogate: 1,2-Dichloroethane-d4	5.46		ug/L	*5.00*		*109*	*80-129*			
Surrogate: Toluene-d8	5.15		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.88		ug/L	*5.00*		*97.5*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.8*	*80-120*			
LCS Dup (BHE0041-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 09:25						
Chloromethane	8.43	0.50	ug/L	10.0		84.3	60-138	0.05	30	
Vinyl Chloride	9.61	0.20	ug/L	10.0		96.1	66-133	2.09	30	
Bromomethane	11.1	1.00	ug/L	10.0		111	72-131	0.33	30	
Chloroethane	13.0	0.20	ug/L	10.0		130	60-155	0.50	30	Q
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	80-129	1.78	30	
Acrolein	63.8	5.00	ug/L	50.0		128	52-144	1.36	30	Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.5	0.20	ug/L	10.0		115	76-129	0.46	30	
Acetone	53.3	5.00	ug/L	50.0		107	58-142	4.55	30	
1,1-Dichloroethene	11.5	0.20	ug/L	10.0		115	69-135	0.03	30	
Bromoethane	10.9	0.20	ug/L	10.0		109	78-128	0.15	30	
Iodomethane	10.5	1.00	ug/L	10.0		105	56-147	0.58	30	
Methylene Chloride	11.0	1.00	ug/L	10.0		110	65-135	0.21	30	
Acrylonitrile	11.1	1.00	ug/L	10.0		111	64-134	0.27	30	
Carbon Disulfide	10.8	0.20	ug/L	10.0		108	78-125	0.93	30	
trans-1,2-Dichloroethene	11.3	0.20	ug/L	10.0		113	78-128	0.27	30	
Vinyl Acetate	10.5	0.20	ug/L	10.0		105	55-138	6.14	30	
1,1-Dichloroethane	11.3	0.20	ug/L	10.0		113	76-124	0.04	30	
2-Butanone	53.0	5.00	ug/L	50.0		106	61-140	0.03	30	
2,2-Dichloropropane	10.3	0.20	ug/L	10.0		103	78-125	4.85	30	
cis-1,2-Dichloroethene	11.0	0.20	ug/L	10.0		110	80-121	0.42	30	
Chloroform	11.2	0.20	ug/L	10.0		112	80-122	0.95	30	
Bromochloromethane	11.3	0.20	ug/L	10.0		113	80-121	0.36	30	
1,1,1-Trichloroethane	12.2	0.20	ug/L	10.0		122	79-123	0.44	30	Q

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0041-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 09:25						
1,1-Dichloropropene	11.0	0.20	ug/L	10.0		110	80-120	1.68	30	
Carbon tetrachloride	9.62	0.20	ug/L	10.0		96.2	53-137	1.45	30	
1,2-Dichloroethane	11.0	0.20	ug/L	10.0		110	75-123	1.74	30	
Benzene	11.1	0.20	ug/L	10.0		111	80-120	1.39	30	
Trichloroethene	10.5	0.20	ug/L	10.0		105	80-120	1.92	30	
1,2-Dichloropropane	11.2	0.20	ug/L	10.0		112	80-120	0.05	30	
Bromodichloromethane	11.9	0.20	ug/L	10.0		119	80-121	1.47	30	Q
Dibromomethane	11.0	0.20	ug/L	10.0		110	80-120	0.42	30	
4-Methyl-2-Pentanone	53.1	5.00	ug/L	50.0		106	67-133	0.15	30	
cis-1,3-Dichloropropene	10.4	0.20	ug/L	10.0		104	80-124	0.70	30	
Toluene	10.9	0.20	ug/L	10.0		109	80-120	0.76	30	
trans-1,3-Dichloropropene	9.98	0.20	ug/L	10.0		99.8	71-127	1.26	30	
2-Hexanone	53.5	5.00	ug/L	50.0		107	69-133	0.12	30	
1,1,2-Trichloroethane	11.1	0.20	ug/L	10.0		111	80-121	0.99	30	
1,3-Dichloropropane	10.9	0.20	ug/L	10.0		109	80-120	1.69	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	1.53	30	
Dibromochloromethane	9.65	0.20	ug/L	10.0		96.5	65-135	1.97	30	
1,2-Dibromoethane	11.6	0.20	ug/L	10.0		116	80-121	0.96	30	
Chlorobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.84	30	
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120	3.34	30	
1,1,1,2-Tetrachloroethane	9.74	0.20	ug/L	10.0		97.4	80-120	1.93	30	
m,p-Xylene	22.2	0.40	ug/L	20.0		111	80-121	1.77	30	
o-Xylene	11.0	0.20	ug/L	10.0		110	80-121	1.69	30	
Styrene	11.2	0.20	ug/L	10.0		112	80-124	1.20	30	
Bromoform	8.64	0.20	ug/L	10.0		86.4	51-134	0.66	30	
1,1,2,2-Tetrachloroethane	11.2	0.20	ug/L	10.0		112	77-123	0.20	30	
1,2,3-Trichloropropane	10.9	0.50	ug/L	10.0		109	76-125	0.19	30	
trans-1,4-Dichloro 2-Butene	8.10	1.00	ug/L	10.0		81.0	55-129	5.29	30	
n-Propylbenzene	11.3	0.20	ug/L	10.0		113	78-130	0.25	30	
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120	0.12	30	
Isopropyl Benzene	11.3	0.20	ug/L	10.0		113	80-128	1.04	30	
2-Chlorotoluene	11.0	0.20	ug/L	10.0		110	78-122	0.03	30	
4-Chlorotoluene	10.9	0.20	ug/L	10.0		109	80-121	0.29	30	
t-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-125	0.35	30	
1,3,5-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-129	0.69	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0041 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0041-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 09:25						
1,2,4-Trimethylbenzene	11.2	0.20	ug/L	10.0		112	80-127	0.81	30	
s-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-129	0.04	30	
4-Isopropyl Toluene	11.3	0.20	ug/L	10.0		113	79-130	0.78	30	
1,3-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120	0.17	30	
1,4-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	0.24	30	
n-Butylbenzene	11.1	0.20	ug/L	10.0		111	74-129	0.12	30	
1,2-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	1.45	30	
1,2-Dibromo-3-chloropropane	9.06	0.50	ug/L	10.0		90.6	62-123	2.94	30	
1,2,4-Trichlorobenzene	10.6	0.50	ug/L	10.0		106	64-124	0.16	30	
Hexachloro-1,3-Butadiene	10.3	0.50	ug/L	10.0		103	58-123	1.68	30	
Naphthalene	11.6	0.50	ug/L	10.0		116	50-134	2.50	30	
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133	1.03	30	
Surrogate: 1,2-Dichloroethane-d4	5.32		ug/L	*5.00*		*106*	*80-129*			
Surrogate: Toluene-d8	5.13		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.87		ug/L	*5.00*		*97.3*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.05		ug/L	*5.00*		*101*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0092-BLK1)			Prepared: 03-May-2019 Analyzed: 03-May-2019 11:09							
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0092-BLK1)	Prepared: 03-May-2019 Analyzed: 03-May-2019 11:09									
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L							U
Naphthalene	ND	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0092-BLK1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 11:09						
Surrogate: 1,2-Dichloroethane-d4	5.56		ug/L	*5.00*		*111*	*80-129*			
Surrogate: Toluene-d8	5.03		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.64		ug/L	*5.00*		*92.9*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.97		ug/L	*5.00*		*99.4*	*80-120*			
LCS (BHE0092-BS1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 10:28						
Chloromethane	9.91	0.50	ug/L	10.0		99.1	60-138			
Vinyl Chloride	10.4	0.20	ug/L	10.0		104	66-133			
Bromomethane	11.6	1.00	ug/L	10.0		116	72-131			
Chloroethane	13.7	0.20	ug/L	10.0		137	60-155			Q
Trichlorofluoromethane	10.6	0.20	ug/L	10.0		106	80-129			
Acrolein	57.3	5.00	ug/L	50.0		115	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	12.0	0.20	ug/L	10.0		120	76-129			
Acetone	53.7	5.00	ug/L	50.0		107	58-142			
1,1-Dichloroethene	11.7	0.20	ug/L	10.0		117	69-135			
Bromoethane	11.2	0.20	ug/L	10.0		112	78-128			
Iodomethane	10.8	1.00	ug/L	10.0		108	56-147			
Methylene Chloride	10.8	1.00	ug/L	10.0		108	65-135			
Acrylonitrile	10.9	1.00	ug/L	10.0		109	64-134			
Carbon Disulfide	11.4	0.20	ug/L	10.0		114	78-125			
trans-1,2-Dichloroethene	11.0	0.20	ug/L	10.0		110	78-128			
Vinyl Acetate	9.49	0.20	ug/L	10.0		94.9	55-138			
1,1-Dichloroethane	10.9	0.20	ug/L	10.0		109	76-124			
2-Butanone	50.0	5.00	ug/L	50.0		99.9	61-140			
2,2-Dichloropropane	9.68	0.20	ug/L	10.0		96.8	78-125			
cis-1,2-Dichloroethene	10.6	0.20	ug/L	10.0		106	80-121			
Chloroform	10.9	0.20	ug/L	10.0		109	80-122			
Bromochloromethane	10.9	0.20	ug/L	10.0		109	80-121			
1,1,1-Trichloroethane	11.7	0.20	ug/L	10.0		117	79-123			
1,1-Dichloropropene	10.9	0.20	ug/L	10.0		109	80-120			
Carbon tetrachloride	9.50	0.20	ug/L	10.0		95.0	53-137			
1,2-Dichloroethane	10.7	0.20	ug/L	10.0		107	75-123			
Benzene	10.8	0.20	ug/L	10.0		108	80-120			
Trichloroethene	10.4	0.20	ug/L	10.0		104	80-120			
1,2-Dichloropropane	11.0	0.20	ug/L	10.0		110	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0092-BS1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 10:28						
Bromodichloromethane	12.0	0.20	ug/L	10.0		120	80-121			
Dibromomethane	10.9	0.20	ug/L	10.0		109	80-120			
4-Methyl-2-Pentanone	51.1	5.00	ug/L	50.0		102	67-133			
cis-1,3-Dichloropropene	10.2	0.20	ug/L	10.0		102	80-124			
Toluene	10.7	0.20	ug/L	10.0		107	80-120			
trans-1,3-Dichloropropene	9.71	0.20	ug/L	10.0		97.1	71-127			
2-Hexanone	50.8	5.00	ug/L	50.0		102	69-133			
1,1,2-Trichloroethane	11.1	0.20	ug/L	10.0		111	80-121			
1,3-Dichloropropane	10.8	0.20	ug/L	10.0		108	80-120			
Tetrachloroethene	10.2	0.20	ug/L	10.0		102	80-120			
Dibromochloromethane	9.75	0.20	ug/L	10.0		97.5	65-135			
1,2-Dibromoethane	11.3	0.20	ug/L	10.0		113	80-121			
Chlorobenzene	10.7	0.20	ug/L	10.0		107	80-120			
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120			
1,1,1,2-Tetrachloroethane	9.75	0.20	ug/L	10.0		97.5	80-120			
m,p-Xylene	22.3	0.40	ug/L	20.0		112	80-121			
o-Xylene	11.0	0.20	ug/L	10.0		110	80-121			
Styrene	11.2	0.20	ug/L	10.0		112	80-124			
Bromoform	8.68	0.20	ug/L	10.0		86.8	51-134			
1,1,2,2-Tetrachloroethane	10.9	0.20	ug/L	10.0		109	77-123			
1,2,3-Trichloropropane	10.3	0.50	ug/L	10.0		103	76-125			
trans-1,4-Dichloro 2-Butene	8.37	1.00	ug/L	10.0		83.7	55-129			
n-Propylbenzene	11.0	0.20	ug/L	10.0		110	78-130			
Bromobenzene	10.5	0.20	ug/L	10.0		105	80-120			
Isopropyl Benzene	11.0	0.20	ug/L	10.0		110	80-128			
2-Chlorotoluene	10.6	0.20	ug/L	10.0		106	78-122			
4-Chlorotoluene	10.7	0.20	ug/L	10.0		107	80-121			
t-Butylbenzene	10.8	0.20	ug/L	10.0		108	78-125			
1,3,5-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-129			
1,2,4-Trimethylbenzene	11.0	0.20	ug/L	10.0		110	80-127			
s-Butylbenzene	10.9	0.20	ug/L	10.0		109	78-129			
4-Isopropyl Toluene	11.1	0.20	ug/L	10.0		111	79-130			
1,3-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
n-Butylbenzene	11.1	0.20	ug/L	10.0		111	74-129			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHE0092-BS1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 10:28						
1,2-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
1,2-Dibromo-3-chloropropane	8.95	0.50	ug/L	10.0		89.5	62-123			
1,2,4-Trichlorobenzene	10.1	0.50	ug/L	10.0		101	64-124			
Hexachloro-1,3-Butadiene	10.1	0.50	ug/L	10.0		101	58-123			
Naphthalene	11.1	0.50	ug/L	10.0		111	50-134			
1,2,3-Trichlorobenzene	10.2	0.50	ug/L	10.0		102	49-133			
Surrogate: 1,2-Dichloroethane-d4	5.35		ug/L	*5.00*		*107*	*80-129*			
Surrogate: Toluene-d8	5.16		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.95		ug/L	*5.00*		*99.1*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.99		ug/L	*5.00*		*99.8*	*80-120*			
LCS Dup (BHE0092-BSD1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 10:49						
Chloromethane	9.36	0.50	ug/L	10.0		93.6	60-138	5.69	30	
Vinyl Chloride	10.1	0.20	ug/L	10.0		101	66-133	2.25	30	
Bromomethane	11.4	1.00	ug/L	10.0		114	72-131	1.31	30	
Chloroethane	13.3	0.20	ug/L	10.0		133	60-155	2.52	30	Q
Trichlorofluoromethane	10.5	0.20	ug/L	10.0		105	80-129	1.38	30	
Acrolein	56.0	5.00	ug/L	50.0		112	52-144	2.42	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.9	0.20	ug/L	10.0		119	76-129	0.61	30	
Acetone	53.3	5.00	ug/L	50.0		107	58-142	0.75	30	
1,1-Dichloroethene	11.5	0.20	ug/L	10.0		115	69-135	2.21	30	
Bromoethane	10.9	0.20	ug/L	10.0		109	78-128	2.68	30	
Iodomethane	10.4	1.00	ug/L	10.0		104	56-147	3.54	30	
Methylene Chloride	10.8	1.00	ug/L	10.0		108	65-135	0.15	30	
Acrylonitrile	11.0	1.00	ug/L	10.0		110	64-134	0.80	30	
Carbon Disulfide	11.2	0.20	ug/L	10.0		112	78-125	2.24	30	
trans-1,2-Dichloroethene	11.0	0.20	ug/L	10.0		110	78-128	0.03	30	
Vinyl Acetate	10.0	0.20	ug/L	10.0		100	55-138	5.47	30	
1,1-Dichloroethane	11.0	0.20	ug/L	10.0		110	76-124	0.65	30	
2-Butanone	50.0	5.00	ug/L	50.0		100	61-140	0.18	30	
2,2-Dichloropropane	10.3	0.20	ug/L	10.0		103	78-125	6.35	30	
cis-1,2-Dichloroethene	10.6	0.20	ug/L	10.0		106	80-121	0.48	30	
Chloroform	10.8	0.20	ug/L	10.0		108	80-122	0.63	30	
Bromochloromethane	10.8	0.20	ug/L	10.0		108	80-121	0.65	30	
1,1,1-Trichloroethane	12.1	0.20	ug/L	10.0		121	79-123	3.33	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0092-BSD1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 10:49						
1,1-Dichloropropene	11.0	0.20	ug/L	10.0		110	80-120	0.20	30	
Carbon tetrachloride	9.99	0.20	ug/L	10.0		99.9	53-137	5.03	30	
1,2-Dichloroethane	11.0	0.20	ug/L	10.0		110	75-123	2.70	30	
Benzene	11.1	0.20	ug/L	10.0		111	80-120	2.42	30	
Trichloroethene	10.7	0.20	ug/L	10.0		107	80-120	2.24	30	
1,2-Dichloropropane	11.1	0.20	ug/L	10.0		111	80-120	1.01	30	
Bromodichloromethane	12.4	0.20	ug/L	10.0		124	80-121	3.46	30	*
Dibromomethane	11.1	0.20	ug/L	10.0		111	80-120	1.30	30	
4-Methyl-2-Pentanone	53.4	5.00	ug/L	50.0		107	67-133	4.37	30	
cis-1,3-Dichloropropene	10.7	0.20	ug/L	10.0		107	80-124	4.85	30	
Toluene	10.9	0.20	ug/L	10.0		109	80-120	2.26	30	
trans-1,3-Dichloropropene	10.3	0.20	ug/L	10.0		103	71-127	5.84	30	
2-Hexanone	52.9	5.00	ug/L	50.0		106	69-133	4.18	30	
1,1,2-Trichloroethane	11.3	0.20	ug/L	10.0		113	80-121	2.17	30	
1,3-Dichloropropane	11.1	0.20	ug/L	10.0		111	80-120	3.21	30	
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120	1.63	30	
Dibromochloromethane	10.1	0.20	ug/L	10.0		101	65-135	4.06	30	
1,2-Dibromoethane	11.7	0.20	ug/L	10.0		117	80-121	3.25	30	
Chlorobenzene	10.9	0.20	ug/L	10.0		109	80-120	2.52	30	
Ethylbenzene	11.0	0.20	ug/L	10.0		110	80-120	2.10	30	
1,1,1,2-Tetrachloroethane	10.3	0.20	ug/L	10.0		103	80-120	5.09	30	
m,p-Xylene	22.7	0.40	ug/L	20.0		114	80-121	1.90	30	
o-Xylene	11.2	0.20	ug/L	10.0		112	80-121	2.40	30	
Styrene	11.4	0.20	ug/L	10.0		114	80-124	2.12	30	
Bromoform	9.27	0.20	ug/L	10.0		92.7	51-134	6.50	30	
1,1,2,2-Tetrachloroethane	11.1	0.20	ug/L	10.0		111	77-123	2.06	30	
1,2,3-Trichloropropane	10.8	0.50	ug/L	10.0		108	76-125	4.41	30	
trans-1,4-Dichloro 2-Butene	9.20	1.00	ug/L	10.0		92.0	55-129	9.47	30	
n-Propylbenzene	11.4	0.20	ug/L	10.0		114	78-130	3.78	30	
Bromobenzene	10.8	0.20	ug/L	10.0		108	80-120	2.70	30	
Isopropyl Benzene	11.4	0.20	ug/L	10.0		114	80-128	3.60	30	
2-Chlorotoluene	10.9	0.20	ug/L	10.0		109	78-122	2.93	30	
4-Chlorotoluene	11.0	0.20	ug/L	10.0		110	80-121	2.49	30	
t-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-125	3.62	30	
1,3,5-Trimethylbenzene	11.5	0.20	ug/L	10.0		115	80-129	3.46	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Volatile Organic Compounds - Quality Control

Batch BHE0092 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHE0092-BSD1)				Prepared: 03-May-2019 Analyzed: 03-May-2019 10:49						
1,2,4-Trimethylbenzene	11.3	0.20	ug/L	10.0		113	80-127	2.46	30	
s-Butylbenzene	11.3	0.20	ug/L	10.0		113	78-129	3.31	30	
4-Isopropyl Toluene	11.4	0.20	ug/L	10.0		114	79-130	2.55	30	
1,3-Dichlorobenzene	10.8	0.20	ug/L	10.0		108	80-120	2.09	30	
1,4-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120	1.72	30	
n-Butylbenzene	11.3	0.20	ug/L	10.0		113	74-129	1.19	30	
1,2-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120	1.43	30	
1,2-Dibromo-3-chloropropane	9.24	0.50	ug/L	10.0		92.4	62-123	3.21	30	
1,2,4-Trichlorobenzene	10.6	0.50	ug/L	10.0		106	64-124	5.05	30	
Hexachloro-1,3-Butadiene	10.7	0.50	ug/L	10.0		107	58-123	5.84	30	
Naphthalene	11.7	0.50	ug/L	10.0		117	50-134	5.01	30	
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133	5.67	30	
Surrogate: 1,2-Dichloroethane-d4	5.25		ug/L	*5.00*		*105*	*80-129*			
Surrogate: Toluene-d8	5.21		ug/L	*5.00*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.91		ug/L	*5.00*		*98.2*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.97		ug/L	*5.00*		*99.4*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Dissolved Gases - Quality Control

Batch BHE0065 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0065-BLK1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 11:20						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Surrogate: Propane	1470		ug/L	*1800*		*81.6*	*72-122*			
LCS (BHE0065-BS1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 11:07						
Methane	692	0.65	ug/L	656		106	80-120			
Ethane	1300	1.23	ug/L	1230		105	80-120			
Ethene	1230	1.14	ug/L	1150		107	80-120			
Surrogate: Propane	1470		ug/L	*1800*		*81.5*	*62-122*			
LCS Dup (BHE0065-BSD1)				Prepared: 02-May-2019 Analyzed: 02-May-2019 13:10						
Methane	678	0.65	ug/L	656		103	80-120	2.15	30	
Ethane	1290	1.23	ug/L	1230		105	80-120	0.52	30	
Ethene	1240	1.14	ug/L	1150		108	80-120	0.31	30	
Surrogate: Propane	1440		ug/L	*1800*		*79.9*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Dissolved Gases - Quality Control

Batch BHE0190 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0190-BLK1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:45						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Surrogate: Propane	1850		ug/L	*1800*		*103*	*72-122*			
LCS (BHE0190-BS1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:17						
Methane	700	0.65	ug/L	656		107	80-120			
Ethane	1320	1.23	ug/L	1230		107	80-120			
Ethene	1250	1.14	ug/L	1150		109	80-120			
Surrogate: Propane	1890		ug/L	*1800*		*105*	*62-122*			
LCS Dup (BHE0190-BSD1)				Prepared: 08-May-2019 Analyzed: 08-May-2019 07:31						
Methane	701	0.65	ug/L	656		107	80-120	0.11	30	
Ethane	1320	1.23	ug/L	1230		107	80-120	0.23	30	
Ethene	1250	1.14	ug/L	1150		109	80-120	0.28	30	
Surrogate: Propane	1850		ug/L	*1800*		*103*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Wet Chemistry - Quality Control

Batch BHE0100 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0100-BLK1)				Prepared: 03-May-2019 Analyzed: 08-May-2019 20:15							
Total Organic Carbon	0.69	0.50	0.50	mg/L							
LCS (BHE0100-BS1)				Prepared: 03-May-2019 Analyzed: 08-May-2019 20:34							
Total Organic Carbon	19.82	0.50	0.50	mg/L	20.00		99.1	90-110			B

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Wet Chemistry - Quality Control

Batch BHE0111 - No Prep Wet Chem

Instrument: DX500 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHE0111-BLK3)				Prepared: 03-May-2019 Analyzed: 06-May-2019 18:37							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHE0111-BS3)				Prepared: 03-May-2019 Analyzed: 06-May-2019 18:54							
Sulfate	1.65	0.100	0.100	mg/L	1.50		110	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	14-May-2019 14:56

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
M	Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

19 November 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19K0043	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19K0043

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 11/4/19
Page 1 of 1

Turnaround Time:
Standard x
Accelerated _____

Project Name DC Regional GW
Project No. 025217.099.039
Project Location/Event ~~DC~~ JWMA-20 / November 2019
Sampler's Name Devan Brandt / Jered Newcomb
Project Contact Chris Kimmel / Jen Parsons
Send Results To Chris Kimmel / Jen Parsons

Special Handling Requirements: _____
Shipment Method: Drop off
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260C)	MEE (RSKSOP-175 Mod)	TOC (SM5310C)	Sulfate (E300.0)	Observations/Comments
MW-20C-191104	11/4/19	851	AQ	3	X				
MW-11A-191104	11/4/19	931	AQ	3	X				
MW-9A-191104	11/4/19	1011	AQ	7	X	X	X	X	
BOC-DUP1-191104	11/4/19	830	AQ	7	X	X	X	X	
MW-15C-191104	11/4/19	1126	AQ	3	X				
MW-14C-191104	11/4/19	1201	AQ	3	X				
MW-13C-191104	11/4/19	1236	AQ	3	X				
MW-13A-191104	11/4/19	1306	AQ	3	X				
MW-16A-191104	11/4/19	1356	AQ	3	X				
MW-16C-191104	11/4/19	1426	AQ	3	X				
MW-22A-191104	11/4/19	1506	AQ	7	X	X	X	X	
Trip Blanks	—	—	AQ	4	X	X			

Allow water samples to settle, collect aliquot from clear portion ☐
NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐
Dissolved metal samples were field filtered

Other * Methane, Ethane, Ethene

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Jered Newcomb	Printed Name Jacob Hafle	Printed Name	Printed Name
Company LAI	Company ASI	Company	Company
Date 11/4/19 Time 1535	Date 11/04/19 Time 1535	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-20C-191104	19K0043-01	Water	04-Nov-2019 08:51	04-Nov-2019 15:35
MW-11A-191104	19K0043-02	Water	04-Nov-2019 09:31	04-Nov-2019 15:35
MW-9A-191104	19K0043-03	Water	04-Nov-2019 10:11	04-Nov-2019 15:35
BDC-DUP1-191104	19K0043-04	Water	04-Nov-2019 08:30	04-Nov-2019 15:35
MW-15C-191104	19K0043-05	Water	04-Nov-2019 11:26	04-Nov-2019 15:35
MW-14C-191104	19K0043-06	Water	04-Nov-2019 12:01	04-Nov-2019 15:35
MW-13C-191104	19K0043-07	Water	04-Nov-2019 12:36	04-Nov-2019 15:35
MW-13A-191104	19K0043-08	Water	04-Nov-2019 13:06	04-Nov-2019 15:35
MW-16A-191104	19K0043-09	Water	04-Nov-2019 13:56	04-Nov-2019 15:35
MW-16C-191104	19K0043-10	Water	04-Nov-2019 14:26	04-Nov-2019 15:35
MW-22A-191104	19K0043-11	Water	04-Nov-2019 15:06	04-Nov-2019 15:35
Trip Blanks	19K0043-12	Water	04-Nov-2019 08:30	04-Nov-2019 15:35

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4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control high in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifer.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits with the exception of surrogates flagged on the associated forms.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Volatile Gases - MEE by RSK175

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits with the exception of surrogates flagged on the associated forms.

The method blank(s) were clean at the reporting limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau / Bucky

Project Name: DC Regional Gh

COC No(s): NA

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

Assigned ARI Job No: 19K0043

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1535 3.3C

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 5306

Cooler Accepted by: JJ Date: 11/04/19 Time: 1535

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA	10/29/19	

Were the sample(s) split by ARI? NA YES Date/Time: Equipment: Split by:

Samples Logged by: Date: 11/4/19 Time: 1557 Labels checked by:

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

WORK ORDER

19K0043

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH	
19K0043-01 A	VOA Vial, Clear, 40 mL		
19K0043-01 B	VOA Vial, Clear, 40 mL		
19K0043-01 C	VOA Vial, Clear, 40 mL		
19K0043-02 A	VOA Vial, Clear, 40 mL		
19K0043-02 B	VOA Vial, Clear, 40 mL		
19K0043-02 C	VOA Vial, Clear, 40 mL		
19K0043-03 A	VOA Vial, Clear, 40 mL		
19K0043-03 B	VOA Vial, Clear, 40 mL		
19K0043-03 C	VOA Vial, Clear, 40 mL		
19K0043-03 D	VOA Vial, Clear, 40 mL		
19K0043-03 E	VOA Vial, Clear, 40 mL		
19K0043-03 F	Small OJ, 500 mL		
19K0043-03 G	Glass NM, Amber, 250 mL, 9N H2SO4	LL	pass
19K0043-04 A	VOA Vial, Clear, 40 mL		
19K0043-04 B	VOA Vial, Clear, 40 mL		
19K0043-04 C	VOA Vial, Clear, 40 mL		
19K0043-04 D	VOA Vial, Clear, 40 mL		
19K0043-04 E	VOA Vial, Clear, 40 mL		
19K0043-04 F	Small OJ, 500 mL		
19K0043-04 G	Glass NM, Amber, 250 mL, 9N H2SO4	LL	pass
19K0043-05 A	VOA Vial, Clear, 40 mL		
19K0043-05 B	VOA Vial, Clear, 40 mL		
19K0043-05 C	VOA Vial, Clear, 40 mL		
19K0043-06 A	VOA Vial, Clear, 40 mL		
19K0043-06 B	VOA Vial, Clear, 40 mL		
19K0043-06 C	VOA Vial, Clear, 40 mL		
19K0043-07 A	VOA Vial, Clear, 40 mL		
19K0043-07 B	VOA Vial, Clear, 40 mL		
19K0043-07 C	VOA Vial, Clear, 40 mL		
19K0043-08 A	VOA Vial, Clear, 40 mL		
19K0043-08 B	VOA Vial, Clear, 40 mL		
19K0043-08 C	VOA Vial, Clear, 40 mL		
19K0043-09 A	VOA Vial, Clear, 40 mL		
19K0043-09 B	VOA Vial, Clear, 40 mL		
19K0043-09 C	VOA Vial, Clear, 40 mL		

Reviewed By

Date

WORK ORDER

19K0043

Client: The Boeing Company [Developmental Center]	**Project Manager: Kelly Bottem**
Project: Boeing Regional GW Developmental Center	**Project Number: Boeing Regional GW Developmental Center**

19K0043-10 A	VOA Vial, Clear, 40 mL		
19K0043-10 B	VOA Vial, Clear, 40 mL		
19K0043-10 C	VOA Vial, Clear, 40 mL		
19K0043-11 A	VOA Vial, Clear, 40 mL		
19K0043-11 B	VOA Vial, Clear, 40 mL		
19K0043-11 C	VOA Vial, Clear, 40 mL		
19K0043-11 D	VOA Vial, Clear, 40 mL		
19K0043-11 E	VOA Vial, Clear, 40 mL		
19K0043-11 F	Small OJ, 500 mL		
19K0043-11 G	Glass NM, Amber, 250 mL, 9N H2SO4	LL	pass
19K0043-12 A	VOA Vial, Clear, 40 mL, HCL		
19K0043-12 B	VOA Vial, Clear, 40 mL, HCL		
19K0043-12 C	VOA Vial, Clear, 40 mL, HCL		
19K0043-12 D	VOA Vial, Clear, 40 mL, HCL		

Preservation Confirmed By

11/4/19
Date

Reviewed By

Date

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-20C-191104

19K0043-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 08:51

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 18:01

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-01 B

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.42**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**1.15**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.22**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-20C-191104

19K0043-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 08:51

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 18:01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*126*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*102*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-11A-191104

19K0043-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 09:31

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 13:49

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-02 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.42**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.43**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**12.5**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-11A-191104

19K0043-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 09:31

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 13:49

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*120*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*100*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-9A-191104

19K0043-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 10:11

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 14:09

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-03 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.46**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-9A-191104

19K0043-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 10:11

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 14:09

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	**0.26**	ug/L	
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**0.86**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-9A-191104

19K0043-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/04/2019 10:11

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 13:51

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHK0137; Prepared: 07-Nov-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19K0043-03 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4120**	ug/L	
Ethane	74-84-0	1	1.23	**123**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*104*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-9A-191104

19K0043-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/04/2019 10:11

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/14/2019 17:05

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0043-03 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**1.11**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-9A-191104

19K0043-03 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/04/2019 10:11

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 11:23

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0043-03 G

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**21.06**	mg/L	D

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

BDC-DUP1-191104

19K0043-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 08:30

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 14:29

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-04 B

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.47**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

BDC-DUP1-191104

19K0043-04 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 08:30

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 14:29

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	**0.27**	ug/L	
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**0.88**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*124*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*100*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

BDC-DUP1-191104

19K0043-04 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/04/2019 08:30

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 14:20

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0043-04 A

Preparation Batch: BHK0137 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**4530**	ug/L	
Ethane	74-84-0	1	1.23	**159**	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*98.4*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

BDC-DUP1-191104

19K0043-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/04/2019 08:30

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/14/2019 17:25

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0043-04 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.842**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

BDC-DUP1-191104

19K0043-04 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/04/2019 08:30

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 11:49

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0043-04 G

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		10	5.00	5.00	**21.92**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-15C-191104

19K0043-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 11:26

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 12:07

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-05 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.24**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.39**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.31**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-15C-191104

19K0043-05 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 11:26

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 12:07

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*117*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*98.9*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-14C-191104

19K0043-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 12:01

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 14:50

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-06 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-14C-191104

19K0043-06 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 12:01

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 14:50

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.1*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*104*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-13C-191104

19K0043-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 12:36

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 15:10

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-07 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	**0.25**	ug/L	
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-13C-191104

19K0043-07 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 12:36

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 15:10

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*126*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.5*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-13A-191104

19K0043-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 13:06

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 15:30

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-08 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	**0.35**	ug/L	
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-13A-191104

19K0043-08 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 13:06

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 15:30

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	**1.19**	ug/L	
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*126*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-16A-191104

19K0043-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 13:56

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 12:27

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-09 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.22**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	**6.33**	ug/L	Q
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.32**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**0.36**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-16A-191104

19K0043-09 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 13:56

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 12:27

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*123*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-16C-191104

19K0043-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 14:26

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 15:50

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-10 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.48**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.58**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-16C-191104

19K0043-10 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 14:26

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 15:50

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*125*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*94.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 15:06

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 12:48

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-11 A

Preparation Batch: BHK0076 — Sample Size: 10 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.21**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.49**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	**0.49**	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	**1.68**	ug/L	
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 15:06

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 12:48

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	**3.69**	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	**4.04**	ug/L	
o-Xylene	95-47-6	1	0.20	**4.44**	ug/L	
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	**0.42**	ug/L	
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	**2.35**	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.20	**9.02**	ug/L	
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	**0.21**	ug/L	
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	**235**	ug/L	E
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*120*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*99.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*103*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*99.1*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/04/2019 15:06

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 14:34

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0043-11 D

Preparation Batch: BHK0137 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**9460**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*69.2*	*%*	*

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/04/2019 15:06

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/14/2019 17:46

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0043-11 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	**0.344**	mg/L	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/04/2019 15:06

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/07/2019 12:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0043-11 G

Preparation Batch: BHK0122 — Sample Size: 20 mL

Prepared: 06-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**172.8**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 15:06

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 18:24

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-11RE1 B

Preparation Batch: BHK0076 — Sample Size: 0.4 mL

Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	12.5	ND	ug/L	U
Vinyl Chloride	75-01-4	1	5.00	ND	ug/L	U
Bromomethane	74-83-9	1	25.0	ND	ug/L	U
Chloroethane	75-00-3	1	5.00	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	5.00	ND	ug/L	U
Acrolein	107-02-8	1	125	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	5.00	ND	ug/L	U
Acetone	67-64-1	1	125	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	5.00	ND	ug/L	U
Bromoethane	74-96-4	1	5.00	ND	ug/L	U
Iodomethane	74-88-4	1	25.0	ND	ug/L	U
Methylene Chloride	75-09-2	1	25.0	**25.3**	ug/L	
Acrylonitrile	107-13-1	1	25.0	ND	ug/L	U
Carbon Disulfide	75-15-0	1	5.00	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	5.00	ND	ug/L	U
Vinyl Acetate	108-05-4	1	5.00	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	5.00	ND	ug/L	U
2-Butanone	78-93-3	1	125	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	5.00	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	5.00	ND	ug/L	U
Chloroform	67-66-3	1	5.00	ND	ug/L	U
Bromochloromethane	74-97-5	1	5.00	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	5.00	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	5.00	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	5.00	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	5.00	ND	ug/L	U
Benzene	71-43-2	1	5.00	ND	ug/L	U
Trichloroethene	79-01-6	1	5.00	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	5.00	ND	ug/L	U
Bromodichloromethane	75-27-4	1	5.00	ND	ug/L	U
Dibromomethane	74-95-3	1	5.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	125	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	5.00	ND	ug/L	U
Toluene	108-88-3	1	5.00	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	5.00	ND	ug/L	U
2-Hexanone	591-78-6	1	125	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 15:06

Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 18:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	5.00	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	5.00	ND	ug/L	U
Tetrachloroethene	127-18-4	1	5.00	ND	ug/L	U
Dibromochloromethane	124-48-1	1	5.00	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	5.00	ND	ug/L	U
Chlorobenzene	108-90-7	1	5.00	ND	ug/L	U
Ethylbenzene	100-41-4	1	5.00	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	5.00	ND	ug/L	U
m,p-Xylene	179601-23-1	1	10.0	ND	ug/L	U
o-Xylene	95-47-6	1	5.00	ND	ug/L	U
Styrene	100-42-5	1	5.00	ND	ug/L	U
Bromoform	75-25-2	1	5.00	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	5.00	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	12.5	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	25.0	ND	ug/L	U
n-Propylbenzene	103-65-1	1	5.00	ND	ug/L	U
Bromobenzene	108-86-1	1	5.00	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	5.00	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	5.00	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	5.00	ND	ug/L	U
t-Butylbenzene	98-06-6	1	5.00	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	5.00	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	5.00	**7.83**	ug/L	
s-Butylbenzene	135-98-8	1	5.00	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	5.00	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	5.00	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	5.00	ND	ug/L	U
n-Butylbenzene	104-51-8	1	5.00	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	5.00	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	12.5	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	12.5	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	12.5	ND	ug/L	U
Naphthalene	91-20-3	1	12.5	**738**	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	12.5	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*133*	*%*	*
Surrogate: Toluene-d8			*80-120 %*	*101*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*93.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

MW-22A-191104

19K0043-11RE1 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/04/2019 15:06

Instrument: FID6 Analyst: LH — Analyzed: 11/06/2019 16:38

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0043-11RE1 C

Preparation Batch: BHK0358 — Sample Size: 10 mL

Prepared: 06-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**10000**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*88.6*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Trip Blanks

19K0043-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 08:30
Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 11:47

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0043-12 A
Preparation Batch: BHK0076 — Sample Size: 10 mL
Prepared: 05-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Trip Blanks

19K0043-12 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/04/2019 08:30
Instrument: NT2 Analyst: PKC — Analyzed: 11/05/2019 11:47

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*117*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*95.4*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Trip Blanks

19K0043-12 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/04/2019 08:30
Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 13:23

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHK0137; Prepared: 07-Nov-2019; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 19K0043-12 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*97.0*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0076-BLK2)			Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 11:26							
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0076-BLK2)	Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 11:26									
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L							U
Naphthalene	ND	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0076-BLK2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 11:26						
Surrogate: 1,2-Dichloroethane-d4	5.73		ug/L	*5.00*		*115*	*80-129*			
Surrogate: Toluene-d8	4.94		ug/L	*5.00*		*98.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.75		ug/L	*5.00*		*95.0*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	4.95		ug/L	*5.00*		*99.1*	*80-120*			
LCS (BHK0076-BS2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 10:17						
Chloromethane	9.01	0.50	ug/L	10.0		90.1	60-138			
Vinyl Chloride	10.1	0.20	ug/L	10.0		101	66-133			
Bromomethane	11.4	1.00	ug/L	10.0		114	72-131			
Chloroethane	13.7	0.20	ug/L	10.0		137	60-155			Q
Trichlorofluoromethane	11.3	0.20	ug/L	10.0		113	80-129			
Acrolein	62.8	5.00	ug/L	50.0		126	52-144			Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.2	0.20	ug/L	10.0		112	76-129			
Acetone	61.7	5.00	ug/L	50.0		123	58-142			Q
1,1-Dichloroethene	11.1	0.20	ug/L	10.0		111	69-135			
Bromoethane	12.4	0.20	ug/L	10.0		124	78-128			Q
Iodomethane	11.3	1.00	ug/L	10.0		113	56-147			
Methylene Chloride	11.7	1.00	ug/L	10.0		117	65-135			
Acrylonitrile	10.0	1.00	ug/L	10.0		100	64-134			
Carbon Disulfide	9.98	0.20	ug/L	10.0		99.8	78-125			
trans-1,2-Dichloroethene	11.3	0.20	ug/L	10.0		113	78-128			
Vinyl Acetate	9.63	0.20	ug/L	10.0		96.3	55-138			
1,1-Dichloroethane	10.8	0.20	ug/L	10.0		108	76-124			
2-Butanone	53.6	5.00	ug/L	50.0		107	61-140			
2,2-Dichloropropane	9.16	0.20	ug/L	10.0		91.6	78-125			
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121			
Chloroform	11.0	0.20	ug/L	10.0		110	80-122			
Bromochloromethane	10.9	0.20	ug/L	10.0		109	80-121			
1,1,1-Trichloroethane	11.0	0.20	ug/L	10.0		110	79-123			
1,1-Dichloropropene	9.64	0.20	ug/L	10.0		96.4	80-120			
Carbon tetrachloride	10.1	0.20	ug/L	10.0		101	53-137			
1,2-Dichloroethane	11.4	0.20	ug/L	10.0		114	75-123			
Benzene	9.98	0.20	ug/L	10.0		99.8	80-120			
Trichloroethene	9.90	0.20	ug/L	10.0		99.0	80-120			
1,2-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0076-BS2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 10:17						
Bromodichloromethane	10.9	0.20	ug/L	10.0		109	80-121			
Dibromomethane	10.9	0.20	ug/L	10.0		109	80-120			
4-Methyl-2-Pentanone	53.1	5.00	ug/L	50.0		106	67-133			
cis-1,3-Dichloropropene	10.3	0.20	ug/L	10.0		103	80-124			
Toluene	9.96	0.20	ug/L	10.0		99.6	80-120			
trans-1,3-Dichloropropene	10.3	0.20	ug/L	10.0		103	71-127			
2-Hexanone	48.4	5.00	ug/L	50.0		96.8	69-133			
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121			
1,3-Dichloropropane	9.52	0.20	ug/L	10.0		95.2	80-120			
Tetrachloroethene	8.95	0.20	ug/L	10.0		89.5	80-120			
Dibromochloromethane	10.5	0.20	ug/L	10.0		105	65-135			
1,2-Dibromoethane	10.5	0.20	ug/L	10.0		105	80-121			
Chlorobenzene	9.47	0.20	ug/L	10.0		94.7	80-120			
Ethylbenzene	9.14	0.20	ug/L	10.0		91.4	80-120			
1,1,1,2-Tetrachloroethane	9.71	0.20	ug/L	10.0		97.1	80-120			
m,p-Xylene	18.9	0.40	ug/L	20.0		94.3	80-121			
o-Xylene	9.10	0.20	ug/L	10.0		91.0	80-121			
Styrene	9.52	0.20	ug/L	10.0		95.2	80-124			
Bromoform	8.07	0.20	ug/L	10.0		80.7	51-134			
1,1,2,2-Tetrachloroethane	9.01	0.20	ug/L	10.0		90.1	77-123			
1,2,3-Trichloropropane	9.54	0.50	ug/L	10.0		95.4	76-125			
trans-1,4-Dichloro 2-Butene	8.07	1.00	ug/L	10.0		80.7	55-129			
n-Propylbenzene	9.02	0.20	ug/L	10.0		90.2	78-130			
Bromobenzene	9.00	0.20	ug/L	10.0		90.0	80-120			
Isopropyl Benzene	9.01	0.20	ug/L	10.0		90.1	80-128			
2-Chlorotoluene	9.86	0.20	ug/L	10.0		98.6	78-122			
4-Chlorotoluene	8.99	0.20	ug/L	10.0		89.9	80-121			
t-Butylbenzene	8.63	0.20	ug/L	10.0		86.3	78-125			
1,3,5-Trimethylbenzene	9.15	0.20	ug/L	10.0		91.5	80-129			
1,2,4-Trimethylbenzene	9.17	0.20	ug/L	10.0		91.7	80-127			
s-Butylbenzene	8.77	0.20	ug/L	10.0		87.7	78-129			
4-Isopropyl Toluene	8.94	0.20	ug/L	10.0		89.4	79-130			
1,3-Dichlorobenzene	8.97	0.20	ug/L	10.0		89.7	80-120			
1,4-Dichlorobenzene	9.08	0.20	ug/L	10.0		90.8	80-120			
n-Butylbenzene	8.96	0.20	ug/L	10.0		89.6	74-129			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0076-BS2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 10:17						
1,2-Dichlorobenzene	9.05	0.20	ug/L	10.0		90.5	80-120			
1,2-Dibromo-3-chloropropane	8.07	0.50	ug/L	10.0		80.7	62-123			
1,2,4-Trichlorobenzene	9.26	0.50	ug/L	10.0		92.6	64-124			
Hexachloro-1,3-Butadiene	7.88	0.50	ug/L	10.0		78.8	58-123			Q
Naphthalene	9.31	0.50	ug/L	10.0		93.1	50-134			
1,2,3-Trichlorobenzene	9.23	0.50	ug/L	10.0		92.3	49-133			
Surrogate: 1,2-Dichloroethane-d4	5.73		ug/L	*5.00*		*115*	*80-129*			
Surrogate: Toluene-d8	5.14		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.08		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.00		ug/L	*5.00*		*100*	*80-120*			
LCS Dup (BHK0076-BSD2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 10:37						
Chloromethane	8.71	0.50	ug/L	10.0		87.1	60-138	3.37	30	
Vinyl Chloride	9.73	0.20	ug/L	10.0		97.3	66-133	3.85	30	
Bromomethane	11.2	1.00	ug/L	10.0		112	72-131	1.79	30	
Chloroethane	13.1	0.20	ug/L	10.0		131	60-155	4.53	30	Q
Trichlorofluoromethane	10.4	0.20	ug/L	10.0		104	80-129	8.51	30	
Acrolein	59.3	5.00	ug/L	50.0		119	52-144	5.62	30	Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.7	0.20	ug/L	10.0		107	76-129	4.27	30	
Acetone	60.1	5.00	ug/L	50.0		120	58-142	2.63	30	Q
1,1-Dichloroethene	10.7	0.20	ug/L	10.0		107	69-135	4.14	30	
Bromoethane	11.9	0.20	ug/L	10.0		119	78-128	3.49	30	Q
Iodomethane	11.1	1.00	ug/L	10.0		111	56-147	1.52	30	
Methylene Chloride	11.2	1.00	ug/L	10.0		112	65-135	4.20	30	
Acrylonitrile	9.83	1.00	ug/L	10.0		98.3	64-134	1.64	30	
Carbon Disulfide	9.73	0.20	ug/L	10.0		97.3	78-125	2.47	30	
trans-1,2-Dichloroethene	10.8	0.20	ug/L	10.0		108	78-128	4.06	30	
Vinyl Acetate	9.56	0.20	ug/L	10.0		95.6	55-138	0.71	30	
1,1-Dichloroethane	10.3	0.20	ug/L	10.0		103	76-124	4.81	30	
2-Butanone	53.2	5.00	ug/L	50.0		106	61-140	0.83	30	
2,2-Dichloropropane	8.78	0.20	ug/L	10.0		87.8	78-125	4.31	30	
cis-1,2-Dichloroethene	9.83	0.20	ug/L	10.0		98.3	80-121	4.49	30	
Chloroform	10.5	0.20	ug/L	10.0		105	80-122	4.28	30	
Bromochloromethane	10.4	0.20	ug/L	10.0		104	80-121	3.99	30	
1,1,1-Trichloroethane	10.5	0.20	ug/L	10.0		105	79-123	5.15	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0076-BSD2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 10:37						
1,1-Dichloropropene	9.28	0.20	ug/L	10.0		92.8	80-120	3.74	30	
Carbon tetrachloride	9.81	0.20	ug/L	10.0		98.1	53-137	2.83	30	
1,2-Dichloroethane	10.8	0.20	ug/L	10.0		108	75-123	5.63	30	
Benzene	9.50	0.20	ug/L	10.0		95.0	80-120	4.92	30	
Trichloroethene	9.53	0.20	ug/L	10.0		95.3	80-120	3.81	30	
1,2-Dichloropropane	9.48	0.20	ug/L	10.0		94.8	80-120	6.16	30	
Bromodichloromethane	10.4	0.20	ug/L	10.0		104	80-121	4.18	30	
Dibromomethane	10.6	0.20	ug/L	10.0		106	80-120	2.30	30	
4-Methyl-2-Pentanone	51.7	5.00	ug/L	50.0		103	67-133	2.57	30	
cis-1,3-Dichloropropene	9.88	0.20	ug/L	10.0		98.8	80-124	4.23	30	
Toluene	9.51	0.20	ug/L	10.0		95.1	80-120	4.66	30	
trans-1,3-Dichloropropene	9.99	0.20	ug/L	10.0		99.9	71-127	3.21	30	
2-Hexanone	47.2	5.00	ug/L	50.0		94.3	69-133	2.58	30	
1,1,2-Trichloroethane	10.2	0.20	ug/L	10.0		102	80-121	3.17	30	
1,3-Dichloropropane	9.08	0.20	ug/L	10.0		90.8	80-120	4.77	30	
Tetrachloroethene	8.50	0.20	ug/L	10.0		85.0	80-120	5.23	30	
Dibromochloromethane	9.91	0.20	ug/L	10.0		99.1	65-135	5.84	30	
1,2-Dibromoethane	10.3	0.20	ug/L	10.0		103	80-121	1.99	30	
Chlorobenzene	9.04	0.20	ug/L	10.0		90.4	80-120	4.69	30	
Ethylbenzene	8.56	0.20	ug/L	10.0		85.6	80-120	6.65	30	
1,1,1,2-Tetrachloroethane	9.36	0.20	ug/L	10.0		93.6	80-120	3.63	30	
m,p-Xylene	17.9	0.40	ug/L	20.0		89.4	80-121	5.33	30	
o-Xylene	8.75	0.20	ug/L	10.0		87.5	80-121	3.99	30	
Styrene	9.16	0.20	ug/L	10.0		91.6	80-124	3.92	30	
Bromoform	7.76	0.20	ug/L	10.0		77.6	51-134	3.96	30	
1,1,2,2-Tetrachloroethane	8.81	0.20	ug/L	10.0		88.1	77-123	2.25	30	
1,2,3-Trichloropropane	9.35	0.50	ug/L	10.0		93.5	76-125	2.04	30	
trans-1,4-Dichloro 2-Butene	8.20	1.00	ug/L	10.0		82.0	55-129	1.55	30	
n-Propylbenzene	8.58	0.20	ug/L	10.0		85.8	78-130	5.10	30	
Bromobenzene	8.59	0.20	ug/L	10.0		85.9	80-120	4.56	30	
Isopropyl Benzene	8.56	0.20	ug/L	10.0		85.6	80-128	5.10	30	
2-Chlorotoluene	9.41	0.20	ug/L	10.0		94.1	78-122	4.61	30	
4-Chlorotoluene	8.64	0.20	ug/L	10.0		86.4	80-121	4.06	30	
t-Butylbenzene	8.24	0.20	ug/L	10.0		82.4	78-125	4.68	30	
1,3,5-Trimethylbenzene	8.74	0.20	ug/L	10.0		87.4	80-129	4.54	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Volatile Organic Compounds - Quality Control

Batch BHK0076 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0076-BSD2)				Prepared: 05-Nov-2019 Analyzed: 05-Nov-2019 10:37						
1,2,4-Trimethylbenzene	8.76	0.20	ug/L	10.0		87.6	80-127	4.54	30	
s-Butylbenzene	8.38	0.20	ug/L	10.0		83.8	78-129	4.52	30	
4-Isopropyl Toluene	8.61	0.20	ug/L	10.0		86.1	79-130	3.81	30	
1,3-Dichlorobenzene	8.71	0.20	ug/L	10.0		87.1	80-120	2.88	30	
1,4-Dichlorobenzene	8.79	0.20	ug/L	10.0		87.9	80-120	3.31	30	
n-Butylbenzene	8.49	0.20	ug/L	10.0		84.9	74-129	5.34	30	
1,2-Dichlorobenzene	8.66	0.20	ug/L	10.0		86.6	80-120	4.36	30	
1,2-Dibromo-3-chloropropane	8.03	0.50	ug/L	10.0		80.3	62-123	0.50	30	
1,2,4-Trichlorobenzene	8.76	0.50	ug/L	10.0		87.6	64-124	5.52	30	
Hexachloro-1,3-Butadiene	7.62	0.50	ug/L	10.0		76.2	58-123	3.37	30	Q
Naphthalene	9.00	0.50	ug/L	10.0		90.0	50-134	3.35	30	
1,2,3-Trichlorobenzene	8.81	0.50	ug/L	10.0		88.1	49-133	4.62	30	
Surrogate: 1,2-Dichloroethane-d4	5.72		ug/L	*5.00*		*114*	*80-129*			
Surrogate: Toluene-d8	5.15		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.10		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.04		ug/L	*5.00*		*101*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Dissolved Gases - Quality Control

Batch BHK0137 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0137-BLK1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 12:18						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Surrogate: Propane	1660		ug/L	*1800*		*92.1*	*72-122*			
LCS (BHK0137-BS1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 11:36						
Methane	714		ug/L	656		109	80-120			
Ethane	1270		ug/L	1230		103	80-120			
Ethene	1150		ug/L	1150		99.9	80-120			
Surrogate: Propane	1670		ug/L	*1800*		*93.0*	*62-122*			
LCS Dup (BHK0137-BSD1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 11:50						
Methane	704		ug/L	656		107	80-120	1.42	30	
Ethane	1250		ug/L	1230		102	80-120	1.61	30	
Ethene	1120		ug/L	1150		97.5	80-120	2.39	30	
Surrogate: Propane	1760		ug/L	*1800*		*97.7*	*62-122*			
Duplicate (BHK0137-DUP1)	**Source: 19K0043-03**			Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 14:06						
Methane	4510	0.65	ug/L		4120			9.01	30	
Ethane	150	1.23	ug/L		123			19.40	30	
Ethene	ND	1.14	ug/L		ND					U
Surrogate: Propane	1770		ug/L	*1800*	*1860*	*98.5*	*72-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Dissolved Gases - Quality Control

Batch BHK0358 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0358-BLK1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 15:27						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Surrogate: Propane	1670		ug/L	*1800*		*92.8*	*72-122*			
LCS (BHK0358-BS1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 14:58						
Methane	704	0.65	ug/L	656		107	80-120			
Ethane	1160	1.23	ug/L	1230		94.6	80-120			
Ethene	1020	1.14	ug/L	1150		88.9	80-120			
Surrogate: Propane	1760		ug/L	*1800*		*97.9*	*62-122*			
LCS Dup (BHK0358-BSD1)				Prepared: 06-Nov-2019 Analyzed: 06-Nov-2019 15:13						
Methane	712	0.65	ug/L	656		109	80-120	1.13	30	
Ethane	1230	1.23	ug/L	1230		99.6	80-120	5.14	30	
Ethene	1090	1.14	ug/L	1150		95.0	80-120	6.64	30	
Surrogate: Propane	1800		ug/L	*1800*		*100*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Wet Chemistry - Quality Control

Batch BHK0122 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0122-BLK1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 04:23							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHK0122-BS1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 04:43							
Total Organic Carbon	20.41	0.50	0.50	mg/L	20.00		102	90-110			

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Wet Chemistry - Quality Control

Batch BHK0354 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0354-BLK1)				Prepared: 14-Nov-2019 Analyzed: 14-Nov-2019 13:05							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHK0354-BS1)				Prepared: 14-Nov-2019 Analyzed: 14-Nov-2019 13:24							
Sulfate	1.53	0.100	0.100	mg/L	1.50		102	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	19-Nov-2019 15:39

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

21 November 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19K0097	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19K0097

LANDAU ASSOCIATES

Chain-of-Custody Record

☑ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 11/6/19
Page 1 of 1

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Regional GW
Project No. 025217.099.039
Project Location/Event SWMU-20/November 2019
Sampler's Name Devan Brandt
Project Contact Chris Kimmel & Jennifer Parsons
Send Results To "

Special Handling Requirements:
Drop off

Shipment Method: _____
Stored on ice: (Yes) / No
2.2 2.7 2.3

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260C) *	MEE (RSK SOP-175 MOD)	TOC (SM 5310C)	Sulfide (E300.0)	Testing Parameters	Observations/Comments
MW-6A-191106	11/6/19	1357	AQ	7	X	X	X	X		
TripBlanks2-191106	11/6/19	—	AQ	4	X	X				
MW-10C-191107	11/7/19	0707	AQ	3	X				Filtered	

Allow water samples to settle, collect aliquot from clear portion ☐

NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

Dissolved metal samples were field filtered

Other * Boeing 69 list

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Devan Brandt	Printed Name Erin Salle	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 11/7/19 Time 0738	Date 11/7/19 Time 0738	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative 10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-6A-191106	19K0097-01	Water	06-Nov-2019 13:57	07-Nov-2019 07:38
Trip Blanks 2-19-1106	19K0097-02	Water	07-Nov-2019 07:07	07-Nov-2019 07:38
MW-10C-191107	19K0097-03	Water	07-Nov-2019 07:07	07-Nov-2019 07:38

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

Volatile Gases - MEE by RSK175

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 11/7/2019 10:15:46AM

WORK ORDER

19K0097

Client: The Boeing Company [Developmental Center] | **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center | **Project Number:** Boeing Regional GW Developmental Center

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due: 21-Nov-2019 18:00 (10 day TAT)

Received By: Erin I. Salle | Date Received: 07-Nov-2019 07:38

Logged In By: Kenny Dang | Date Logged In: 07-Nov-2019 10:08

Samples Received at: **2.2°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

19K0097-01 MW-6A-191106 [Water] Sampled 06-Nov-2019 13:57 — Three versions

8260C VOA	11/21/2019	10	11/20/2019
Carbon, Organic Total, SM 5310 B-00	11/21/2019	10	12/4/2019
RSK-175 Dissolved Gases (MEE)	11/21/2019	10	11/20/2019
Sulfate, IC, EPA 300.0	11/21/2019	10	12/4/2019

19K0097-02 Trip Blanks 2-19-1106 [Water] Sampled 07-Nov-2019 07:07 — Three versions

8260C VOA	11/21/2019	10	11/21/2019
RSK-175 Dissolved Gases (MEE)	11/21/2019	10	11/21/2019

19K0097-03 MW-10C-191107 [Water] Sampled 07-Nov-2019 07:07 — Three versions

8260C VOA	11/21/2019	10	11/21/2019

Reviewed By

Date

WORK ORDER

19K0097

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Preservation Confirmation

Container ID	Container Type	pH
19K0097-01 A	Small OJ, 500 mL	
19K0097-01 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
19K0097-01 C	VOA Vial, Clear, 40 mL	
19K0097-01 D	VOA Vial, Clear, 40 mL	
19K0097-01 E	VOA Vial, Clear, 40 mL	
19K0097-01 F	VOA Vial, Clear, 40 mL, HCL	
19K0097-01 G	VOA Vial, Clear, 40 mL, HCL	
19K0097-02 A	VOA Vial, Clear, 40 mL, HCL	
19K0097-02 B	VOA Vial, Clear, 40 mL, HCL	
19K0097-02 C	VOA Vial, Clear, 40 mL, HCL	
19K0097-02 D	VOA Vial, Clear, 40 mL, HCL	
19K0097-03 A	VOA Vial, Clear, 40 mL, HCL	
19K0097-03 B	VOA Vial, Clear, 40 mL, HCL	
19K0097-03 C	VOA Vial, Clear, 40 mL, HCL	

KD
Preservation Confirmed By

11/7/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing DC
COC No(s): _____ (NA)
Assigned ARI Job No: 19K0097

Project Name: Regional GW
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)
Were custody papers included with the cooler? (YES) NO
Were custody papers properly filled out (ink, signed, etc.) (YES) NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 0738 — 2.1 2.7 2.3 ___ ___ ___

If cooler temperature is out of compliance fill out form 00070F
Temp Gun ID#: D00520E

Cooler Accepted by: _____ Date: 11/7/19 Time: 0738

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____
Was sufficient ice used (if appropriate)? NA (YES) NO
How were bottles sealed in plastic bags? Individually Grouped (Not)
Did all bottles arrive in good condition (unbroken)? (YES) NO
Were all bottle labels complete and legible? (YES) NO
Did the number of containers listed on COC match with the number of containers received? (YES) NO
Did all bottle labels and tags agree with custody papers? (YES) NO
Were all bottles used correct for the requested analyses? (YES) NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA (YES) NO
Were all VOC vials free of air bubbles? NA (YES) NO
Was sufficient amount of sample sent in each bottle? (YES) NO
Date VOC Trip Blank was made at ARI NA 10/29/19
Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: KD Date: 11/7/19 Time: 1008 Labels checked by: KD

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-6A-191106

19K0097-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 13:57

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 11:39

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0097-01 C

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	**5.15**	ug/L	
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-6A-191106

19K0097-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/06/2019 13:57

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 11:39

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*101*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*101*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-6A-191106

19K0097-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/06/2019 13:57

Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 15:45

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0097-01 F

Preparation Batch: BHK0137 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**1730**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.9*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-6A-191106

19K0097-01 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/06/2019 13:57

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/19/2019 07:16

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0097-01 B

Preparation Batch: BHK0450 — Sample Size: 20 mL

Prepared: 18-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**410.2**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-6A-191106

19K0097-01RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/06/2019 13:57

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/19/2019 17:20

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0097-01RE2 A

Preparation Batch: BHK0354 — Sample Size: 5 mL

Prepared: 14-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	**3.12**	mg/L	D

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Trip Blanks 2-19-1106

19K0097-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/07/2019 07:07
Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 11:19

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0097-02 B
Preparation Batch: BHK0161 — Sample Size: 10 mL
Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Trip Blanks 2-19-1106

19K0097-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/07/2019 07:07

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 11:19

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*103*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Trip Blanks 2-19-1106

19K0097-02 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/07/2019 07:07
Instrument: FID6 Analyst: LH — Analyzed: 11/07/2019 13:37

Sample Preparation: Preparation Method: No Prep - Volatiles; Preparation Batch: BHK0137; Prepared: 07-Nov-2019; Sample Size: 10 mL; Final Volume: 10 mL; Extract ID: 19K0097-02 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*93.2*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-10C-191107

19K0097-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/07/2019 07:07

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 11:59

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0097-03 A

Preparation Batch: BHK0161 — Sample Size: 10 mL

Prepared: 07-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	**0.68**	ug/L	
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	**0.50**	ug/L	
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

MW-10C-191107

19K0097-03 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/07/2019 07:07

Instrument: NT2 Analyst: LH — Analyzed: 11/07/2019 11:59

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*100*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*98.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*96.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*102*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0161-BLK2)			Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 09:19							
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0161-BLK2)	Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 09:19									
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	0.50	ug/L							U
Naphthalene	ND	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0161-BLK2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 09:19						
Surrogate: 1,2-Dichloroethane-d4	4.98		ug/L	*5.00*		*99.6*	*80-129*			
Surrogate: Toluene-d8	4.81		ug/L	*5.00*		*96.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	*5.00*		*97.2*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.02		ug/L	*5.00*		*100*	*80-120*			
LCS (BHK0161-BS2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 07:57						
Chloromethane	9.50	0.50	ug/L	10.0		95.0	60-138			
Vinyl Chloride	9.90	0.20	ug/L	10.0		99.0	66-133			
Bromomethane	9.84	1.00	ug/L	10.0		98.4	72-131			
Chloroethane	10.8	0.20	ug/L	10.0		108	60-155			
Trichlorofluoromethane	9.78	0.20	ug/L	10.0		97.8	80-129			
Acrolein	46.8	5.00	ug/L	50.0		93.6	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.1	0.20	ug/L	10.0		101	76-129			
Acetone	44.4	5.00	ug/L	50.0		88.7	58-142			
1,1-Dichloroethene	9.57	0.20	ug/L	10.0		95.7	69-135			
Bromoethane	9.77	0.20	ug/L	10.0		97.7	78-128			
Iodomethane	9.44	1.00	ug/L	10.0		94.4	56-147			
Methylene Chloride	9.47	1.00	ug/L	10.0		94.7	65-135			
Acrylonitrile	9.78	1.00	ug/L	10.0		97.8	64-134			
Carbon Disulfide	9.80	0.20	ug/L	10.0		98.0	78-125			
trans-1,2-Dichloroethene	9.63	0.20	ug/L	10.0		96.3	78-128			
Vinyl Acetate	9.10	0.20	ug/L	10.0		91.0	55-138			
1,1-Dichloroethane	9.26	0.20	ug/L	10.0		92.6	76-124			
2-Butanone	47.8	5.00	ug/L	50.0		95.7	61-140			
2,2-Dichloropropane	10.6	0.20	ug/L	10.0		106	78-125			
cis-1,2-Dichloroethene	9.95	0.20	ug/L	10.0		99.5	80-121			
Chloroform	9.78	0.20	ug/L	10.0		97.8	80-122			
Bromochloromethane	9.75	0.20	ug/L	10.0		97.5	80-121			
1,1,1-Trichloroethane	10.3	0.20	ug/L	10.0		103	79-123			
1,1-Dichloropropene	10.3	0.20	ug/L	10.0		103	80-120			
Carbon tetrachloride	10.3	0.20	ug/L	10.0		103	53-137			
1,2-Dichloroethane	9.44	0.20	ug/L	10.0		94.4	75-123			
Benzene	10.0	0.20	ug/L	10.0		100	80-120			
Trichloroethene	10.0	0.20	ug/L	10.0		100	80-120			
1,2-Dichloropropane	9.86	0.20	ug/L	10.0		98.6	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0161-BS2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 07:57						
Bromodichloromethane	10.2	0.20	ug/L	10.0		102	80-121			
Dibromomethane	9.59	0.20	ug/L	10.0		95.9	80-120			
4-Methyl-2-Pentanone	49.6	5.00	ug/L	50.0		99.1	67-133			
cis-1,3-Dichloropropene	9.18	0.20	ug/L	10.0		91.8	80-124			
Toluene	9.93	0.20	ug/L	10.0		99.3	80-120			
trans-1,3-Dichloropropene	8.60	0.20	ug/L	10.0		86.0	71-127			
2-Hexanone	51.5	5.00	ug/L	50.0		103	69-133			
1,1,2-Trichloroethane	9.84	0.20	ug/L	10.0		98.4	80-121			
1,3-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120			
Tetrachloroethene	9.97	0.20	ug/L	10.0		99.7	80-120			
Dibromochloromethane	8.91	0.20	ug/L	10.0		89.1	65-135			
1,2-Dibromoethane	10.4	0.20	ug/L	10.0		104	80-121			
Chlorobenzene	10.0	0.20	ug/L	10.0		100	80-120			
Ethylbenzene	10.2	0.20	ug/L	10.0		102	80-120			
1,1,1,2-Tetrachloroethane	9.27	0.20	ug/L	10.0		92.7	80-120			
m,p-Xylene	21.1	0.40	ug/L	20.0		106	80-121			
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121			
Styrene	11.2	0.20	ug/L	10.0		112	80-124			
Bromoform	7.85	0.20	ug/L	10.0		78.5	51-134			Q
1,1,2,2-Tetrachloroethane	10.1	0.20	ug/L	10.0		101	77-123			
1,2,3-Trichloropropane	9.91	0.50	ug/L	10.0		99.1	76-125			
trans-1,4-Dichloro 2-Butene	7.78	1.00	ug/L	10.0		77.8	55-129			Q
n-Propylbenzene	10.9	0.20	ug/L	10.0		109	78-130			
Bromobenzene	10.1	0.20	ug/L	10.0		101	80-120			
Isopropyl Benzene	11.3	0.20	ug/L	10.0		113	80-128			
2-Chlorotoluene	11.4	0.20	ug/L	10.0		114	78-122			
4-Chlorotoluene	10.7	0.20	ug/L	10.0		107	80-121			
t-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-125			
1,3,5-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-129			
1,2,4-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-127			
s-Butylbenzene	11.1	0.20	ug/L	10.0		111	78-129			
4-Isopropyl Toluene	11.6	0.20	ug/L	10.0		116	79-130			
1,3-Dichlorobenzene	10.3	0.20	ug/L	10.0		103	80-120			
1,4-Dichlorobenzene	9.95	0.20	ug/L	10.0		99.5	80-120			
n-Butylbenzene	11.5	0.20	ug/L	10.0		115	74-129			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0161-BS2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 07:57						
1,2-Dichlorobenzene	10.0	0.20	ug/L	10.0		100	80-120			
1,2-Dibromo-3-chloropropane	8.28	0.50	ug/L	10.0		82.8	62-123			
1,2,4-Trichlorobenzene	11.1	0.50	ug/L	10.0		111	64-124			
Hexachloro-1,3-Butadiene	11.2	0.50	ug/L	10.0		112	58-123			
Naphthalene	10.2	0.50	ug/L	10.0		102	50-134			
1,2,3-Trichlorobenzene	11.2	0.50	ug/L	10.0		112	49-133			
Surrogate: 1,2-Dichloroethane-d4	4.71		ug/L	*5.00*		*94.2*	*80-129*			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*99.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.15		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.01		ug/L	*5.00*		*100*	*80-120*			
LCS Dup (BHK0161-BSD2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 08:38						
Chloromethane	9.27	0.50	ug/L	10.0		92.7	60-138	2.43	30	
Vinyl Chloride	9.96	0.20	ug/L	10.0		99.6	66-133	0.61	30	
Bromomethane	9.84	1.00	ug/L	10.0		98.4	72-131	0.01	30	
Chloroethane	10.8	0.20	ug/L	10.0		108	60-155	0.58	30	
Trichlorofluoromethane	9.41	0.20	ug/L	10.0		94.1	80-129	3.83	30	
Acrolein	47.2	5.00	ug/L	50.0		94.4	52-144	0.91	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.0	0.20	ug/L	10.0		100	76-129	0.26	30	
Acetone	47.1	5.00	ug/L	50.0		94.3	58-142	6.08	30	
1,1-Dichloroethene	9.74	0.20	ug/L	10.0		97.4	69-135	1.72	30	
Bromoethane	9.74	0.20	ug/L	10.0		97.4	78-128	0.39	30	
Iodomethane	9.44	1.00	ug/L	10.0		94.4	56-147	0.06	30	
Methylene Chloride	9.68	1.00	ug/L	10.0		96.8	65-135	2.18	30	
Acrylonitrile	10.2	1.00	ug/L	10.0		102	64-134	4.51	30	
Carbon Disulfide	9.96	0.20	ug/L	10.0		99.6	78-125	1.65	30	
trans-1,2-Dichloroethene	9.72	0.20	ug/L	10.0		97.2	78-128	0.95	30	
Vinyl Acetate	9.54	0.20	ug/L	10.0		95.4	55-138	4.67	30	
1,1-Dichloroethane	9.74	0.20	ug/L	10.0		97.4	76-124	5.03	30	
2-Butanone	50.2	5.00	ug/L	50.0		100	61-140	4.86	30	
2,2-Dichloropropane	10.6	0.20	ug/L	10.0		106	78-125	0.89	30	
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121	3.68	30	
Chloroform	10.1	0.20	ug/L	10.0		101	80-122	2.80	30	
Bromochloromethane	10.1	0.20	ug/L	10.0		101	80-121	3.28	30	
1,1,1-Trichloroethane	10.6	0.20	ug/L	10.0		106	79-123	2.63	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0161-BSD2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 08:38						
1,1-Dichloropropene	10.5	0.20	ug/L	10.0		105	80-120	1.83	30	
Carbon tetrachloride	10.3	0.20	ug/L	10.0		103	53-137	0.35	30	
1,2-Dichloroethane	9.70	0.20	ug/L	10.0		97.0	75-123	2.74	30	
Benzene	10.3	0.20	ug/L	10.0		103	80-120	2.55	30	
Trichloroethene	10.2	0.20	ug/L	10.0		102	80-120	2.22	30	
1,2-Dichloropropane	10.1	0.20	ug/L	10.0		101	80-120	2.35	30	
Bromodichloromethane	10.5	0.20	ug/L	10.0		105	80-121	3.07	30	
Dibromomethane	10.0	0.20	ug/L	10.0		100	80-120	4.50	30	
4-Methyl-2-Pentanone	51.9	5.00	ug/L	50.0		104	67-133	4.68	30	
cis-1,3-Dichloropropene	9.46	0.20	ug/L	10.0		94.6	80-124	3.05	30	
Toluene	10.1	0.20	ug/L	10.0		101	80-120	1.81	30	
trans-1,3-Dichloropropene	8.80	0.20	ug/L	10.0		88.0	71-127	2.33	30	
2-Hexanone	53.7	5.00	ug/L	50.0		107	69-133	4.14	30	
1,1,2-Trichloroethane	10.2	0.20	ug/L	10.0		102	80-121	3.16	30	
1,3-Dichloropropane	10.5	0.20	ug/L	10.0		105	80-120	3.90	30	
Tetrachloroethene	10.0	0.20	ug/L	10.0		100	80-120	0.60	30	
Dibromochloromethane	9.03	0.20	ug/L	10.0		90.3	65-135	1.37	30	
1,2-Dibromoethane	10.7	0.20	ug/L	10.0		107	80-121	3.27	30	
Chlorobenzene	10.1	0.20	ug/L	10.0		101	80-120	0.91	30	
Ethylbenzene	10.2	0.20	ug/L	10.0		102	80-120	0.20	30	
1,1,1,2-Tetrachloroethane	9.41	0.20	ug/L	10.0		94.1	80-120	1.51	30	
m,p-Xylene	21.6	0.40	ug/L	20.0		108	80-121	2.22	30	
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121	2.05	30	
Styrene	11.3	0.20	ug/L	10.0		113	80-124	0.30	30	
Bromoform	8.13	0.20	ug/L	10.0		81.3	51-134	3.50	30	Q
1,1,2,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	77-123	3.40	30	
1,2,3-Trichloropropane	10.5	0.50	ug/L	10.0		105	76-125	6.03	30	
trans-1,4-Dichloro 2-Butene	7.31	1.00	ug/L	10.0		73.1	55-129	6.24	30	Q
n-Propylbenzene	11.1	0.20	ug/L	10.0		111	78-130	2.15	30	
Bromobenzene	10.5	0.20	ug/L	10.0		105	80-120	3.46	30	
Isopropyl Benzene	11.5	0.20	ug/L	10.0		115	80-128	1.64	30	
2-Chlorotoluene	11.3	0.20	ug/L	10.0		113	78-122	0.82	30	
4-Chlorotoluene	11.0	0.20	ug/L	10.0		110	80-121	2.53	30	
t-Butylbenzene	11.4	0.20	ug/L	10.0		114	78-125	1.83	30	
1,3,5-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-129	2.47	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Volatile Organic Compounds - Quality Control

Batch BHK0161 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0161-BSD2)				Prepared: 07-Nov-2019 Analyzed: 07-Nov-2019 08:38						
1,2,4-Trimethylbenzene	11.5	0.20	ug/L	10.0		115	80-127	3.18	30	
s-Butylbenzene	11.4	0.20	ug/L	10.0		114	78-129	2.53	30	
4-Isopropyl Toluene	11.8	0.20	ug/L	10.0		118	79-130	1.36	30	
1,3-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.42	30	
1,4-Dichlorobenzene	10.2	0.20	ug/L	10.0		102	80-120	2.50	30	
n-Butylbenzene	11.4	0.20	ug/L	10.0		114	74-129	0.57	30	
1,2-Dichlorobenzene	10.3	0.20	ug/L	10.0		103	80-120	2.78	30	
1,2-Dibromo-3-chloropropane	8.69	0.50	ug/L	10.0		86.9	62-123	4.88	30	
1,2,4-Trichlorobenzene	11.6	0.50	ug/L	10.0		116	64-124	4.16	30	
Hexachloro-1,3-Butadiene	10.9	0.50	ug/L	10.0		109	58-123	3.14	30	
Naphthalene	10.7	0.50	ug/L	10.0		107	50-134	5.15	30	
1,2,3-Trichlorobenzene	11.5	0.50	ug/L	10.0		115	49-133	2.61	30	
Surrogate: 1,2-Dichloroethane-d4	4.82		ug/L	*5.00*		*96.4*	*80-129*			
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.11		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.02		ug/L	*5.00*		*100*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Dissolved Gases - Quality Control

Batch BHK0137 - No Prep - Volatiles

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0137-BLK1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 12:18						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Surrogate: Propane	1660		ug/L	*1800*		*92.1*	*72-122*			
LCS (BHK0137-BS1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 11:36						
Methane	714		ug/L	656		109	80-120			
Ethane	1270		ug/L	1230		103	80-120			
Ethene	1150		ug/L	1150		99.9	80-120			
Surrogate: Propane	1670		ug/L	*1800*		*93.0*	*62-122*			
LCS Dup (BHK0137-BSD1)				Prepared: 06-Nov-2019 Analyzed: 07-Nov-2019 11:50						
Methane	704		ug/L	656		107	80-120	1.42	30	
Ethane	1250		ug/L	1230		102	80-120	1.61	30	
Ethene	1120		ug/L	1150		97.5	80-120	2.39	30	
Surrogate: Propane	1760		ug/L	*1800*		*97.7*	*62-122*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Wet Chemistry - Quality Control

Batch BHK0354 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0354-BLK1)				Prepared: 14-Nov-2019 Analyzed: 14-Nov-2019 13:05							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHK0354-BS1)				Prepared: 14-Nov-2019 Analyzed: 14-Nov-2019 13:24							
Sulfate	1.53	0.100	0.100	mg/L	1.50		102	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Wet Chemistry - Quality Control

Batch BHK0450 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0450-BLK1)				Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 20:47							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHK0450-BS1)				Prepared: 18-Nov-2019 Analyzed: 18-Nov-2019 21:06							
Total Organic Carbon	19.54	0.50	0.50	mg/L	20.00		97.7	90-110			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	21-Nov-2019 14:32

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

04 December 2019

Carl Bach
The Boeing Company [Developmental Center]
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124

RE: Boeing Regional GW Developmental Center

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19K0312	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

19K0312

LANDAU ASSOCIATES

Chain-of-Custody Record

☒ Seattle/Edmonds (425) 778-0907 ☐ Spokane (509) 327-9737
☐ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ _____

Date 11/ /19
Page 1 of 1

Turnaround Time:
Standard X
Accelerated _____

Project Name DC Region GW
Project No. 025217.099.089
Project Location/Event SWMU-20 / November 2019
Sampler's Name Devan Brandt
Project Contact Chris Kimmel & Jennifer Parsons
Send Results To " "

Special Handling Requirements:

Shipment Method: Drop off
Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs (8260C) *	MEE (RSK SOP-175 MOD)	TOC (SM 5310C)	Sulfate (300.0)	Observations/Comments
MW-68-191120	11/20/19	1127	AQ	7	X	X	X	X	
Trip Blanks-191120	11/20/19	—	AQ	4	X	X			

Testing Parameters

Allow water samples to settle, collect aliquot from clear portion ☐

NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

Dissolved metal samples were field filtered

Other
* Boeing 69 List

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Devan Brandt	Printed Name Jacob Haffe	Printed Name	Printed Name
Company LAI	Company ARI	Company	Company
Date 11/20/19 Time 1330	Date 11/20/19 Time 1330	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative 10/2018

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-68-191120	19K0312-01	Water	20-Nov-2019 11:27	20-Nov-2019 13:30
Trip Blanks-191120	19K0312-02	Water	20-Nov-2019 11:27	20-Nov-2019 13:30

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Work Order Case Narrative

Volatiles - EPA Method SW8260C

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL and 2,2-Dichlororpropane is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) contained hexachloro-1,3-Butadiene. All associated samples that contain analyte have been flagged with a "B" qualifer.

The LCS/LCSD percent recoveries and RPD were within control limits.

Volatile Gases - MEE by RSK175

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

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WORK ORDER

19K0312

Client: The Boeing Company [Developmental Center] **Project Manager:** Kelly Bottem

Project: Boeing Regional GW Developmental Center **Project Number:** Boeing Regional GW Developmental Center

Report To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone: (206) 898-0438
Fax: -

Invoice To:
The Boeing Company [Developmental Center]
Carl Bach
P.O. Box 3707 MC 9U4-26
Seattle, WA 98124
Phone :(206) 898-0438
Fax: -

Date Due: 05-Dec-2019 18:00 (10 day TAT)

Received By: Jacob Walter
Date Received: 20-Nov-2019 13:30

Logged In By: Jacob Walter
Date Logged In: 20-Nov-2019 14:13

Samples Received at: **4.8°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

19K0312-01 MW-68-191120 [Water] Sampled 20-Nov-2019 11:27 Three versions

8260C VOA	12/05/2019	10	12/4/2019
Carbon, Organic Total, SM 5310 B-00	12/05/2019	10	12/18/2019
RSK-175 Dissolved Gases (MEE)	12/05/2019	10	11/27/2019
Sulfate, IC, EPA 300.0	12/05/2019	10	12/18/2019

19K0312-02 Trip Blanks-191120 [Water] Sampled 20-Nov-2019 11:27 Three versions

8260C VOA	12/05/2019	10	12/4/2019
RSK-175 Dissolved Gases (MEE)	12/05/2019	10	12/4/2019

Reviewed By

Date

WORK ORDER

19K0312

Client: The Boeing Company [Developmental Center]	**Project Manager: Kelly Bottem**
Project: Boeing Regional GW Developmental Center	**Project Number: Boeing Regional GW Developmental Center**

Preservation Confirmation

Container ID	Container Type	pH	
19K0312-01 A	Small OJ, 500 mL		
19K0312-01 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass
19K0312-01 C	VOA Vial, Clear, 40 mL, HCL		
19K0312-01 D	VOA Vial, Clear, 40 mL, HCL		
19K0312-01 E	VOA Vial, Clear, 40 mL		
19K0312-01 F	VOA Vial, Clear, 40 mL		
19K0312-01 G	VOA Vial, Clear, 40 mL		
19K0312-02 A	VOA Vial, Clear, 40 mL, HCL		
19K0312-02 B	VOA Vial, Clear, 40 mL, HCL		
19K0312-02 C	VOA Vial, Clear, 40 mL, HCL		
19K0312-02 D	VOA Vial, Clear, 40 mL, HCL		

JSm — Preservation Confirmed By

11/20/19 — Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau / Beachy Project Name: DC Region Gw

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19K0312 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1330 4.8°C

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00 5206

Cooler Accepted by: JBw Date: 11/20/19 Time: 1330

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	(Bubble Wrap) Wet Ice Gel Packs (Baggies) (Foam Block) Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	10/29/19	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JBw Date: 11/20/19 Time: 1413 Labels checked by: JBw

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

MW-68-191120

19K0312-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/20/2019 11:27

Instrument: NT2 Analyst: PKC — Analyzed: 11/20/2019 16:02

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0312-01 C

Preparation Batch: BHK0544 — Sample Size: 1 mL

Prepared: 20-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	5.00	ND	ug/L	U
Vinyl Chloride	75-01-4	1	2.00	ND	ug/L	U
Bromomethane	74-83-9	1	10.0	ND	ug/L	U
Chloroethane	75-00-3	1	2.00	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	2.00	ND	ug/L	U
Acrolein	107-02-8	1	50.0	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	2.00	ND	ug/L	U
Acetone	67-64-1	1	50.0	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	2.00	ND	ug/L	U
Bromoethane	74-96-4	1	2.00	ND	ug/L	U
Iodomethane	74-88-4	1	10.0	ND	ug/L	U
Methylene Chloride	75-09-2	1	10.0	ND	ug/L	U
Acrylonitrile	107-13-1	1	10.0	ND	ug/L	U
Carbon Disulfide	75-15-0	1	2.00	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	2.00	ND	ug/L	U
Vinyl Acetate	108-05-4	1	2.00	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	2.00	ND	ug/L	U
2-Butanone	78-93-3	1	50.0	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	2.00	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	2.00	ND	ug/L	U
Chloroform	67-66-3	1	2.00	ND	ug/L	U
Bromochloromethane	74-97-5	1	2.00	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	2.00	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	2.00	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	2.00	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	2.00	ND	ug/L	U
Benzene	71-43-2	1	2.00	ND	ug/L	U
Trichloroethene	79-01-6	1	2.00	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	2.00	ND	ug/L	U
Bromodichloromethane	75-27-4	1	2.00	ND	ug/L	U
Dibromomethane	74-95-3	1	2.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	50.0	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	2.00	ND	ug/L	U
Toluene	108-88-3	1	2.00	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	2.00	ND	ug/L	U
2-Hexanone	591-78-6	1	50.0	ND	ug/L	U

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

MW-68-191120

19K0312-01 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/20/2019 11:27

Instrument: NT2 Analyst: PKC — Analyzed: 11/20/2019 16:02

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	2.00	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	2.00	ND	ug/L	U
Tetrachloroethene	127-18-4	1	2.00	ND	ug/L	U
Dibromochloromethane	124-48-1	1	2.00	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	2.00	ND	ug/L	U
Chlorobenzene	108-90-7	1	2.00	ND	ug/L	U
Ethylbenzene	100-41-4	1	2.00	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	2.00	ND	ug/L	U
m,p-Xylene	179601-23-1	1	4.00	ND	ug/L	U
o-Xylene	95-47-6	1	2.00	ND	ug/L	U
Styrene	100-42-5	1	2.00	ND	ug/L	U
Bromoform	75-25-2	1	2.00	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	2.00	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	5.00	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	10.0	ND	ug/L	U
n-Propylbenzene	103-65-1	1	2.00	ND	ug/L	U
Bromobenzene	108-86-1	1	2.00	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	2.00	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	2.00	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	2.00	ND	ug/L	U
t-Butylbenzene	98-06-6	1	2.00	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	2.00	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	2.00	ND	ug/L	U
s-Butylbenzene	135-98-8	1	2.00	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	2.00	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	2.00	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	2.00	ND	ug/L	U
n-Butylbenzene	104-51-8	1	2.00	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	2.00	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	5.00	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	5.00	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	5.00	ND	ug/L	U
Naphthalene	91-20-3	1	5.00	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.9*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*103*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

MW-68-191120

19K0312-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/20/2019 11:27

Instrument: FID6 Analyst: PB — Analyzed: 11/25/2019 15:12

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0312-01 E

Preparation Batch: BHK0694 — Sample Size: 10 mL

Prepared: 25-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	**2590**	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*105*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

MW-68-191120

19K0312-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 11/20/2019 11:27

Instrument: DX2100 Analyst: KOTT — Analyzed: 11/29/2019 20:31

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0312-01 A

Preparation Batch: BHK0829 — Sample Size: 5 mL

Prepared: 29-Nov-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	**1.69**	mg/L	D

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

MW-68-191120

19K0312-01RE1 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 11/20/2019 11:27

Instrument: TOC-LCSH Analyst: BF — Analyzed: 11/27/2019 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19K0312-01RE1 B

Preparation Batch: BHK0685 — Sample Size: 20 mL

Prepared: 25-Nov-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		50	25.00	25.00	**1065**	mg/L	D

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Trip Blanks-191120

19K0312-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/20/2019 11:27
Instrument: NT2 Analyst: PKC — Analyzed: 11/20/2019 15:42

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap) — Extract ID: 19K0312-02 C
Preparation Batch: BHK0544 — Sample Size: 10 mL
Prepared: 20-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Trip Blanks-191120

19K0312-02 (Water)

Volatile Organic Compounds

Method: EPA 8260C — Sampled: 11/20/2019 11:27

Instrument: NT2 Analyst: PKC — Analyzed: 11/20/2019 15:42

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*96.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*90.8*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4			*80-120 %*	*101*	*%*	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Trip Blanks-191120

19K0312-02 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 11/20/2019 11:27
Instrument: FID6 Analyst: PB — Analyzed: 11/25/2019 15:27

Sample Preparation: Preparation Method: No Prep - Volatiles — Extract ID: 19K0312-02 A
Preparation Batch: BHK0694 — Sample Size: 10 mL
Prepared: 25-Nov-2019 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*118*	*%*	

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0544-BLK1)			Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 09:12							
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Bromoethane	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0544-BLK1)			Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 09:12							
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	0.60	0.50	ug/L							
Naphthalene	ND	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0544-BLK1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 09:12						
Surrogate: 1,2-Dichloroethane-d4	4.76		ug/L	*5.00*		*95.3*	*80-129*			
Surrogate: Toluene-d8	4.88		ug/L	*5.00*		*97.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.74		ug/L	*5.00*		*94.9*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.05		ug/L	*5.00*		*101*	*80-120*			
LCS (BHK0544-BS1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 08:10						
Chloromethane	9.68	0.50	ug/L	10.0		96.8	60-138			
Vinyl Chloride	9.98	0.20	ug/L	10.0		99.8	66-133			
Bromomethane	9.81	1.00	ug/L	10.0		98.1	72-131			
Chloroethane	11.1	0.20	ug/L	10.0		111	60-155			
Trichlorofluoromethane	8.37	0.20	ug/L	10.0		83.7	80-129			
Acrolein	51.7	5.00	ug/L	50.0		103	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.3	0.20	ug/L	10.0		103	76-129			
Acetone	45.9	5.00	ug/L	50.0		91.8	58-142			
1,1-Dichloroethene	9.75	0.20	ug/L	10.0		97.5	69-135			
Bromoethane	10.3	0.20	ug/L	10.0		103	78-128			
Iodomethane	10.1	1.00	ug/L	10.0		101	56-147			
Methylene Chloride	9.96	1.00	ug/L	10.0		99.6	65-135			
Acrylonitrile	10.2	1.00	ug/L	10.0		102	64-134			
Carbon Disulfide	9.84	0.20	ug/L	10.0		98.4	78-125			
trans-1,2-Dichloroethene	9.99	0.20	ug/L	10.0		99.9	78-128			
Vinyl Acetate	9.51	0.20	ug/L	10.0		95.1	55-138			
1,1-Dichloroethane	10.1	0.20	ug/L	10.0		101	76-124			
2-Butanone	49.0	5.00	ug/L	50.0		98.0	61-140			
2,2-Dichloropropane	12.4	0.20	ug/L	10.0		124	78-125			Q
cis-1,2-Dichloroethene	10.8	0.20	ug/L	10.0		108	80-121			
Chloroform	10.5	0.20	ug/L	10.0		105	80-122			
Bromochloromethane	10.9	0.20	ug/L	10.0		109	80-121			
1,1,1-Trichloroethane	11.1	0.20	ug/L	10.0		111	79-123			
1,1-Dichloropropene	10.5	0.20	ug/L	10.0		105	80-120			
Carbon tetrachloride	11.5	0.20	ug/L	10.0		115	53-137			
1,2-Dichloroethane	9.51	0.20	ug/L	10.0		95.1	75-123			
Benzene	10.6	0.20	ug/L	10.0		106	80-120			
Trichloroethene	10.6	0.20	ug/L	10.0		106	80-120			
1,2-Dichloropropane	10.5	0.20	ug/L	10.0		105	80-120			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0544-BS1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 08:10						
Bromodichloromethane	10.5	0.20	ug/L	10.0		105	80-121			
Dibromomethane	10.1	0.20	ug/L	10.0		101	80-120			
4-Methyl-2-Pentanone	50.8	5.00	ug/L	50.0		102	67-133			
cis-1,3-Dichloropropene	9.82	0.20	ug/L	10.0		98.2	80-124			
Toluene	10.5	0.20	ug/L	10.0		105	80-120			
trans-1,3-Dichloropropene	9.27	0.20	ug/L	10.0		92.7	71-127			
2-Hexanone	49.6	5.00	ug/L	50.0		99.3	69-133			
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121			
1,3-Dichloropropane	10.3	0.20	ug/L	10.0		103	80-120			
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120			
Dibromochloromethane	8.92	0.20	ug/L	10.0		89.2	65-135			
1,2-Dibromoethane	10.9	0.20	ug/L	10.0		109	80-121			
Chlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
Ethylbenzene	10.5	0.20	ug/L	10.0		105	80-120			
1,1,1,2-Tetrachloroethane	9.89	0.20	ug/L	10.0		98.9	80-120			
m,p-Xylene	21.8	0.40	ug/L	20.0		109	80-121			
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121			
Styrene	11.6	0.20	ug/L	10.0		116	80-124			
Bromoform	7.88	0.20	ug/L	10.0		78.8	51-134			Q
1,1,2,2-Tetrachloroethane	10.0	0.20	ug/L	10.0		100	77-123			
1,2,3-Trichloropropane	9.80	0.50	ug/L	10.0		98.0	76-125			
trans-1,4-Dichloro 2-Butene	6.60	1.00	ug/L	10.0		66.0	55-129			Q
n-Propylbenzene	10.9	0.20	ug/L	10.0		109	78-130			
Bromobenzene	10.4	0.20	ug/L	10.0		104	80-120			
Isopropyl Benzene	11.2	0.20	ug/L	10.0		112	80-128			
2-Chlorotoluene	10.9	0.20	ug/L	10.0		109	78-122			
4-Chlorotoluene	10.6	0.20	ug/L	10.0		106	80-121			
t-Butylbenzene	11.1	0.20	ug/L	10.0		111	78-125			
1,3,5-Trimethylbenzene	11.2	0.20	ug/L	10.0		112	80-129			
1,2,4-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-127			
s-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-129			
4-Isopropyl Toluene	11.6	0.20	ug/L	10.0		116	79-130			
1,3-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120			
1,4-Dichlorobenzene	10.2	0.20	ug/L	10.0		102	80-120			
n-Butylbenzene	11.3	0.20	ug/L	10.0		113	74-129			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BHK0544-BS1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 08:10						
1,2-Dichlorobenzene	10.2	0.20	ug/L	10.0		102	80-120			
1,2-Dibromo-3-chloropropane	8.06	0.50	ug/L	10.0		80.6	62-123			
1,2,4-Trichlorobenzene	11.2	0.50	ug/L	10.0		112	64-124			
Hexachloro-1,3-Butadiene	11.1	0.50	ug/L	10.0		111	58-123			B
Naphthalene	9.82	0.50	ug/L	10.0		98.2	50-134			
1,2,3-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	49-133			
Surrogate: 1,2-Dichloroethane-d4	4.66		ug/L	*5.00*		*93.2*	*80-129*			
Surrogate: Toluene-d8	5.05		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.12		ug/L	*5.00*		*102*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.06		ug/L	*5.00*		*101*	*80-120*			
LCS Dup (BHK0544-BSD1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 08:51						
Chloromethane	10.2	0.50	ug/L	10.0		102	60-138	4.81	30	
Vinyl Chloride	10.2	0.20	ug/L	10.0		102	66-133	2.24	30	
Bromomethane	10.3	1.00	ug/L	10.0		103	72-131	5.28	30	
Chloroethane	11.7	0.20	ug/L	10.0		117	60-155	5.28	30	
Trichlorofluoromethane	8.20	0.20	ug/L	10.0		82.0	80-129	2.14	30	
Acrolein	52.2	5.00	ug/L	50.0		104	52-144	1.00	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.3	0.20	ug/L	10.0		103	76-129	0.15	30	
Acetone	47.5	5.00	ug/L	50.0		95.0	58-142	3.47	30	
1,1-Dichloroethene	10.0	0.20	ug/L	10.0		100	69-135	2.56	30	
Bromoethane	10.2	0.20	ug/L	10.0		102	78-128	0.62	30	
Iodomethane	10.5	1.00	ug/L	10.0		105	56-147	3.39	30	
Methylene Chloride	10.2	1.00	ug/L	10.0		102	65-135	2.48	30	
Acrylonitrile	11.2	1.00	ug/L	10.0		112	64-134	8.82	30	
Carbon Disulfide	10.3	0.20	ug/L	10.0		103	78-125	4.11	30	
trans-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	78-128	0.57	30	
Vinyl Acetate	10.1	0.20	ug/L	10.0		101	55-138	5.99	30	
1,1-Dichloroethane	9.83	0.20	ug/L	10.0		98.3	76-124	2.58	30	
2-Butanone	51.8	5.00	ug/L	50.0		104	61-140	5.50	30	
2,2-Dichloropropane	12.0	0.20	ug/L	10.0		120	78-125	3.64	30	Q
cis-1,2-Dichloroethene	10.9	0.20	ug/L	10.0		109	80-121	1.09	30	
Chloroform	10.5	0.20	ug/L	10.0		105	80-122	0.01	30	
Bromochloromethane	11.1	0.20	ug/L	10.0		111	80-121	1.34	30	
1,1,1-Trichloroethane	11.1	0.20	ug/L	10.0		111	79-123	0.07	30	

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0544-BSD1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 08:51						
1,1-Dichloropropene	10.6	0.20	ug/L	10.0		106	80-120	0.68	30	
Carbon tetrachloride	11.4	0.20	ug/L	10.0		114	53-137	1.25	30	
1,2-Dichloroethane	9.60	0.20	ug/L	10.0		96.0	75-123	0.92	30	
Benzene	10.8	0.20	ug/L	10.0		108	80-120	1.34	30	
Trichloroethene	10.7	0.20	ug/L	10.0		107	80-120	0.91	30	
1,2-Dichloropropane	10.6	0.20	ug/L	10.0		106	80-120	1.60	30	
Bromodichloromethane	10.9	0.20	ug/L	10.0		109	80-121	4.04	30	
Dibromomethane	10.5	0.20	ug/L	10.0		105	80-120	4.17	30	
4-Methyl-2-Pentanone	53.9	5.00	ug/L	50.0		108	67-133	6.05	30	
cis-1,3-Dichloropropene	10.1	0.20	ug/L	10.0		101	80-124	2.64	30	
Toluene	10.7	0.20	ug/L	10.0		107	80-120	1.39	30	
trans-1,3-Dichloropropene	9.70	0.20	ug/L	10.0		97.0	71-127	4.53	30	
2-Hexanone	52.7	5.00	ug/L	50.0		105	69-133	5.98	30	
1,1,2-Trichloroethane	10.7	0.20	ug/L	10.0		107	80-121	2.59	30	
1,3-Dichloropropane	10.4	0.20	ug/L	10.0		104	80-120	1.62	30	
Tetrachloroethene	10.2	0.20	ug/L	10.0		102	80-120	0.34	30	
Dibromochloromethane	9.14	0.20	ug/L	10.0		91.4	65-135	2.46	30	
1,2-Dibromoethane	11.5	0.20	ug/L	10.0		115	80-121	4.91	30	
Chlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	1.43	30	
Ethylbenzene	10.5	0.20	ug/L	10.0		105	80-120	0.11	30	
1,1,1,2-Tetrachloroethane	9.83	0.20	ug/L	10.0		98.3	80-120	0.53	30	
m,p-Xylene	22.0	0.40	ug/L	20.0		110	80-121	0.84	30	
o-Xylene	11.2	0.20	ug/L	10.0		112	80-121	2.58	30	
Styrene	11.7	0.20	ug/L	10.0		117	80-124	0.97	30	
Bromoform	7.81	0.20	ug/L	10.0		78.1	51-134	0.88	30	Q
1,1,2,2-Tetrachloroethane	10.4	0.20	ug/L	10.0		104	77-123	3.90	30	
1,2,3-Trichloropropane	9.98	0.50	ug/L	10.0		99.8	76-125	1.81	30	
trans-1,4-Dichloro 2-Butene	6.24	1.00	ug/L	10.0		62.4	55-129	5.59	30	Q
n-Propylbenzene	10.8	0.20	ug/L	10.0		108	78-130	1.01	30	
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120	1.87	30	
Isopropyl Benzene	11.1	0.20	ug/L	10.0		111	80-128	1.46	30	
2-Chlorotoluene	11.4	0.20	ug/L	10.0		114	78-122	4.39	30	
4-Chlorotoluene	10.7	0.20	ug/L	10.0		107	80-121	0.31	30	
t-Butylbenzene	11.1	0.20	ug/L	10.0		111	78-125	0.25	30	
1,3,5-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-129	1.16	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Volatile Organic Compounds - Quality Control

Batch BHK0544 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BHK0544-BSD1)				Prepared: 20-Nov-2019 Analyzed: 20-Nov-2019 08:51						
1,2,4-Trimethylbenzene	11.3	0.20	ug/L	10.0		113	80-127	1.31	30	
s-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-129	0.14	30	
4-Isopropyl Toluene	11.7	0.20	ug/L	10.0		117	79-130	0.73	30	
1,3-Dichlorobenzene	10.7	0.20	ug/L	10.0		107	80-120	1.18	30	
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	1.62	30	
n-Butylbenzene	11.5	0.20	ug/L	10.0		115	74-129	1.66	30	
1,2-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	1.98	30	
1,2-Dibromo-3-chloropropane	8.15	0.50	ug/L	10.0		81.5	62-123	1.11	30	
1,2,4-Trichlorobenzene	11.4	0.50	ug/L	10.0		114	64-124	1.18	30	
Hexachloro-1,3-Butadiene	11.6	0.50	ug/L	10.0		116	58-123	3.99	30	B
Naphthalene	10.2	0.50	ug/L	10.0		102	50-134	4.05	30	
1,2,3-Trichlorobenzene	11.2	0.50	ug/L	10.0		112	49-133	2.25	30	
Surrogate: 1,2-Dichloroethane-d4	4.59		ug/L	*5.00*		*91.8*	*80-129*			
Surrogate: Toluene-d8	5.05		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5.17		ug/L	*5.00*		*103*	*80-120*			
Surrogate: 1,2-Dichlorobenzene-d4	5.01		ug/L	*5.00*		*100*	*80-120*			

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Dissolved Gases - Quality Control

Batch BHK0694 - No Prep - Volatiles

Instrument: FID6 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0694-BLK1)				Prepared: 25-Nov-2019 Analyzed: 25-Nov-2019 10:57						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Surrogate: Propane	2040		ug/L	*1800*		*113*	*72-122*			
LCS (BHK0694-BS1)				Prepared: 25-Nov-2019 Analyzed: 25-Nov-2019 11:45						
Methane	749		ug/L	656		114	80-120			
Ethane	1300		ug/L	1230		106	80-120			
Ethene	1220		ug/L	1150		106	80-120			
Surrogate: Propane	2190		ug/L	*1800*		*122*	*62-122*			
LCS Dup (BHK0694-BSD1)				Prepared: 25-Nov-2019 Analyzed: 25-Nov-2019 12:00						
Methane	717		ug/L	656		109	80-120	4.31	30	
Ethane	1300		ug/L	1230		106	80-120	0.19	30	
Ethene	1200		ug/L	1150		104	80-120	1.33	30	
Surrogate: Propane	1950		ug/L	*1800*		*108*	*62-122*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Wet Chemistry - Quality Control

Batch BHK0685 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0685-BLK1)				Prepared: 25-Nov-2019 Analyzed: 26-Nov-2019 01:49							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BHK0685-BS1)				Prepared: 25-Nov-2019 Analyzed: 26-Nov-2019 02:09							
Total Organic Carbon	18.81	0.50	0.50	mg/L	20.00		94.1	90-110			
Duplicate (BHK0685-DUP2)		**Source: 19K0312-01**		Prepared: 25-Nov-2019 Analyzed: 27-Nov-2019 12:55							
Total Organic Carbon	1263	25.00	25.00	mg/L		1045			18.90	20	D
Matrix Spike (BHK0685-MS1)		**Source: 19K0312-01**		Prepared: 25-Nov-2019 Analyzed: 26-Nov-2019 03:31							
Total Organic Carbon	1260	25.00	25.00	mg/L	200.0	1045	108	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Developmental Center]	Project: Boeing Regional GW Developmental Center	
P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Wet Chemistry - Quality Control

Batch BHK0829 - No Prep Wet Chem

Instrument: DX2100 Analyst: KOTT

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHK0829-BLK1)				Prepared: 29-Nov-2019 Analyzed: 29-Nov-2019 18:31							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BHK0829-BS1)				Prepared: 29-Nov-2019 Analyzed: 29-Nov-2019 18:51							
Sulfate	1.46	0.100	0.100	mg/L	1.50		97.0	90-110			

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

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P.O. Box 3707 MC 9U4-26	Project Number: Boeing Regional GW Developmental Center	**Reported:**
Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

n-Hexane	WADOE
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Ethane	NELAP
Ethene	NELAP
Acetylene	NELAP

SM 5310 B-00 in Water

Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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Seattle WA, 98124	Project Manager: Carl Bach	04-Dec-2019 18:46

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

APPENDIX B

Cumulative Groundwater Level Measurements

Table B-1
Cumulative Groundwater Level Measurements
November 1999 to Present
Boeing Developmental Center
Tukwila, Washington

			November 2019		May 2019		February 2019		November 2018		August 2018		May 2018		February 2018		November 2017		August 2017		May 2017		February 2017		November 2016		August 2016		April 2016	
Well Location / Bldg.	Well ID No.	Well Depth (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
9-101-bldg.	MW-6A	24.25	13.14	1.66	12.81	1.99			12.90	1.90			12.29	2.51			12.81	1.99			11.97	2.83			12.13	2.67			12.38	2.42
9-101-bldg.	MW-6B	27.20	13.53	1.56	13.02	2.07			13.08	2.01			12.60	2.49			13.15	1.94			12.31	2.78			12.82	2.27			12.77	2.32
9-101-bldg.	MW-6C	40.55																												
9-101-bldg.	MW-8C	40.20																												
9-101-bldg.	MW-9A	21.30	13.18	1.56	12.83	1.91			12.83	1.91			12.45	2.29			12.91	1.83			12.07	2.67			12.18	2.56			12.37	2.37
9-101-bldg.	MW-9B	26.90																												
9-101-bldg.	MW-9C	38.80																												
9-101-bldg.	MW-9D	56.00																												
9-101-bldg.	MW-10A	20.20																												
9-101-bldg.	MW-10C	40.40	13.11	1.53	12.78	1.86			12.82	1.82			12.39	2.25			12.86	1.78			11.97	2.67			12.16	2.48			12.37	2.27
9-101-bldg.	MW-11A	19.90	13.23	1.65	12.80	2.08			12.89	1.99			12.39	2.49			12.96	1.92			12.03	2.85			12.14	2.74			12.47	2.41
9-101-bldg.	MW-12A	20.20																												
9-101-bldg.	MW-13A	19.37	12.56	1.58	12.38	1.76			12.37	1.77			11.77	2.37			12.28	1.86			11.57	2.57			11.55	2.59			11.82	2.32
9-101-bldg.	MW-13C	35.62	12.33	1.69	12.16	1.86			12.21	1.81			11.60	2.42			12.10	1.92			11.39	2.63			11.41	2.61			11.71	2.31
9-101-bldg.	MW-14A	19.00																												
9-101-bldg.	MW-14C	33.30	12.47	1.50	12.23	1.74			12.14	1.83			11.80	2.17			12.10	1.87			11.40	2.57			11.33	2.64			11.78	2.19
9-101-bldg.	MW-14E	82.10																												
9-101-bldg.	MW-15A	20.70																												
9-101-bldg.	MW-15C	34.35	13.14	1.41	12.89	1.66			12.78	1.77			12.41	2.14			12.79	1.76			12.00	2.55			11.98	2.57			12.45	2.10
9-101-bldg.	MW-15D	51.80																												
9-101-bldg.	MW-16A	20.55	13.29	1.70	12.94	2.05			13.04	1.95			12.54	2.45			12.99	2.00			12.18	2.81			12.32	2.67			12.60	2.39
9-101-bldg.	MW-16C	38.30	13.44	1.60	13.09	1.95			13.16	1.88			12.72	2.32			13.14	1.90			12.33	2.71			12.54	2.50			12.70	2.34
9-101-bldg.	MW-17A	19.00	13.11	1.55	12.71	1.95			12.81	1.85			12.24	2.42			12.81	1.85			11.97	2.69			12.11	2.55			12.28	2.38
9-101-bldg.	MW-17C	35.00																												
9-101-bldg.	MW-17D	52.50																												
9-101-bldg.	MW-18A	20.02	12.85	1.45	12.47	1.83			12.50	1.80			11.91	2.39			12.50	1.80			11.73	2.57			11.68	2.62			11.87	2.43
9-101-bldg.	MW-18C	34.55																												
9-101-bldg.	MW-18D	52.85																												
9-101-bldg.	MW-19A	16.86																												
9-101-bldg.	MW-19C	33.92																												
9-101-bldg.	MW-19D	51.86																												
9-101-bldg.	MW-20A	19.34																												
9-101-bldg.	MW-20C	35.32	12.82	1.33	12.46	1.69			12.39	1.76			11.96	2.19			12.45	1.70			11.59	2.56			11.55	2.60			11.95	2.20
9-101-bldg.	MW-20D	50.15																												
9-101-bldg.	MW-22A	19.20	12.72	1.53	12.62	1.63			12.55	1.70			12.08	2.17			12.55	1.70			11.79	2.46			11.79	2.46			12.12	2.13
9-101-bldg.	MW-23A	19.50																												
9-101/9-50 bldg.	MW-21A	19.90	13.09	1.36	12.66	1.79			12.69	1.76			12.12	2.33			12.68	1.77			11.97	2.48			11.85	2.60			12.10	2.35
9-101/9-50 bldg.	MW-21C	34.00																												
9-64-bldg.	BDC-05-02	25.35	12.64	1.77	12.19	2.22			12.39	2.02			11.76	2.65			12.42	1.99	12.31	2.10	11.46	2.95	11.24	3.17	11.68	2.73	12.53	1.88	11.77	2.64
9-64-bldg.	BDC-05-03	25.47	12.78	1.63	12.43	1.98			12.58	1.83			11.94	2.47			12.45	1.96			11.58	2.83			11.71	2.70			11.86	2.55
9-64-bldg.	BDC-05-04	25.36	12.76	1.83	12.37	2.22			12.62	1.97			11.95	2.64			12.58	2.01			11.62	2.97			11.86	2.73			11.95	2.64
9-64-bldg.	BDC-05-05	24.18	12.45	1.99	12.00	2.44			12.32	2.12			11.58	2.86			12.27	2.17			11.19	3.25			11.52	2.92			11.57	2.87
9-64-bldg.	BDC-05-07	25.30	12.24	1.75	11.70	2.29			11.96	2.03			11.34	2.65			12.03	1.96			11.02	2.97			11.22	2.77			11.38	2.61
9-64-bldg.	BDC-05-08	26.75	13.02	1.65	12.62	2.05			12.74	1.93			12.12	2.55			12.71	1.96			11.88	2.79			11.95	2.72			12.11	2.56
9-64-bldg.	BDC-05-09	24.55	12.66	1.75	12.25	2.16			12.40	2.01			11.79	2.62			12.41	2.00			11.49	2.92			11.68	2.73			11.80	2.61
9-64-bldg.	BDC-05-10	24.57	12.63	1.78	12.23	2.18			12.42	1.99			11.74	2.67			12.44	1.97			11.31	3.10			11.62	2.79			11.80	2.61
9-64-bldg.	BDC-05-11	24.85	12.78	1.87	12.48	2.17			12.60	2.05			11.96	2.69			12.58	2.07			11.71	2.94			11.78	2.87			12.02	2.63
9-64-bldg.	BDC-05-12	24.87	12.91	1.81	12.54	2.18			12.65	2.07			11.94	2.78			12.68	2.04	12.62	2.10	11.80	2.92	11.50	3.22	11.91	2.81	12.80	1.92	12.11	2.61
9-64-bldg.	BDC-05-13	24.78	12.66	1.77	12.31	2.12			12.44	1.99			11.45	2.98			12.44	1.99			11.62	2.81			11.68	2.75			11.87	2.56
9-64-bldg.	BDC-05-14	24.85	12.47	1.75	12.14	2.08			12.26	1.96			11.71	2.51			12.25	1.97			11.39	2.83			11.52	2.70			11.71	2.51
9-64-bldg.	BDC-05-15	24.48	12.28	1.69	11.89	2.08			12.02	1.95			11.26	2.71			11.94	2.03			11.20	2.77			11.28	2.69			11.49	2.48
9-64-bldg.	BDC-05-16	24.89	12.38	1.69	12.04	2.03			12.14	1.93			11.51	2.56			12.10	1.97	12.13	1.94	11.32	2.75	11.05	3.02	11.43	2.64	12.31	1.76	11.65	2.42
9-64-bldg.	BDC-05-17	24.82	12.61	1.64	12.18	2.07			12.37	1.88			11.77	2.48			12.33	1.92			11.56	2.69			11.65	2.60			11.86	2.39
9-64-bldg.	BDC-05-18	24.69	12.10	1.69	11.69	2.10			11.87	1.92			11.19	2.60			11.73	2.06	11.77	2.02	10.92	2.87	10.70	3.09	11.13	2.66	11.96	1.83	11.22	2.57
9-64-bldg.	BDC-05-19	24.85	12.79	1.77	12.46	2.10			12.48	2.08			11.97	2.59			12.58	1.98	12.52	2.04	11.73	2.83	11.43	3.13	11.82	2.74	12.68	1.88	11.99	2.57
9-64-bldg.	BDC-05-20	24.80	12.77	1.57	12.38	1.96			12.49	1.85			11.91	2.43			12.41	1.93	12.44	1.90	11.66	2.68	11.34	3.00	11.74	2.60	12.62	1.72	11.92	2.42
9-64-bldg.	BDC-05-21	24.86	12.66	1.53	12.33	1.86			12.37	1.82			11.82	2.37			12.31	1.88	12.29	1.90	11.49	2.70	11.16	3.03	11.57	2.62	12.50	1.69	11.80	2.39
9-64-bldg.	BDC-05-22	25.07	12.61	1.55	12.22	1.94			11.31	2.85			11.73	2.43			12.21	1.95	12.22	1.94	11.45	2.71	11.16	3.00	11.59	2.57	12.42	1.74	11.73	2.43
9-64-bldg.	BDC-05-23	25.10	13.12	1.34	12.76	1.70			12.75	1.71			12.26	2.20			12.69	1.77	12.74	1.72	11.94	2.52	11.48	2.98	12.02	2.44	12.88	1.58	12.25	2.21
9-64-bldg.	BDC-05-24	24.73	12.50	1.69	12.15	2.04			12.26	1.93			11.66	2.53			12.10	2.09	12.23	1.96	11.39	2.80	11.10	3.09	11.48	2.71	12.37	1.82	11.68	2.51
9-60 bldg.	BDC-101	18.42	12.37	2.10	11.87	2.60	11.19	3.28	12.20	2.27	12.21	2.26	11.41	3.06	10.66	3.81	12.21	2.26	12.08	2.39	11.02	3.45	10.97	3.50	11.55	2.92	12.30	2.17	11.27	3.20
9-60 bldg.	BDC-102	18.83	12.15	2.12	11.70	2.57	10.98	3.29	11.97	2.30	12.01	2.26	11.18	3.09	10.53	3.74	11.94	2.33	11.85	2.42	10.86	3.41	10.73	3.54	11.32	2.95	12.07	2.20	11.09	3.18
9-60 bldg.	BDC-103	18.51	12.08	2.26	11.63	2.71	10.94	3.40	12.00	2.34	12.01	2.33	11.10	3.24	10.38	3.96	11.89	2.45	11.82	2.52	10.76	3.58	10.69	3.65	11.39	2.95	12.13	2.21	10.97	3.37
9-60 bldg.	BDC-104	18.90	11.89	2.27	11.37	2.79	10.72	3.44	11.79	2.37	11.81	2.35	10.88	3.28	10.19	3.97	11.72	2.44	11.61	2.55	10.52	3.64	10.51	3.65	11.03	3.13	11.89	2.27	10.73	3.43
9-52-bldg.	952MW-1	17.40																												
9-52-bldg.	952MW-2	17.54																												
9-52-bldg.	952MW-3	17.95																												
9-52-bldg. (west)	MW-5	27.43																												
9-04-bldg. (north)	MW-2	26.98																												
9-04-bldg. (north)	MW-7	18.50																												
9-04-bldg. (north)	MW-8	18.50																												
9-04-bldg. (north)	MW-9	18.50																												

Table B-1
Cumulative Groundwater Level Measurements
November 1999 to Present
Boeing Developmental Center
Tukwila, Washington

			January 2016		October 2015		July 2015		April 2015		January 2015		November 2014		August 2014		May 2014		February 2014		November 2013		August 2013		May 2013		February 2013		November 2012	
Well Location / Bldg.	Well ID No.	Well Depth (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
9-101-bldg.	MW-6A	24.25			12.80	2.00			12.65	2.15			12.22	2.58			12.10	2.70			12.82	1.98			12.92	1.88			12.82	1.98
9-101-bldg.	MW-6B	27.20			13.16	1.93			13.02	2.07			12.58	2.51			14.44	0.65			13.16	1.93			13.27	1.82			13.17	1.92
9-101-bldg.	MW-6C	40.55																												
9-101-bldg.	MW-8C	40.20																												
9-101-bldg.	MW-9A	21.30			12.83	1.91			12.64	2.10			12.18	2.56			12.07	2.67			12.88	1.86			12.80	1.94			12.83	1.91
9-101-bldg.	MW-9B	26.90																												
9-101-bldg.	MW-9C	38.80																												
9-101-bldg.	MW-9D	56.00																												
9-101-bldg.	MW-10A	20.20											12.14	2.55			11.98	2.71			12.81	1.88			12.72	1.97			12.77	1.92
9-101-bldg.	MW-10C	40.40			12.66	1.96			12.57	2.05			12.06	2.56			11.91	2.71			12.73	1.89			12.65	1.97			12.70	1.92
9-101-bldg.	MW-11A	19.90			12.87	2.01			12.74	2.14			12.31	2.57			12.10	2.78			12.89	1.99			12.84	2.04			12.19	2.69
9-101-bldg.	MW-12A	20.20											12.38	2.45			12.17	2.66			12.98	1.85			12.88	1.95			13.01	1.82
9-101-bldg.	MW-13A	19.37			12.23	1.91			12.19	1.95			11.71	2.43			11.62	2.52			12.37	1.77			12.36	1.78			12.27	1.87
9-101-bldg.	MW-13C	35.62			12.08	1.94			12.07	1.95			11.59	2.43			11.49	2.53			12.23	1.79			12.22	1.80			12.11	1.91
9-101-bldg.	MW-14A	19.00											11.93	2.44			11.85	2.52			12.59	1.78			12.65	1.72			12.53	1.84
9-101-bldg.	MW-14C	33.30			11.95	2.02			11.95	2.02			11.54	2.43			11.49	2.48			12.17	1.80			12.25	1.72			12.07	1.90
9-101-bldg.	MW-14E	82.10																												
9-101-bldg.	MW-15A	20.70											11.77	2.40			11.72	2.45			12.44	1.73			12.48	1.69			12.34	1.83
9-101-bldg.	MW-15C	34.35			12.19	1.98			12.29	1.88			11.70	2.47			11.71	2.46			12.42	1.75			12.54	1.63			12.27	1.90
9-101-bldg.	MW-15D	51.80																												
9-101-bldg.	MW-16A	20.55			12.96	2.03			12.85	2.14			12.40	2.59			12.22	2.77			13.06	1.93			13.07	1.92			13.02	1.97
9-101-bldg.	MW-16C	38.30			13.14	1.90			13.02	2.02			12.58	2.46			12.32	2.72			13.24	1.80			13.25	1.79			13.17	1.87
9-101-bldg.	MW-17A	19.00			12.83	1.97			12.67	2.13			12.25	2.55			12.11	2.69			12.90	1.90			12.98	1.82			12.78	2.02
9-101-bldg.	MW-17C	35.00																												
9-101-bldg.	MW-17D	52.50																												
9-101-bldg.	MW-18A	20.02			12.36	1.94			12.26	2.04			11.86	2.44			11.70	2.60			12.23	2.07			12.58	1.72			12.39	1.91
9-101-bldg.	MW-18C	34.55																												
9-101-bldg.	MW-18D	52.85																												
9-101-bldg.	MW-19A	16.86																							10.74	1.49				
9-101-bldg.	MW-19C	33.92																												
9-101-bldg.	MW-19D	51.86																												
9-101-bldg.	MW-20A	19.34																												
9-101-bldg.	MW-20C	35.32			12.14	2.01			12.19	1.96			11.61	2.54			11.58	2.57			12.40	1.75			12.50	1.65			12.22	1.93
9-101-bldg.	MW-20D	50.15																												
9-101-bldg.	MW-22A	19.20			12.34	1.91			12.33	1.92			11.96	2.29			11.90	2.35			12.42	1.83			12.72	1.53			12.42	1.83
9-101-bldg.	MW-23A	19.50																												
9-101/9-50 bldg.	MW-21A	19.90			12.55	1.90			12.48	1.97			12.06	2.39			11.90	2.55			12.39	2.06			12.80	1.65			12.60	1.85
9-101/9-50 bldg.	MW-21C	34.00																												
9-64-bldg.	BDC-05-02	25.35	10.85	3.56	12.28	2.13	12.30	2.11	12.07	2.34	11.49	2.92	11.77	2.64	12.26	2.15	11.69	2.72	12.21	2.20	12.36	2.05	12.47	1.94	12.29	2.12	12.19	2.22	12.31	2.10
9-64-bldg.	BDC-05-03	25.47			12.33	2.08			12.19	2.22			11.79	2.62			11.76	2.65			12.43	1.98			12.36	2.05			12.36	2.05
9-64-bldg.	BDC-05-04	25.36			12.54	2.05			12.26	2.33			11.95	2.64			11.93	2.66			12.51	2.08			12.17	2.42			12.52	2.07
9-64-bldg.	BDC-05-05	24.18			12.18	2.26			11.86	2.58			11.53	2.91			11.47	2.97			12.15	2.29			12.13	2.31			13.40	1.04
9-64-bldg.	BDC-05-07	25.30			11.88	2.11			11.67	2.32			11.37	2.62			11.29	2.70			11.96	2.03			11.92	2.07			11.97	2.02
9-64-bldg.	BDC-05-08	26.75			12.62	2.05			12.47	2.20			12.10	2.57			12.07	2.60			12.72	1.95			12.64	2.03			12.64	2.03
9-64-bldg.	BDC-05-09	24.55			12.30	2.11			12.10	2.31			11.79	2.62			11.71	2.70			12.37	2.04			12.31	2.10			12.36	2.05
9-64-bldg.	BDC-05-10	24.57			12.27	2.14			12.11	2.30			11.72	2.69			11.70	2.71			12.36	2.05			12.31	2.10			12.30	2.11
9-64-bldg.	BDC-05-11	24.85			12.99	1.66			12.33	2.32			11.93	2.72			11.91	2.74			12.59	2.06			12.51	2.14			12.55	2.10
9-64-bldg.	BDC-05-12	24.87	11.21	3.51	12.59	2.13	12.63	2.09	12.43	2.29	11.83	2.89	12.06	2.66	12.58	2.14	12.01	2.71	12.53	2.19	12.88	1.84	12.78	1.94	12.61	2.11	12.53	2.19	12.66	2.06
9-64-bldg.	BDC-05-13	24.78			12.37	2.06			12.20	2.23			11.85	2.58			11.86	2.57			12.44	1.99			12.40	2.03			12.44	1.99
9-64-bldg.	BDC-05-14	24.85			12.18	2.04			12.03	2.19			11.70	2.52			11.68	2.54			12.25	1.97			12.21	2.01			12.29	1.93
9-64-bldg.	BDC-05-15	24.48			11.95	2.02			11.83	2.14			11.47	2.50			11.42	2.55			12.04	1.93			12.07	1.90			11.97	2.00
9-64-bldg.	BDC-05-16	24.89	10.79	3.28	12.10	1.97	12.10	1.97	11.90	2.17	11.31	2.76	11.65	2.42	12.04	2.03	11.60	2.47	12.00	2.07	12.16	1.91	12.25	1.82	12.19	1.88	12.04	2.03	12.09	1.98
9-64-bldg.	BDC-05-17	24.82			12.29	1.96			12.12	2.13			11.86	2.39			11.83	2.42			12.34	1.91			12.30	1.95			12.27	1.98
9-64-bldg.	BDC-05-18	24.69	10.34	3.45	11.77	2.02	11.75	2.04	11.50	2.29	10.98	2.81	11.14	2.65	11.51	2.28	11.16	2.63	11.62	2.17	11.71	2.08	11.90	1.89	11.72	2.07	11.63	2.16	11.75	2.04
9-64-bldg.	BDC-05-19	24.85	11.11	3.45	12.49	2.07	12.53	2.03	12.33	2.23	11.61	2.95	11.96	2.60	12.47	2.09	11.91	2.65	12.43	2.13	12.58	1.98	12.68	1.88	12.52	2.04	12.44	2.12	12.60	1.96
9-64-bldg.	BDC-05-20	24.80	11.08	3.26	12.37	1.97	12.42	1.92	12.25	2.09	11.64	2.70	11.92	2.42	12.45	1.89	11.95	2.39	12.28	2.06	12.46	1.88	12.55	1.79	12.38	1.96	12.41	1.93	12.44	1.90
9-64-bldg.	BDC-05-21	24.86	10.96	3.23	12.22	1.97	12.24	1.95	12.10	2.09	11.51	2.68	11.80	2.39	12.29	1.90	11.79	2.40	12.15	2.04	12.30	1.89	12.42	1.77	12.26	1.93	12.25	1.94	12.30	1.89
9-64-bldg.	BDC-05-22	25.07	10.89	3.27	12.19	1.97	12.29	1.87	12.04	2.12	11.47	2.69	11.74	2.42	12.25	1.91	11.75	2.41	12.08	2.08	12.25	1.91	12.38	1.78	12.22	1.94	12.18	1.98	12.24	1.92
9-64-bldg.	BDC-05-23	25.10	11.40	3.06	12.57	1.89	12.85	1.61	12.51	1.95	11.98	2.48	12.27	2.19	12.81	1.65	12.36	2.10	12.51	1.95	12.74	1.72	12.83	1.63	12.70	1.76	12.56	1.90	12.74	1.72
9-64-bldg.	BDC-05-24	24.73	10.81	3.38	12.15	2.04	12.21	1.98	12.00	2.19	11.43	2.76	11.65	2.54	12.12	2.07	11.64	2.55	12.04	2.15	12.22	1.97	12.34	1.85	12.19	2.00	12.09	2.10	12.20	1.99
9-60 bldg.	BDC-101	18.42	10.51	3.96	12.20	2.27	12.12	2.35	11.75	2.72	11.22	3.25	11.44	3.03	12.08	2.39	11.22	3.25	11.97	2.50	11.99	2.48	12.27	2.20	11.99	2.48	11.77	2.70	12.20	2.27
9-60 bldg.	BDC-102	18.83	10.30	3.97	11.98	2.29	11.94	2.33	11.57	2.70	11.01	3.26	11.20	3.07	11.87	2.40	10.97	3.30	11.73	2.54	11.75	2.52	12.04	2.23	11.79	2.48	11.55	2.72	11.93	2.34
9-60 bldg.	BDC-103	18.51	10.22	4.12	12.02	2.32	11.94	2.40	11.49	2.85	10.93	3.41	11.01	3.33	11.88	2.46	10.85	3.49	11.75	2.59	11.66	2.68	12.06	2.28	11.71	2.63	11.43	2.91	11.88	2.46
9-60 bldg.	BDC-104	18.90	10.02	4.14	11.95	2.21	11.75	2.41	11.23	2.93	10.74	3.42	10.88	3.28	11.67	2.49	10.66	3.50	11.45	2.71	11.51	2.65	11.87	2.29	11.51	2.65	11.24	2.92	11.78	2.38
9-52-bldg.	952MW-1	17.40																												
9-52-bldg.	952MW-2	17.54																												
9-52-bldg.	952MW-3	17.95																												
9-52-bldg. (west)	MW-5	27.43																												
9-04-bldg. (north)	MW-2	26.98																												
9-04-bldg. (north)	MW-7	18.50																												
9-04-bldg. (north)	MW-8	18.50																												
9-04-bldg. (north)	MW-9	18.50																												

Table B-1
Cumulative Groundwater Level Measurements
November 1999 to Present
Boeing Developmental Center
Tukwila, Washington

			May 2012		November 2011		July 2011		May 2011		November 2010		May 2010		November 2009		May 2009		November 2008		May 2008		November 2007		May 2007		February 2007		November 2006	
Well Location / Bldg.	Well ID No.	Well Depth (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
9-101-bldg.	MW-6A	24.25	12.61	2.19	12.99	1.81			12.50	2.30	12.70	2.10	12.69	2.11	12.42	2.38	12.73	2.07	12.79	2.01	12.87	1.93	13.08	1.72	12.97	1.83	12.42	2.38	12.30	2.50
9-101-bldg.	MW-6B	27.20	12.96	2.13	13.29	1.80			12.81	2.28	13.06	2.03	13.04	2.05	12.73	2.36	13.08	2.01	13.12	1.97	13.21	1.88	13.46	1.63	13.32	1.77	12.75	2.34	12.67	2.42
9-101-bldg.	MW-6C	40.55													12.72	2.35	13.05	2.02	13.06	2.01	13.13	1.94	13.41	1.66	13.27	1.80	12.69	2.38	12.65	2.42
9-101-bldg.	MW-8C	40.20													12.70	2.22	13.01	1.91	12.88	2.04	13.16	1.76	13.28	1.64	13.00	1.92			12.21	2.71
9-101-bldg.	MW-9A	21.30	12.54	2.20	13.03	1.71			12.53	2.21	12.65	2.09	12.65	2.09	12.43	2.31	12.77	1.97	12.69	2.05	12.93	1.81	13.07	1.67	12.90	1.84	12.36	2.38	12.12	2.62
9-101-bldg.	MW-9B	26.90													12.30	2.29	12.64	1.95	12.68	1.91	12.75	1.84	12.91	1.68	12.71	1.88	12.19	2.40	11.95	2.64
9-101-bldg.	MW-9C	38.80													12.40	2.26	12.67	1.99	12.66	2.00	12.82	1.84	13.02	1.64	12.81	1.85	12.20	2.46	12.05	2.61
9-101-bldg.	MW-9D	56.00													12.43	2.23	12.79	1.87	12.78	1.88	12.90	1.76	13.56	1.10	12.88	1.78			12.30	2.36
9-101-bldg.	MW-10A	20.20	12.55	2.14	12.97	1.72			12.47	2.22	12.64	2.05	12.62	2.07	12.46	2.23	12.65	2.04	12.68	2.01	12.89	1.80	13.05	1.64	12.72	1.97	12.35	2.34	12.06	2.63
9-101-bldg.	MW-10C	40.40	12.49	2.13	12.90	1.72			12.38	2.24	12.55	2.07	12.53	2.09	12.41	2.21	12.60	2.02	12.62	2.00	12.78	1.84	12.96	1.66	12.77	1.85			11.99	2.63
9-101-bldg.	MW-11A	19.90	12.65	2.23	13.03	1.85			12.62	2.26	12.59	2.29	12.69	2.19	12.52	2.36	12.81	2.07	12.81	2.07	13.16	1.72	13.16	1.72	12.96	1.92			11.85	3.03
9-101-bldg.	MW-12A	20.20	12.70	2.13	13.23	1.60			12.71	2.12	12.68	2.15	12.73	2.10	12.56	2.27	12.96	1.87	12.91	1.92	13.22	1.61	13.24	1.59	13.00	1.83			11.89	2.94
9-101-bldg.	MW-13A	19.37	12.20	1.94	12.66	1.48			12.11	2.03	12.08	2.06	12.14	2.00	11.89	2.25	12.29	1.85	12.25	1.89	12.62	1.52	12.42	1.72	12.33	1.81			11.50	2.64
9-101-bldg.	MW-13C	35.62	12.06	1.96	12.52	1.50			11.94	2.08	11.92	2.10	12.02	2.00	11.71	2.31	12.14	1.88	12.12	1.90	12.46	1.56	12.29	1.73	12.20	1.82			11.35	2.67
9-101-bldg.	MW-14A	19.00	12.46	1.91	12.71	1.66			12.16	2.21	12.22	2.15	12.39	1.98	12.10	2.27	12.50	1.87	12.50	1.87	12.64	1.73	12.55	1.82	12.73	1.64	12.03	2.34	11.46	2.91
9-101-bldg.	MW-14C	33.30	12.09	1.88	12.20	1.77			12.78	1.19	11.82	2.15	12.00	1.97	11.65	2.32	12.20	1.77	12.08	1.89	12.14	1.83	12.00	1.97	12.32	1.65			11.72	2.25
9-101-bldg.	MW-14E	82.10													7.20	6.98	7.55	6.63	7.51	6.67	8.07	6.11	6.83	7.35	7.59	6.59			6.71	7.47
9-101-bldg.	MW-15A	20.70	12.16	2.01	12.51	1.66			11.87	2.30	12.12	2.05	12.22	1.95	11.89	2.28	12.44	1.73	12.31	1.86	12.35	1.82	12.24	1.93	12.52	1.65			11.93	2.24
9-101-bldg.	MW-15C	34.35	12.36	1.81	12.44	1.73			11.49	2.68	12.00	2.17	12.17	2.00	11.85	2.32	12.46	1.71	12.23	1.94	12.50	1.67	12.30	1.87	12.55	1.62			11.91	2.26
9-101-bldg.	MW-15D	51.80													12.02	2.39	12.78	1.63	12.47	1.94	12.68	1.73	12.53	1.88	12.76	1.65			12.14	2.27
9-101-bldg.	MW-16A	20.55	12.81	2.18	13.19	1.80			12.67	2.32	12.84	2.15	12.88	2.11	12.68	2.31	12.98	2.01	12.95	2.04	13.17	1.82	12.53	2.46	13.11	1.88			12.05	2.94
9-101-bldg.	MW-16C	38.30	13.01	2.03	13.33	1.71			12.84	2.20	13.02	2.02	13.04	2.00	12.63	2.41	13.12	1.92	13.13	1.91	13.34	1.70	13.33	1.71	13.23	1.81			12.22	2.82
9-101-bldg.	MW-17A	19.00	12.26	2.54	12.73	2.07	12.84	1.96	12.45	2.35	12.65	2.15	12.63	2.17	12.55	2.25	12.75	2.05	12.80	2.00	13.07	1.73	13.00	1.80	12.80	2.00			12.04	2.76
9-101-bldg.	MW-17C	35.00																												
9-101-bldg.	MW-17D	52.50																												
9-101-bldg.	MW-18A	20.02	11.90	2.40	12.84	1.46	12.43	1.87	12.14	2.16	12.22	2.08	12.25	2.05	12.21	2.09	12.42	1.88	12.37	1.93	12.72	1.58	12.46	1.84	12.45	1.85			11.57	2.73
9-101-bldg.	MW-18C	34.55													12.36	2.27	12.66	1.97	12.67	1.96	12.98	1.65	12.88	1.75	12.74	1.89			11.85	2.78
9-101-bldg.	MW-18D	52.85																												
9-101-bldg.	MW-19A	16.86													10.11	2.12	10.49	1.74	10.47	1.76	10.49	1.74	10.68	1.55	10.55	1.68	9.92	2.31	9.59	2.64
9-101-bldg.	MW-19C	33.92													9.98	2.25	10.44	1.79	10.33	1.90	10.41	1.82	10.59	1.64	10.50	1.73			9.50	2.73
9-101-bldg.	MW-19D	51.86																												
9-101-bldg.	MW-20A	19.34													12.37	1.94	12.56	1.75	12.69	1.62	12.60	1.71	12.76	1.55	12.30	2.01			12.10	2.21
9-101-bldg.	MW-20C	35.32	12.18	1.97	12.76	1.39			12.27	1.88	11.87	2.28	12.06	2.09	11.70	2.45	12.15	2.00	12.13	2.02	12.50	1.65	12.39	1.76	12.28	1.87			11.67	2.48
9-101-bldg.	MW-20D	50.15																												
9-101-bldg.	MW-22A	19.20	12.35	1.90	12.52	1.73			12.14	2.11	12.40	1.85	12.30	1.95	12.04	2.21	12.57	1.68	12.35	1.90	12.50	1.75	12.25	2.00	12.64	1.61	11.90	2.35	12.11	2.14
9-101-bldg.	MW-23A	19.50													11.86	2.41	13.27	1.00	12.67	1.60	12.67	1.60	12.83	1.44	12.90	1.37	12.03	2.24	13.02	1.25
9-101/9-50 bldg.	MW-21A	19.90	12.13	2.32	13.05	1.40	12.67	1.78	12.41	2.04	12.43	2.02	12.45	2.00	12.37	2.08														
9-101/9-50 bldg.	MW-21C	34.00																												
9-64-bldg.	BDC-05-02	25.35	11.81	2.60	12.63	1.78	12.35	2.06	11.81	2.60	12.10	2.31	12.14	2.27	12.05	2.36	12.19	2.22	12.20	2.21	12.28	2.09	12.31	2.06	12.23	2.14			11.53	2.84
9-64-bldg.	BDC-05-03	25.47	11.95	2.46	12.77	1.64			11.94	2.47	12.21	2.20	12.24	2.17	12.11	2.30	12.29	2.12	12.28	2.13	12.47	1.94	12.51	1.90	12.45	1.96			11.75	2.66
9-64-bldg.	BDC-05-04	25.36	12.05	2.54	12.82	1.77			12.03	2.56	12.30	2.29	12.33	2.26	12.22	2.37	12.40	2.19	12.35	2.24	12.58	2.01	12.57	2.02	12.54	2.05			11.85	2.74
9-64-bldg.	BDC-05-05	24.18	11.65	2.79	12.50	1.94			11.61	2.83	11.95	2.49	11.97	2.47	11.89	2.55	12.02	2.42	12.00	2.44	12.18	2.26	12.30	2.14	12.07	2.37			11.51	2.93
9-64-bldg.	BDC-05-07	25.30	11.40	2.59	12.23	1.76			11.42	2.57	11.95	2.04	11.75	2.24	11.95	2.04	11.82	2.17	11.80	2.19	12.02	1.97	12.03	1.96	11.96	2.03			11.27	2.72
9-64-bldg.	BDC-05-08	26.75	12.28	2.39	13.02	1.65			12.20	2.47	12.49	2.18	12.51	2.16	12.39	2.28	12.79	1.88	12.57	2.10										
9-64-bldg.	BDC-05-09	24.55	11.90	2.51	12.68	1.73	12.27	2.13																						
9-64-bldg.	BDC-05-10	24.57	11.95	2.46	12.74	1.67	12.27	2.14																						
9-64-bldg.	BDC-05-11	24.85	12.13	2.52	12.92	1.73	12.60	2.05																						
9-64-bldg.	BDC-05-12	24.87	12.24	2.48	13.00	1.72	12.57	2.15																						
9-64-bldg.	BDC-05-13	24.78	12.02	2.41	12.78	1.65	12.35	2.08																						
9-64-bldg.	BDC-05-14	24.85	11.83	2.39	12.55	1.67	12.23	1.99																						
9-64-bldg.	BDC-05-15	24.48	11.63	2.34	12.34	1.63	11.95	2.02																						
9-64-bldg.	BDC-05-16	24.89	11.78	2.29	12.44	1.63	12.05	2.02																						
9-64-bldg.	BDC-05-17	24.82	11.65	2.60	12.60	1.65	12.27	1.98																						
9-64-bldg.	BDC-05-18	24.69	11.34	2.45	12.10	1.69	11.84	1.95																						
9-64-bldg.	BDC-05-19	24.85	12.15	2.41	12.90	1.66	12.59	1.97																						
9-64-bldg.	BDC-05-20	24.80	12.08	2.26	12.75	1.59	12.47	1.87																						
9-64-bldg.	BDC-05-21	24.86	11.94	2.25	12.59	1.60	12.34	1.85																						
9-64-bldg.	BDC-05-22	25.07	11.87	2.29	12.54	1.62	12.27	1.89																						
9-64-bldg.	BDC-05-23	25.10	12.39	2.07	13.08	1.38	12.79	1.67																						
9-64-bldg.	BDC-05-24	24.73	11.82	2.37	12.59	1.60	12.28	1.91																						
9-60 bldg.	BDC-101	18.42	11.32	3.15	12.46	2.01	12.16	2.31	11.48	2.99	11.92	2.55	11.82	2.65	11.82	2.65	11.89	2.58	11.95	2.52	12.29	2.18	12.22	2.25	12.13	2.34			11.42	3.05
9-60 bldg.	BDC-102	18.83	11.13	3.14	12.16	2.11	11.92	2.35	11.20	3.07	11.67	2.60	11.57	2.70	11.58	2.69	11.64	2.63	11.67	2.60	12.08	2.19	11.86	2.41	11.89	2.38			11.13	3.14
9-60 bldg.	BDC-103	18.51	11.09	3.25	12.20	2.14	11.90	2.44	10.96	3.38	11.63	2.71	11.54	2.80	11.55	2.79	11.61	2.73	11.68	2.66	12.02	2.32	11.93	2.41	11.87	2.47			11.10	3.24
9-60 bldg.	BDC-104	18.90	10.93	3.23	12.00	2.16	11.72	2.44	10.97	3.19	11.45	2.71	11.32	2.84	11.36	2.80	11.40	2.76	11.51	2.65	11.84	2.32								
9-52-bldg.	952MW-1	17.40																												
9-52-bldg.	952MW-2	17.54																												
9-52-bldg.	952MW-3	17.95																												
9-52-bldg. (west)	MW-5	27.43																												
9-04-bldg. (north)	MW-2	26.98																												
9-04-bldg. (north)	MW-7	18.50																												
9-04-bldg. (north)	MW-8	18.50																												
9-04-bldg. (north)	MW-9	18.50																												

Table B-1
Cumulative Groundwater Level Measurements
November 1999 to Present
Boeing Developmental Center
Tukwila, Washington

			August 2006		May 2006		February 2006		November 2005		August 2005		May 2005		February 2005		October 2004		August 2004		May 2004		November 2003		June 2003		December 2002		June 2002	
Well Location / Bldg.	Well ID No.	Well Depth (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
9-101-bldg.	MW-6A	24.25	13.16	1.64	12.77	2.03	12.42	2.38	12.80	2.00	13.02	1.78	12.52	2.28	12.68	2.12	12.90	1.90	13.06	1.74										
9-101-bldg.	MW-6B	27.20	13.50	1.59	13.09	2.00	12.75	2.34	13.15	1.94	13.35	1.74	12.88	2.21	12.97	2.12	13.25	1.84	13.40	1.69	13.00	1.83	12.88	1.95	13.30	1.53	13.01	1.82	13.21	1.62
9-101-bldg.	MW-6C	40.55	13.41	1.66	13.07	2.00	12.71	2.36	13.14	1.93	13.32	1.75	12.87	2.20	12.90	2.17	13.18	1.89	13.37	1.70	13.14	1.85	13.03	1.96	13.44	1.55	13.16	1.83	13.36	1.63
9-101-bldg.	MW-8C	40.20			13.18	1.74			13.00	1.92			12.64	2.28			12.91	2.01			13.11	1.81	13.11	1.81	13.39	1.53	13.19	1.73	13.27	1.65
9-101-bldg.	MW-9A	21.30	13.05	1.69	13.00	1.74	12.37	2.37	12.73	2.01	13.08	1.66	12.53	2.21	12.51	2.23	12.92	1.82	13.05	1.69	12.82	1.82	12.78	1.86	13.00	1.64	12.90	1.74	12.94	1.70
9-101-bldg.	MW-9B	26.90	12.87	1.72	13.81	0.78	12.19	2.40	12.69	1.90	12.90	1.69	12.17	2.42	10.80	3.79	12.76	1.83	12.90	1.69	12.77	1.95	12.82	1.90	13.08	1.64	12.96	1.76	13.00	1.72
9-101-bldg.	MW-9C	38.80	13.01	1.65	12.91	1.75	12.26	2.40	12.69	1.97	12.93	1.73	12.55	2.11	12.46	2.20	12.87	1.79	13.01	1.65	12.85	1.83	12.77	1.91	13.09	1.59	12.90	1.78	12.94	1.74
9-101-bldg.	MW-9D	56.00			13.15	1.51			12.90	1.76			12.90	1.76			13.92	0.74			12.92	1.74	13.04	1.62	13.39	1.27	13.17	1.49	13.20	1.46
9-101-bldg.	MW-10A	20.20	12.88	1.81	12.98	1.71	11.93	2.76	12.73	1.96	12.85	1.84	12.52	2.17	12.58	2.11	12.95	1.74	13.05	1.64	12.93	1.76	12.83	1.86	13.08	1.61	13.03	1.66	12.94	1.75
9-101-bldg.	MW-10C	40.40			12.88	1.74			12.63	1.99			12.45	2.17			12.74	1.88			12.80	1.82	12.71	1.91	12.97	1.65	12.90	1.72	12.84	1.78
9-101-bldg.	MW-11A	19.90			12.80	2.08			12.92	1.96			12.42	2.46			12.78	2.10			13.12	1.76	12.91	1.97	13.14	1.74	13.13	1.75	12.97	1.91
9-101-bldg.	MW-12A	20.20			12.97	1.86			12.98	1.85			12.58	2.25			12.86	1.97			13.21	1.62	13.00	1.83	13.23	1.60	13.20	1.63	13.03	1.80
9-101-bldg.	MW-13A	19.37			12.48	1.66			12.26	1.88			11.97	2.17			12.35	1.79			12.47	1.67	12.18	1.96	12.49	1.65	12.38	1.76	12.50	1.64
9-101-bldg.	MW-13C	35.62			12.33	1.69			12.10	1.92			11.78	2.24			12.19	1.83			12.35	1.67	12.02	2.00	12.30	1.72	12.22	1.80	12.31	1.71
9-101-bldg.	MW-14A	19.00	12.83	1.54	12.59	1.78	11.95	2.42	12.39	1.98	12.56	1.81	12.35	2.02	12.38	2.09	12.60	1.87	12.94	1.53	12.71	1.76	12.57	1.90	12.91	1.56	12.70	1.77	12.85	1.62
9-101-bldg.	MW-14C	33.30			12.26	1.71			12.13	1.84			11.84	2.13			12.09	1.88			12.16	1.81	12.07	1.90	12.43	1.54	12.18	1.79	12.33	1.64
9-101-bldg.	MW-14E	82.10			8.78	5.40			7.87	6.31			7.29	6.89			7.58	6.60			6.94	7.24	7.26	6.92	8.56	5.62	7.69	6.49	7.64	6.54
9-101-bldg.	MW-15A	20.70			12.05	2.12			12.42	1.75			11.74	2.43			12.17	2.00			12.67	1.50	12.36	1.81	12.57	1.60	12.55	1.62	12.52	1.65
9-101-bldg.	MW-15C	34.35			12.37	1.80			12.50	1.67			12.02	2.15			12.31	1.86			12.72	1.45	12.37	1.80	12.56	1.61	12.47	1.70	12.50	1.67
9-101-bldg.	MW-15D	51.80			12.52	1.89			12.63	1.78			12.20	2.21			12.56	1.85			12.88	1.53	12.64	1.77	12.41	2.00	12.80	1.61	13.02	1.39
9-101-bldg.	MW-16A	20.55			13.04	1.95			13.05	1.94			12.67	2.32			12.97	2.02			13.19	1.80	12.96	2.03	13.35	1.64	13.03	1.96	13.02	1.97
9-101-bldg.	MW-16C	38.30			13.23	1.81			13.22	1.82			12.83	2.21			13.15	1.89			13.38	1.66	13.15	1.89	13.51	1.53	13.33	1.71	13.29	1.75
9-101-bldg.	MW-17A	19.00			12.85	1.95			12.74	2.30							12.81	1.99			13.05	1.75	12.83	1.97	13.10	1.70	12.99	1.81	13.07	1.73
9-101-bldg.	MW-17C	35.00							12.83	2.21							12.80	2.05			13.11	1.74								
9-101-bldg.	MW-17D	52.50							12.82	2.22							12.97	1.90			13.20	1.67								
9-101-bldg.	MW-18A	20.02			12.43	1.87			12.44	1.86			12.11	2.19			12.43	1.87			12.57	1.73	12.36	1.94						
9-101-bldg.	MW-18C	34.55			12.70	1.93			12.72	1.91			12.36	2.27			12.75	1.88			12.84	1.79	12.62	2.01	12.89	1.74	12.82	1.81	12.92	1.71
9-101-bldg.	MW-18D	52.85							12.42	2.21							12.42	1.84			12.60	1.66								
9-101-bldg.	MW-19A	16.86	10.77	1.46	10.44	1.79	10.22	2.01	10.43	1.80	10.70	1.53	10.22	2.01	10.19	2.04	10.54	1.69			10.85	1.38	10.39	1.84						
9-101-bldg.	MW-19C	33.92			10.32	1.91			10.36	1.87			10.22	2.01			10.43	1.80			10.22	2.01	10.31	1.92	10.55	1.68	10.41	1.82	10.71	1.52
9-101-bldg.	MW-19D	51.86							10.69	1.54							10.67	1.56			10.86	1.37								
9-101-bldg.	MW-20A	19.34			12.09	2.22			12.68	1.63			12.33	1.98			12.75	1.56			12.73	1.58	12.58	1.73						
9-101-bldg.	MW-20C	35.32			12.05	2.10			12.30	1.85			11.90	2.25			12.39	1.76			12.66	1.49	12.24	1.91	12.48	1.67	12.26	1.89	12.55	1.60
9-101-bldg.	MW-20D	50.15							12.66	1.49							12.80	1.63			13.17	1.26								
9-101-bldg.	MW-22A	19.20	12.77	1.48	12.41	1.84	12.25	2.00	12.55	1.70	12.81	1.44	12.38	1.87																
9-101-bldg.	MW-23A	19.50	12.94	1.33	12.49	1.78	12.44	1.83	12.78	1.49	13.73	0.54	13.55	0.72																
9-101/9-50 bldg.	MW-21A	19.90			12.68	1.77																					12.79	1.66	12.74	1.71
9-101/9-50 bldg.	MW-21C	34.00																									10.53	1.67	10.52	1.68
9-64-bldg.	BDC-05-02	25.35			12.21	2.16			12.21	2.16			11.86	2.51			12.40	1.97			12.24	2.13	12.08	2.29	12.47	1.90	12.40	1.97	12.25	2.12
9-64-bldg.	BDC-05-03	25.47			12.40	2.01			12.43	1.98			12.07	2.34			12.60	1.81			12.46	1.95	12.28	2.13	12.66	1.75	12.60	1.81	12.47	1.94
9-64-bldg.	BDC-05-04	25.36			12.54	2.05			12.52	2.07			12.17	2.42			12.72	1.87			12.55	2.04	12.40	2.19	12.80	1.79	12.71	1.88	12.57	2.02
9-64-bldg.	BDC-05-05	24.18			12.16	2.28			12.16	2.28			11.87	2.57			12.41	2.03			12.12	2.32	12.13	2.31	12.51	1.93	12.42	2.02	12.22	2.22
9-64-bldg.	BDC-05-07	25.30			11.94	2.05			11.96	2.03			11.59	2.40			12.14	1.85			11.97	2.02	11.81	2.18	12.18	1.81	12.11	1.88	12.02	1.97
9-64-bldg.	BDC-05-08	26.75																												
9-64-bldg.	BDC-05-09	24.55																												
9-64-bldg.	BDC-05-10	24.57																												
9-64-bldg.	BDC-05-11	24.85																												
9-64-bldg.	BDC-05-12	24.87																												
9-64-bldg.	BDC-05-13	24.78																												
9-64-bldg.	BDC-05-14	24.85																												
9-64-bldg.	BDC-05-15	24.48																												
9-64-bldg.	BDC-05-16	24.89																												
9-64-bldg.	BDC-05-17	24.82																												
9-64-bldg.	BDC-05-18	24.69																												
9-64-bldg.	BDC-05-19	24.85																												
9-64-bldg.	BDC-05-20	24.80																												
9-64-bldg.	BDC-05-21	24.86																												
9-64-bldg.	BDC-05-22	25.07																												
9-64-bldg.	BDC-05-23	25.10																												
9-64-bldg.	BDC-05-24	24.73																												
9-60 bldg.	BDC-101	18.42			12.07	2.40			11.91	2.56			11.73	2.74			12.31	2.16			12.04	2.43	12.08	2.39	12.43	2.04	12.34	2.13	12.07	2.40
9-60 bldg.	BDC-102	18.83			11.85	2.42			11.79	2.48			11.53	2.74			11.97	2.30			11.84	2.43	11.82	2.45	12.24	2.03	12.14	2.13	11.82	2.45
9-60 bldg.	BDC-103	18.51			11.78	2.56			11.81	2.53			11.50	2.84			12.08	2.26			11.79	2.55	11.72	2.62	12.27	2.07	12.15	2.19	11.81	2.53
9-60 bldg.	BDC-104	18.90																												
9-52-bldg.	952MW-1	17.40																											11.10	2.38
9-52-bldg.	952MW-2	17.54																											11.37	2.63
9-52-bldg.	952MW-3	17.95																											11.40	2.36
9-52-bldg. (west)	MW-5	27.43																												
9-04-bldg. (north)	MW-2	26.98																			9.96	2.71	9.78	2.89						
9-04-bldg. (north)	MW-7	18.50																			10.90	2.79	10.72	2.97						
9-04-bldg. (north)	MW-8	18.50																			11.10	2.82	10.88	3.04						
9-04-bldg. (north)	MW-9	18.50																			11.03		10.84							

Table B-1
Cumulative Groundwater Level Measurements
November 1999 to Present
Boeing Developmental Center
Tukwila, Washington

			December 2001		June 2001		December 2000		June 2000		November 1999	
Well Location / Bldg.	Well ID No.	Well Depth (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
9-101-bldg.	MW-6A	24.25										
9-101-bldg.	MW-6B	27.20	12.45	2.38	13.50	1.33	13.55	1.28	13.01	1.82	13.33	1.50
9-101-bldg.	MW-6C	40.55	12.60	2.39	13.67	1.32	13.70	1.29	13.15	1.84	13.50	1.49
9-101-bldg.	MW-8C	40.20	12.89	2.03	13.85	1.07	13.71	1.21	13.13	1.79	13.79	1.13
9-101-bldg.	MW-9A	21.30	12.69	1.95	13.76	0.88	13.72	0.92	12.78	1.86	13.67	0.97
9-101-bldg.	MW-9B	26.90	12.82	1.90	13.90	0.82	13.82	0.90	12.81	1.91	13.90	0.82
9-101-bldg.	MW-9C	38.80	12.61	2.07	13.64	1.04	13.57	1.11	12.75	1.93	13.60	1.08
9-101-bldg.	MW-9D	56.00	12.25	2.41	13.15	1.51	13.03	1.63	12.74	1.92	13.00	1.66
9-101-bldg.	MW-10A	20.20	12.52	2.17	13.52	1.17	13.62	1.07	12.84	1.85	13.50	1.19
9-101-bldg.	MW-10C	40.40	12.32	2.30	13.37	1.25	13.40	1.22	12.74	1.88	13.29	1.33
9-101-bldg.	MW-11A	19.90	12.28	2.60	13.35	1.53	13.52	1.36	12.91	1.97	13.20	1.68
9-101-bldg.	MW-12A	20.20	12.33	2.50	13.35	1.48	13.50	1.33	13.02	1.81	13.21	1.62
9-101-bldg.	MW-13A	19.37	11.92	2.22	12.59	1.55	12.76	1.38	12.50	1.64	12.33	1.81
9-101-bldg.	MW-13C	35.62	11.45	2.57	12.43	1.59	12.69	1.33	12.37	1.65	12.21	1.81
9-101-bldg.	MW-14A	19.00	12.16	2.31	13.00	1.47	12.98	1.49	12.70	1.77	12.78	1.69
9-101-bldg.	MW-14C	33.30	11.60	2.37	12.59	1.38	12.49	1.48	12.17	1.80	12.35	1.62
9-101-bldg.	MW-14E	82.10	6.10	8.08	7.83	6.35	7.44	6.74	7.45	6.73	7.90	6.28
9-101-bldg.	MW-15A	20.70	11.82	2.35	12.66	1.51	12.82	1.35	12.40	1.77	12.35	1.82
9-101-bldg.	MW-15C	34.35	11.73	2.44	12.80	1.37	12.77	1.40	12.36	1.81	12.49	1.68
9-101-bldg.	MW-15D	51.80	11.90	2.51	12.88	1.53	12.90	1.51	12.59	1.82	12.44	1.97
9-101-bldg.	MW-16A	20.55	12.45	2.54	13.55	1.44	13.50	1.49	13.19	1.80	13.34	1.65
9-101-bldg.	MW-16C	38.30	12.62	2.42	13.77	1.27	13.67	1.37	13.36	1.68	13.52	1.52
9-101-bldg.	MW-17A	19.00	12.34	2.46			13.32	1.48	13.05	1.75	13.03	1.77
9-101-bldg.	MW-17C	35.00			13.25	1.60			13.10	1.75	13.05	1.80
9-101-bldg.	MW-17D	52.50			13.20	1.67			13.25	1.62	12.82	2.05
9-101-bldg.	MW-18A	20.02	11.82	2.48	12.61	1.69	12.84	1.46	12.55	1.75	12.38	1.92
9-101-bldg.	MW-18C	34.55			12.87	1.76	13.12	1.51	12.83	1.80	12.61	2.02
9-101-bldg.	MW-18D	52.85			12.58	1.68	12.85	1.41	12.52	1.74	12.33	1.93
9-101-bldg.	MW-19A	16.86	9.93	2.30	10.62	1.61	10.93	1.30	10.68	1.55	10.42	1.81
9-101-bldg.	MW-19C	33.92			10.55	1.68	10.89	1.34	10.65	1.58	10.35	1.88
9-101-bldg.	MW-19D	51.86			11.00	1.23	10.90	1.33	10.71	1.52	11.05	1.18
9-101-bldg.	MW-20A	19.34	12.20	2.11	12.60	1.71	12.89	1.42	12.44	1.87	12.75	1.56
9-101-bldg.	MW-20C	35.32			12.50	1.65	12.69	1.46	12.16	1.99	12.44	1.71
9-101-bldg.	MW-20D	50.15			12.83	1.60	12.87	1.56	12.41	2.02	12.66	1.77
9-101-bldg.	MW-22A	19.20										
9-101-bldg.	MW-23A	19.50										
9-101/9-50 bldg.	MW-21A	19.90	12.05	2.40	12.77	1.68	13.04	1.41	12.93	1.52	12.50	1.95
9-101/9-50 bldg.	MW-21C	34.00	9.87	2.33	10.50	1.70						
9-64-bldg.	BDC-05-02	25.35	11.45	2.92	12.38	1.99	12.56	1.81	12.37	2.00	12.03	2.34
9-64-bldg.	BDC-05-03	25.47	11.70	2.71	12.56	1.85	12.82	1.59	12.56	1.85	12.33	2.08
9-64-bldg.	BDC-05-04	25.36	11.78	2.81	12.69	1.90	12.86	1.73	12.65	1.94	12.33	2.26
9-64-bldg.	BDC-05-05	24.18	11.38	3.06	12.37	2.07	12.53	1.91	12.36	2.08	11.96	2.48
9-64-bldg.	BDC-05-07	25.30	11.18	2.81	12.10	1.89	12.28	1.71	12.08	1.91	11.72	2.27
9-64-bldg.	BDC-05-08	26.75										
9-64-bldg.	BDC-05-09	24.55										
9-64-bldg.	BDC-05-10	24.57										
9-64-bldg.	BDC-05-11	24.85										
9-64-bldg.	BDC-05-12	24.87										
9-64-bldg.	BDC-05-13	24.78										
9-64-bldg.	BDC-05-14	24.85										
9-64-bldg.	BDC-05-15	24.48										
9-64-bldg.	BDC-05-16	24.89										
9-64-bldg.	BDC-05-17	24.82										
9-64-bldg.	BDC-05-18	24.69										
9-64-bldg.	BDC-05-19	24.85										
9-64-bldg.	BDC-05-20	24.80										
9-64-bldg.	BDC-05-21	24.86										
9-64-bldg.	BDC-05-22	25.07										
9-64-bldg.	BDC-05-23	25.10										
9-64-bldg.	BDC-05-24	24.73										
9-60 bldg.	BDC-101	18.42	11.29	3.18	12.30	2.17						
9-60 bldg.	BDC-102	18.83	11.05	3.22	12.06	2.21						
9-60 bldg.	BDC-103	18.51	11.03	3.31	12.04	2.30						
9-60 bldg.	BDC-104	18.90										
9-52-bldg.	952MW-1	17.40	10.21	3.27	11.25	2.23	11.50	1.98			10.97	2.51
9-52-bldg.	952MW-2	17.54	10.46	3.54	11.48	2.52	11.76	2.24			11.25	2.75
9-52-bldg.	952MW-3	17.95	10.52	3.24	11.55	2.21	11.85	1.91			11.28	2.48
9-52-bldg. (west)	MW-5	27.43									10.53	2.42
9-04-bldg. (north)	MW-2	26.98			10.03	2.64			10.19	2.48	9.53	3.14
9-04-bldg. (north)	MW-7	18.50	9.96	3.73	11.05	2.64						
9-04-bldg. (north)	MW-8	18.50	10.08	3.84	11.23	2.69						
9-04-bldg. (north)	MW-9	18.50	10.08		11.23	-11.23						

Notes:

ft = feet

Depth to Water measurements taken from top of well casing.

Top of casing elevation altered in wells MW-6B, MW-6C, MW-9A, MW-9B, and MW-9C by installation of threaded fitting on 6/19/2004.

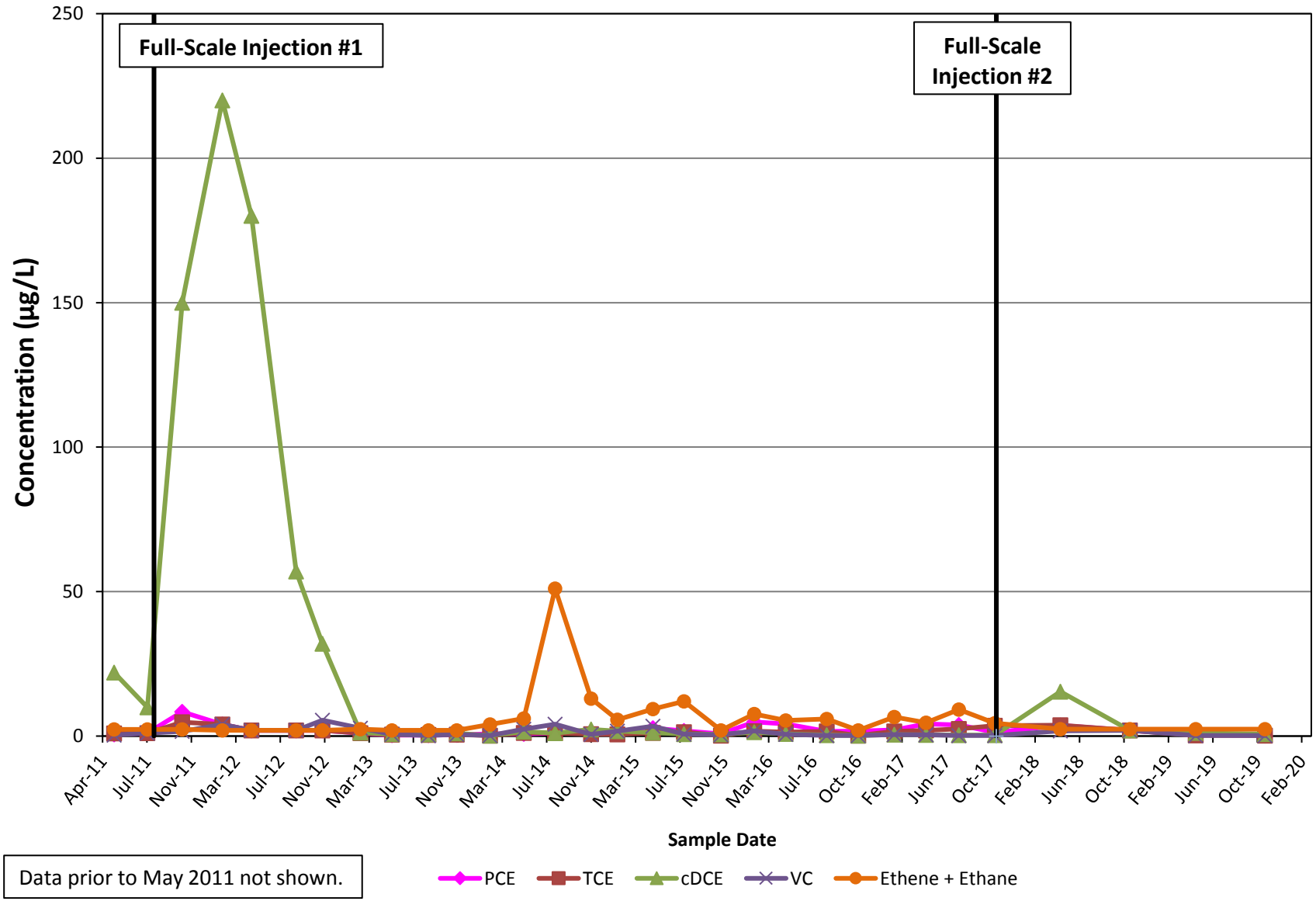
Top of casing elevation was lowered in well MW-14A by 0.10 ft on 3/17/2005; resurveyed 9/9/05.

Top of casing elevation at wells MS-22A and MW-23A measured 9/9/05.

BDC-05-02 was modified in October 2008 for utilization as an injection well. Elevation changed from 14.37 to 14.41 ft; total depth changed from 25.35 to 25.27.

APPENDIX C

SWMU-17 Time Plots: VOC Concentrations



Data prior to May 2011 not shown.

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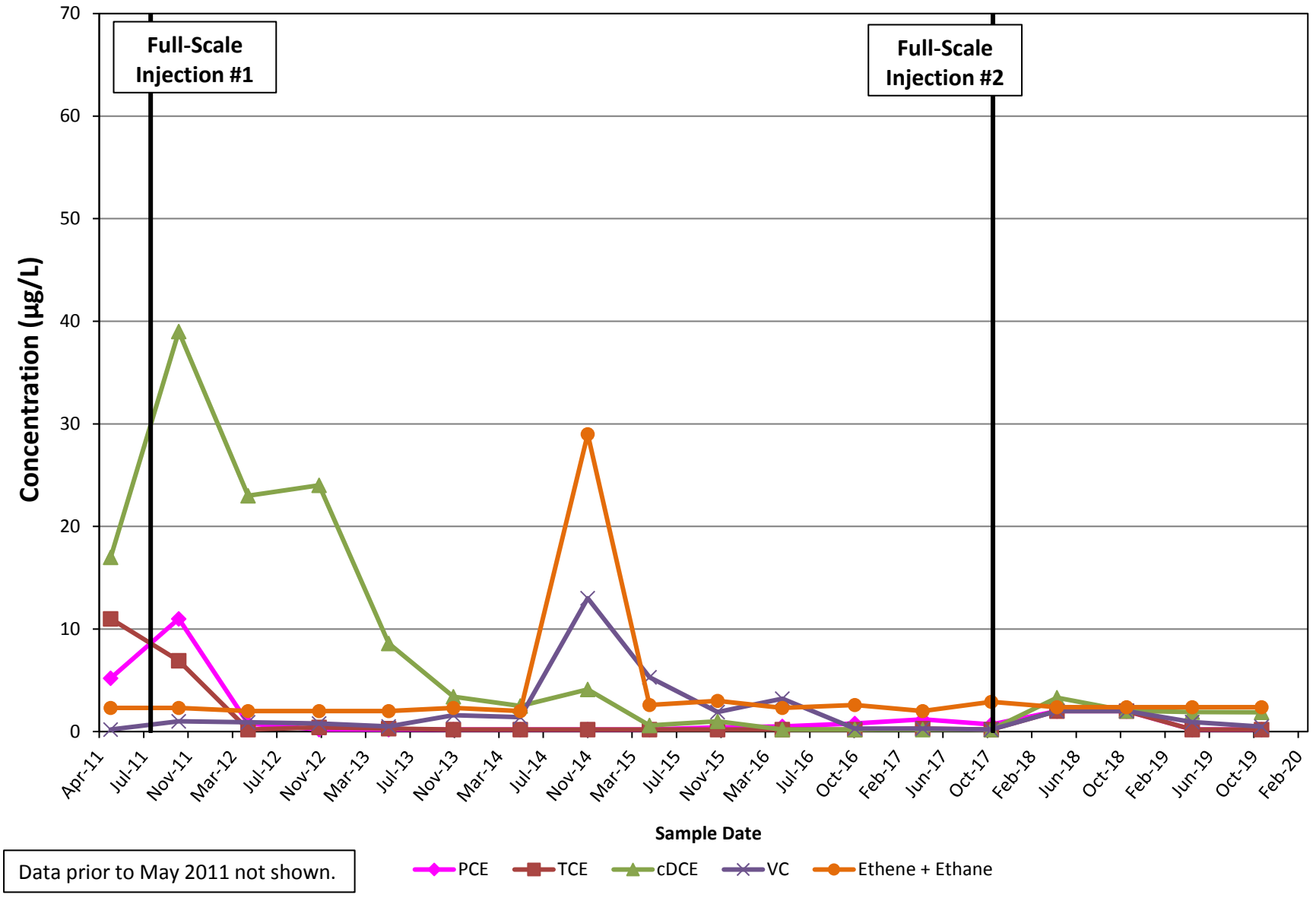
Boeing Developmental Center
Tukwila, Washington

SWMU-17 – VOCs at Source Zone Injection Well BDC-05-02

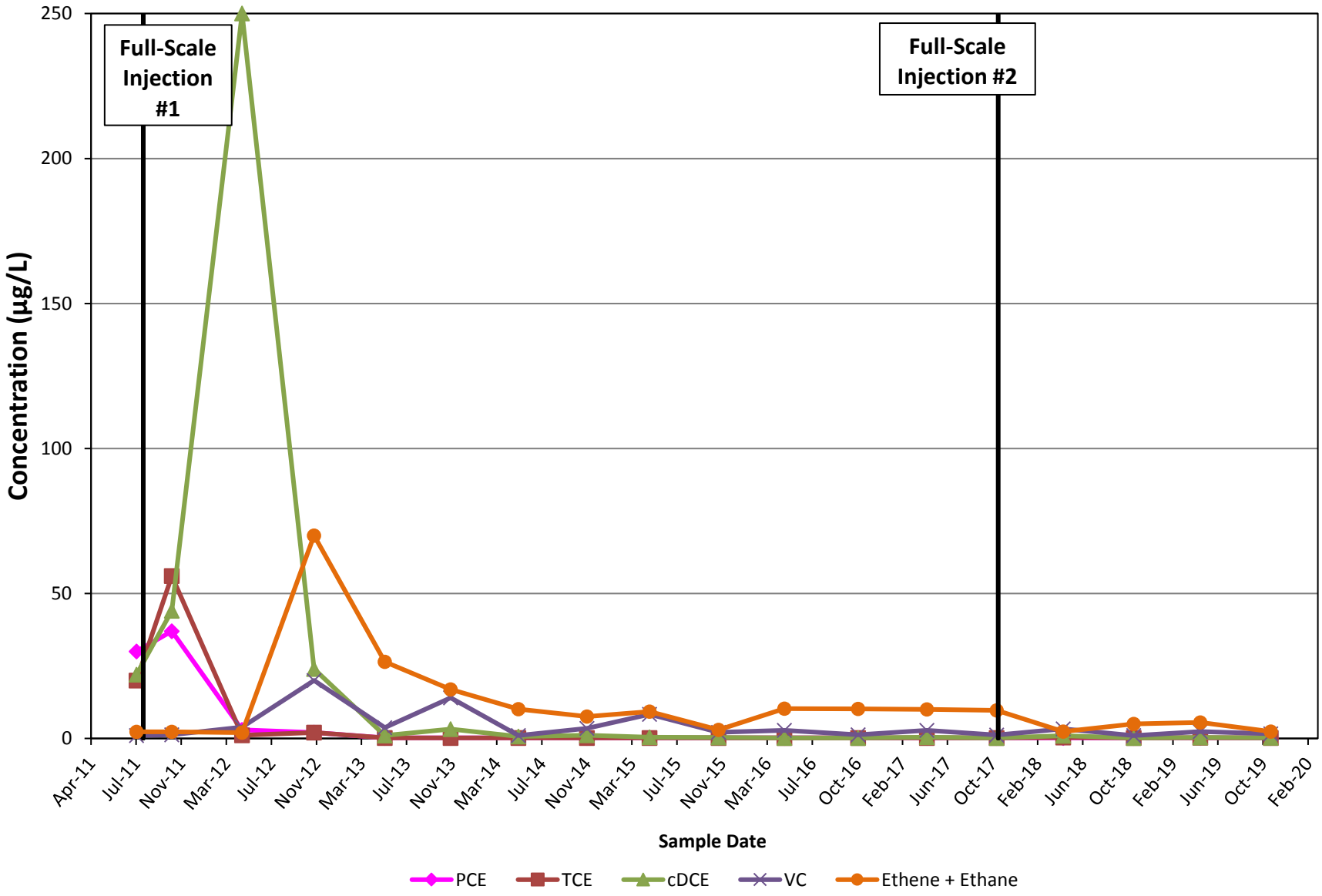
Figure
C-1



Data prior to May 2011 not shown.

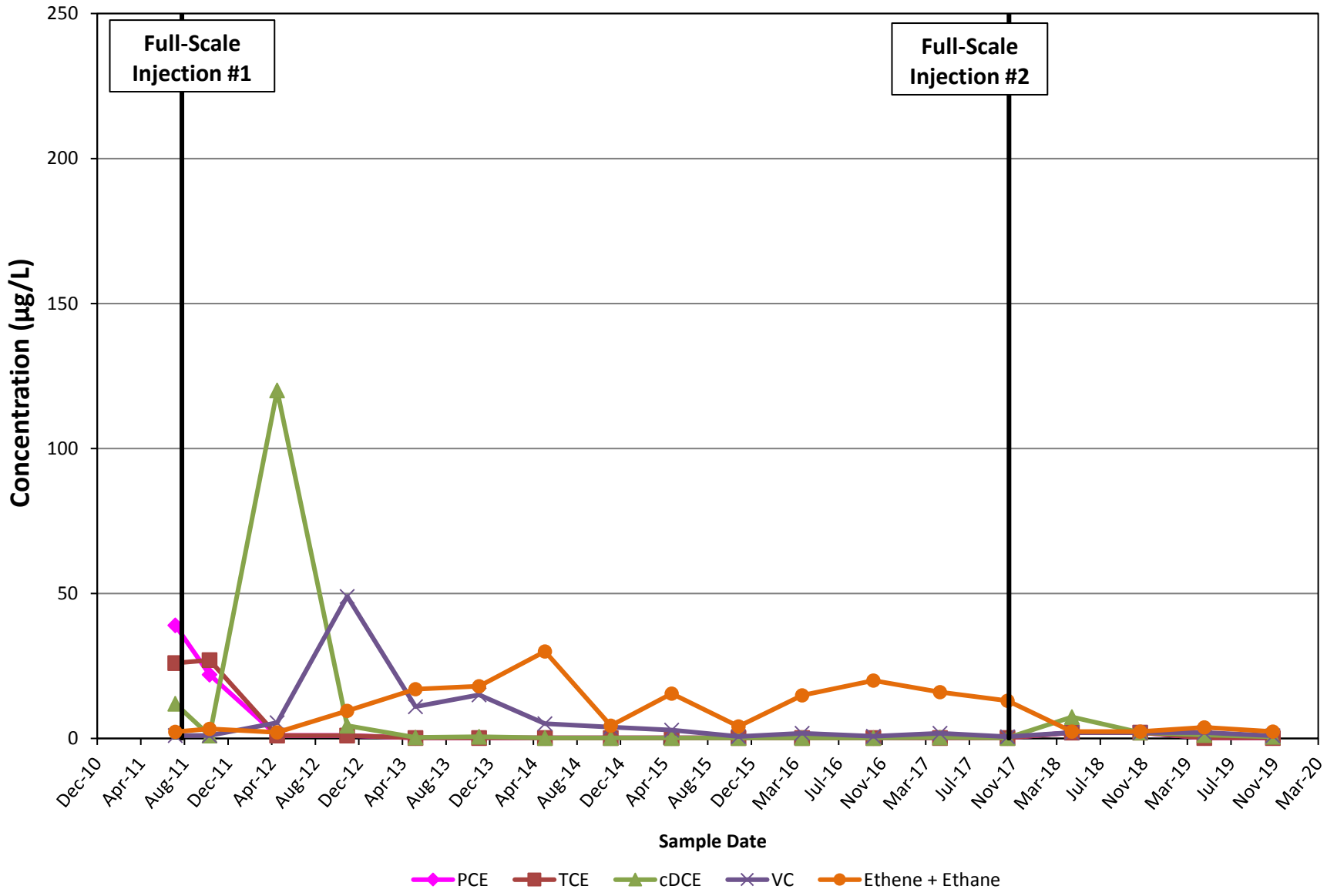
LANDAU ASSOCIATES	Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Source Zone Injection Well BDC-05-07**

Figure
C-2



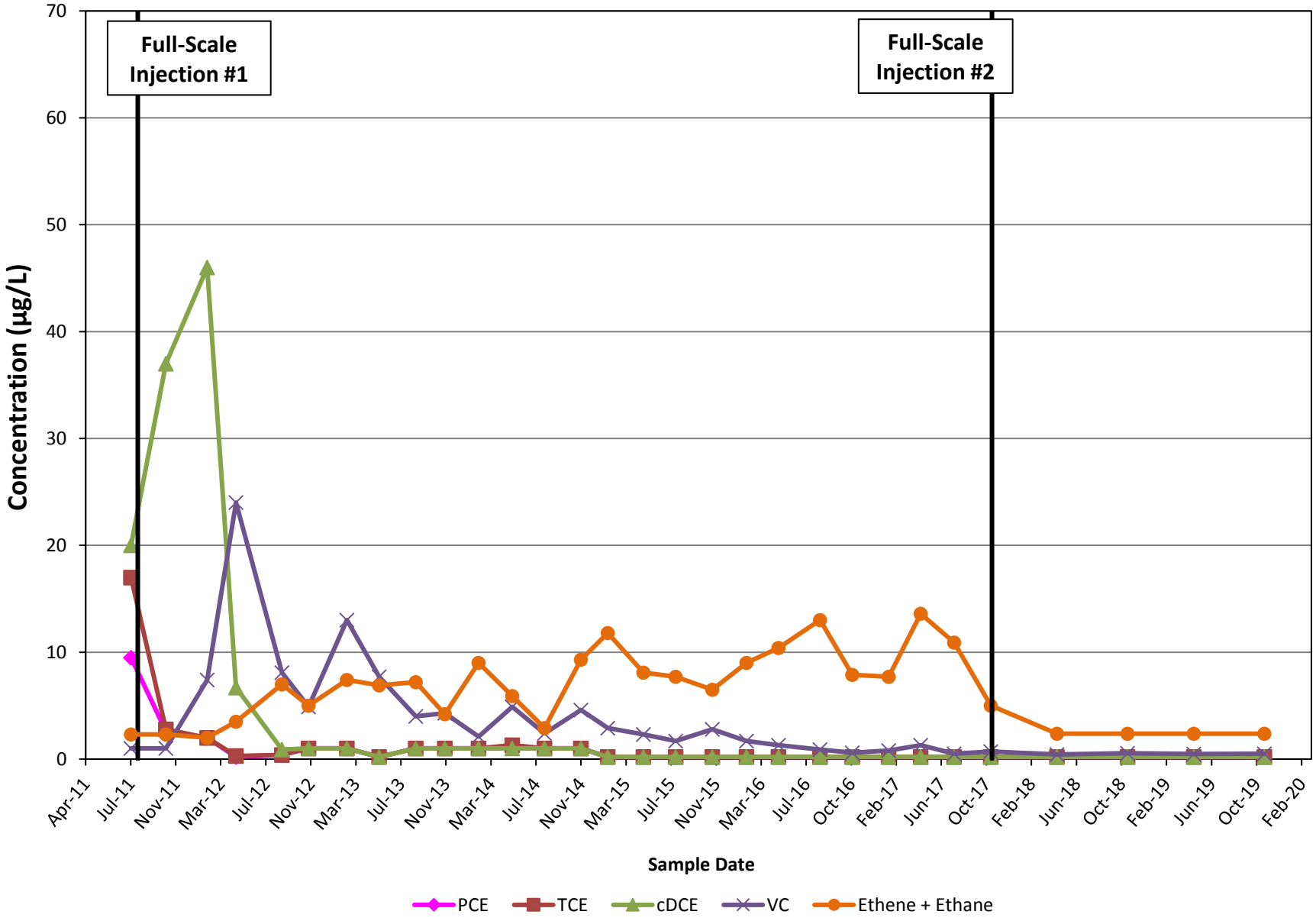
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Plume Injection Well BDC-05-09**	Figure C-3

LANDAU ASSOCIATES



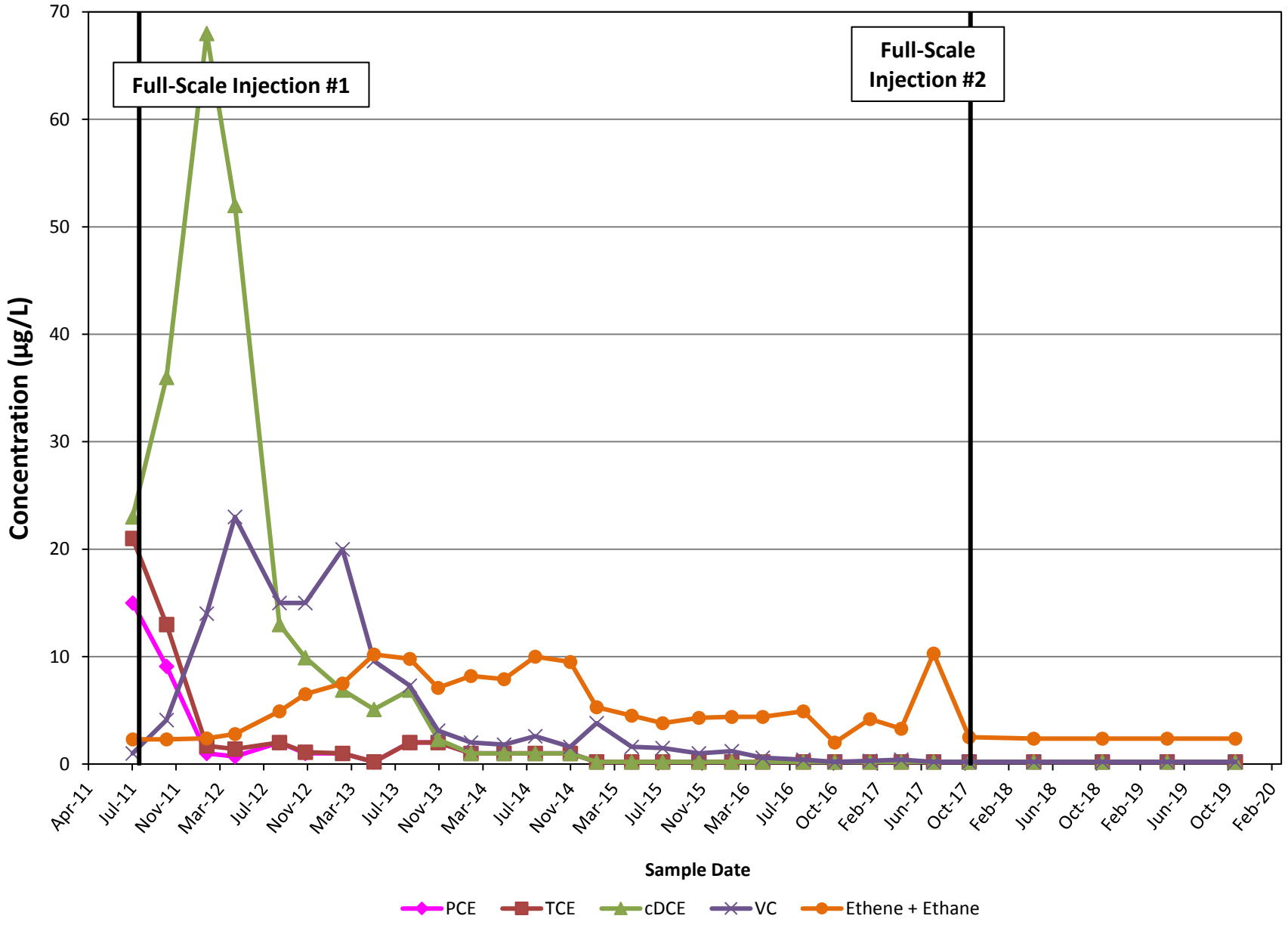
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Plume Injection Well BDC-05-10**	Figure C-4

LANDAU ASSOCIATES



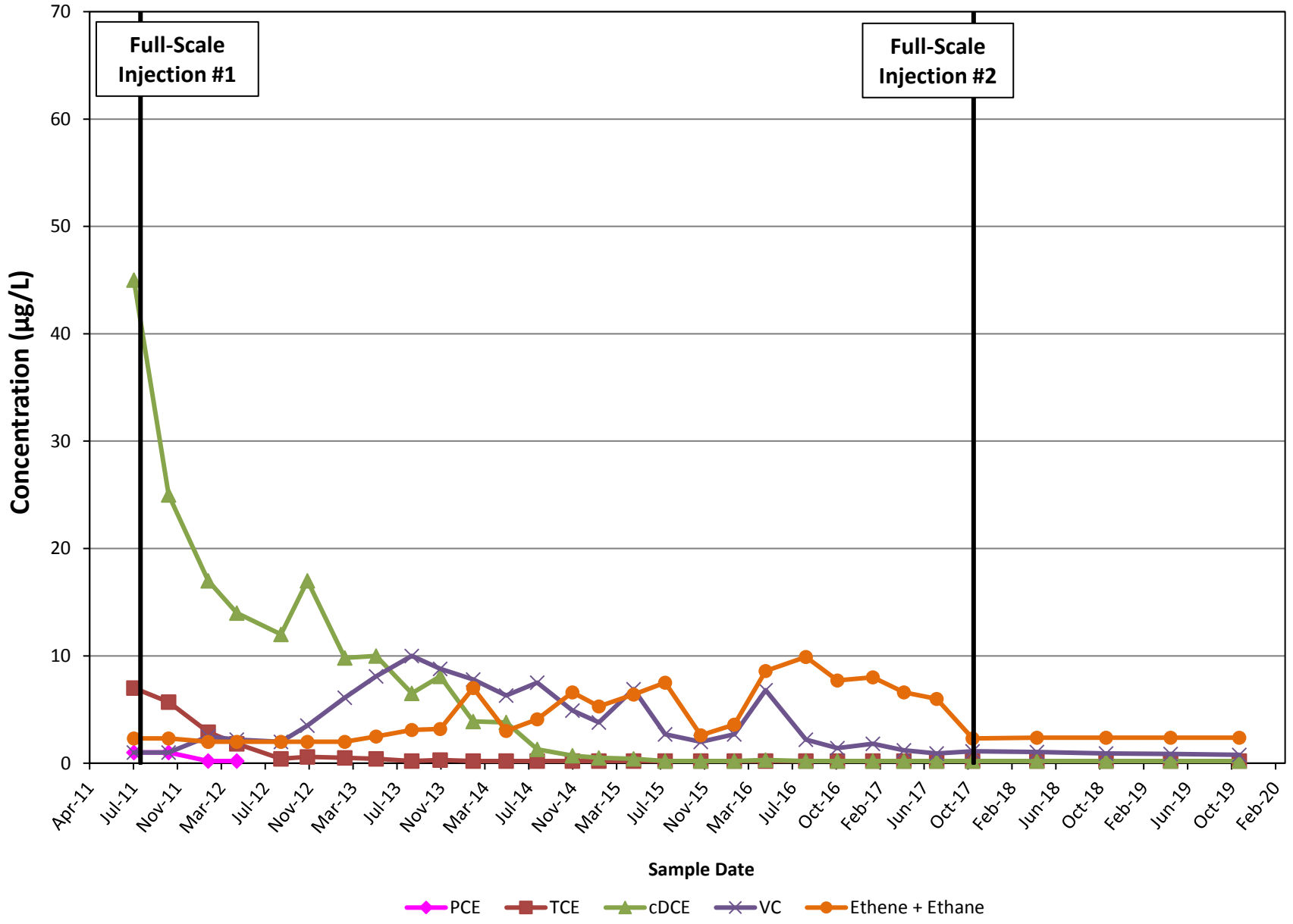
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Non-Source Zone Injection Well BDC-05-16**	Figure C-5

LANDAU ASSOCIATES



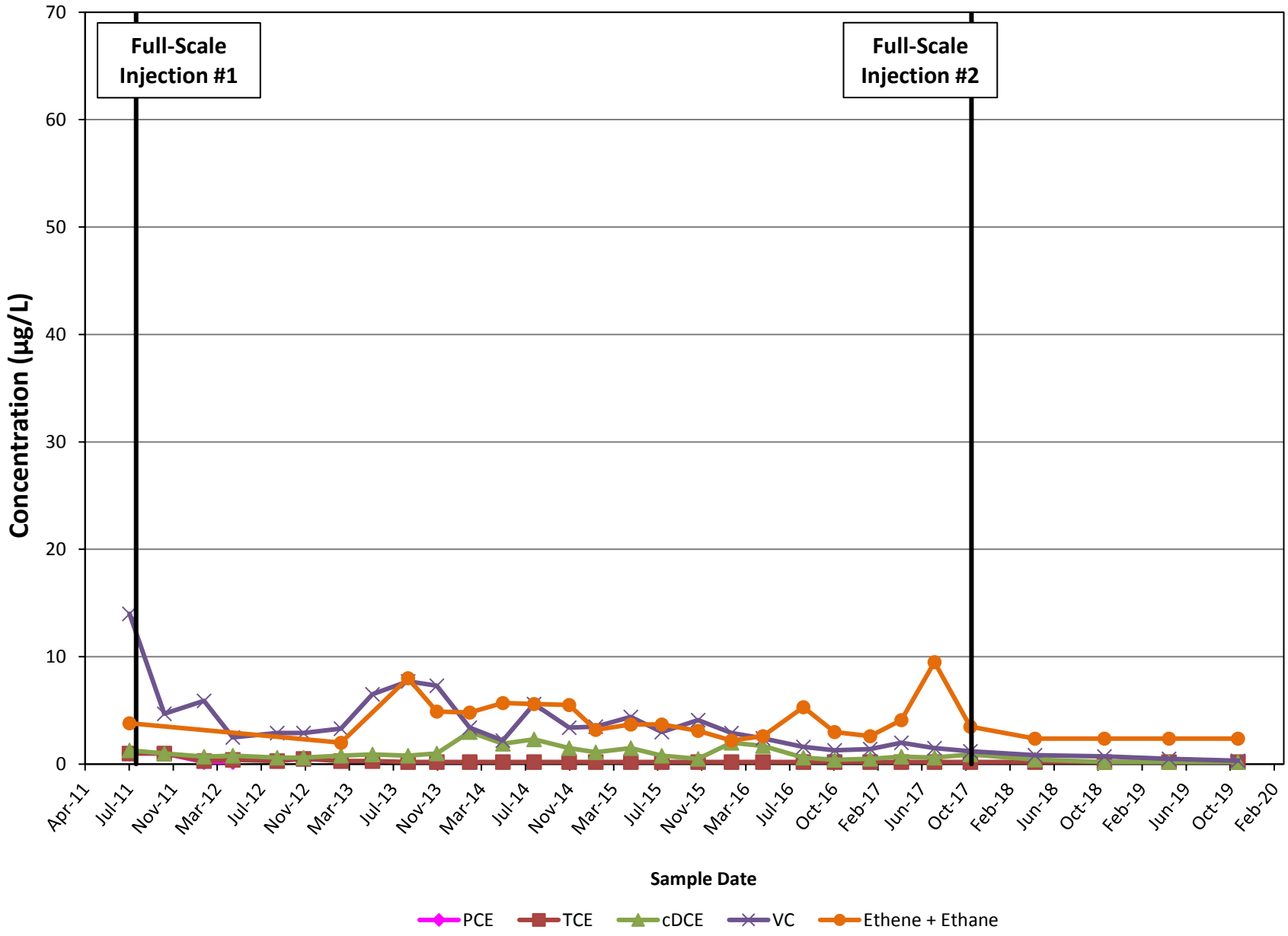
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Monitoring Well BDC-05-19**	Figure C-6

LANDAU ASSOCIATES



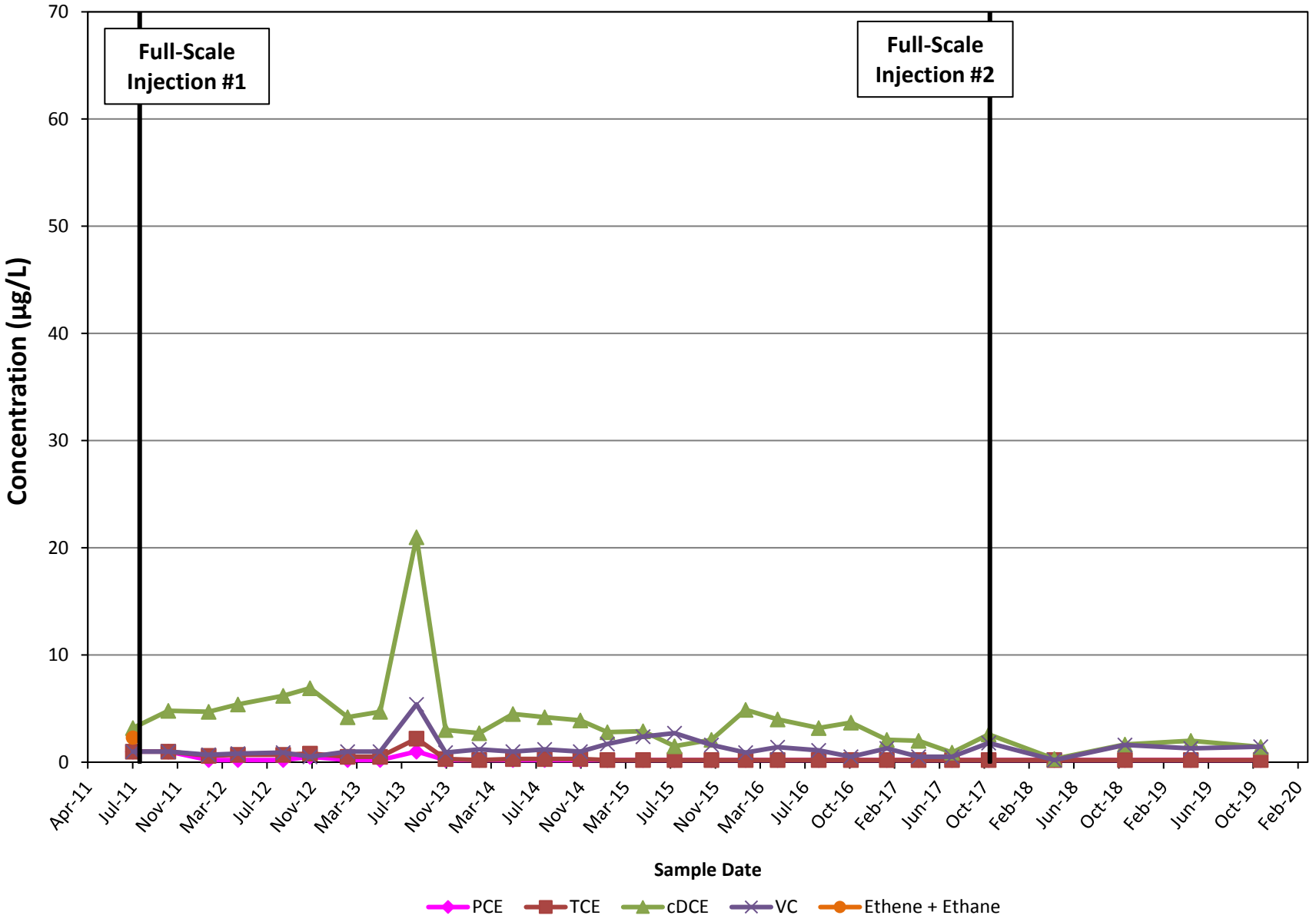
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Monitoring Well BDC-05-20**	Figure C-7

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Monitoring Well BDC-05-21**	Figure C-8

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – VOCs at Monitoring Well BDC-05-23**	Figure C-9

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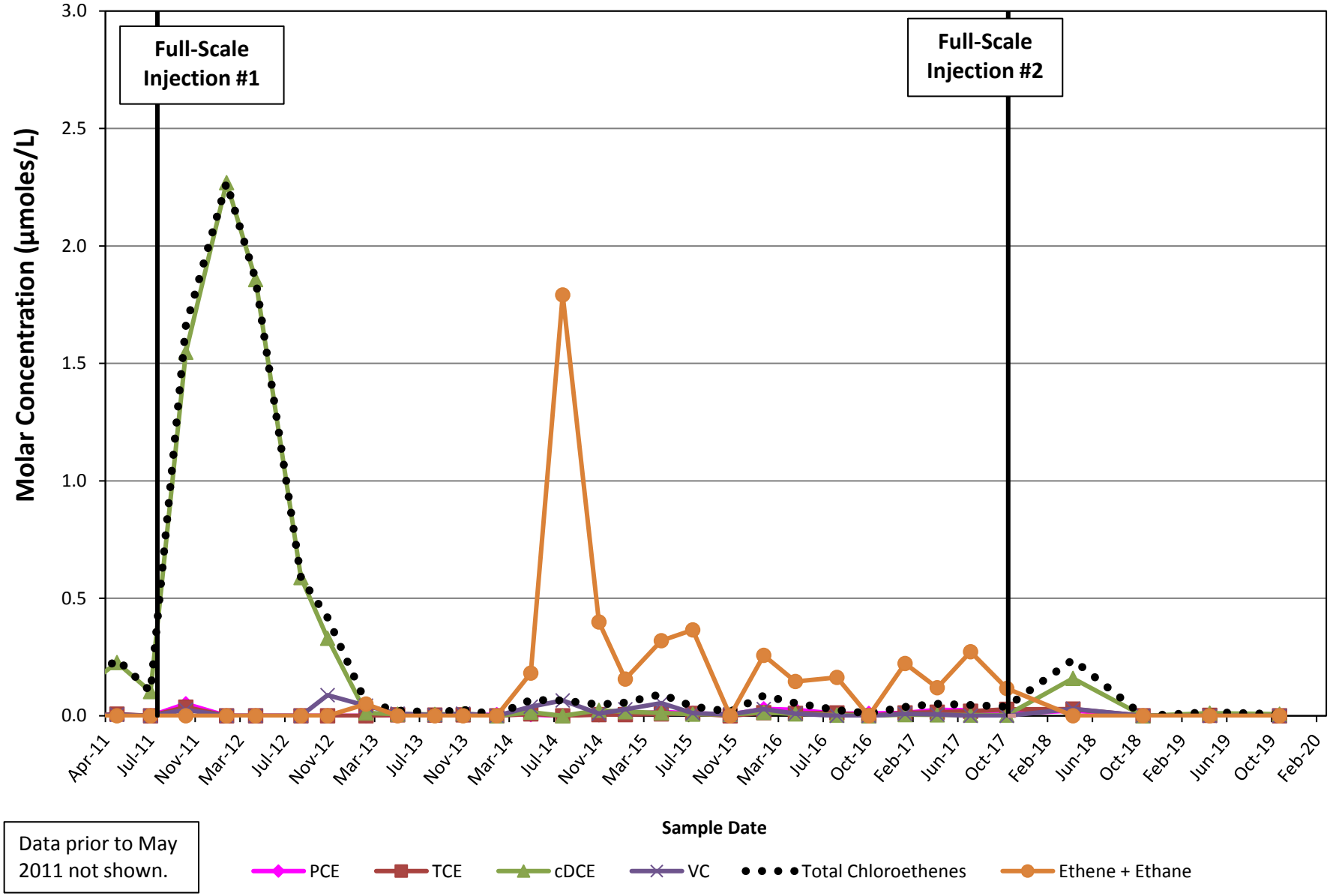
APPENDIX D

SWMU-17 Time Plots: Molar Concentrations of VOCs and Breakdown Products



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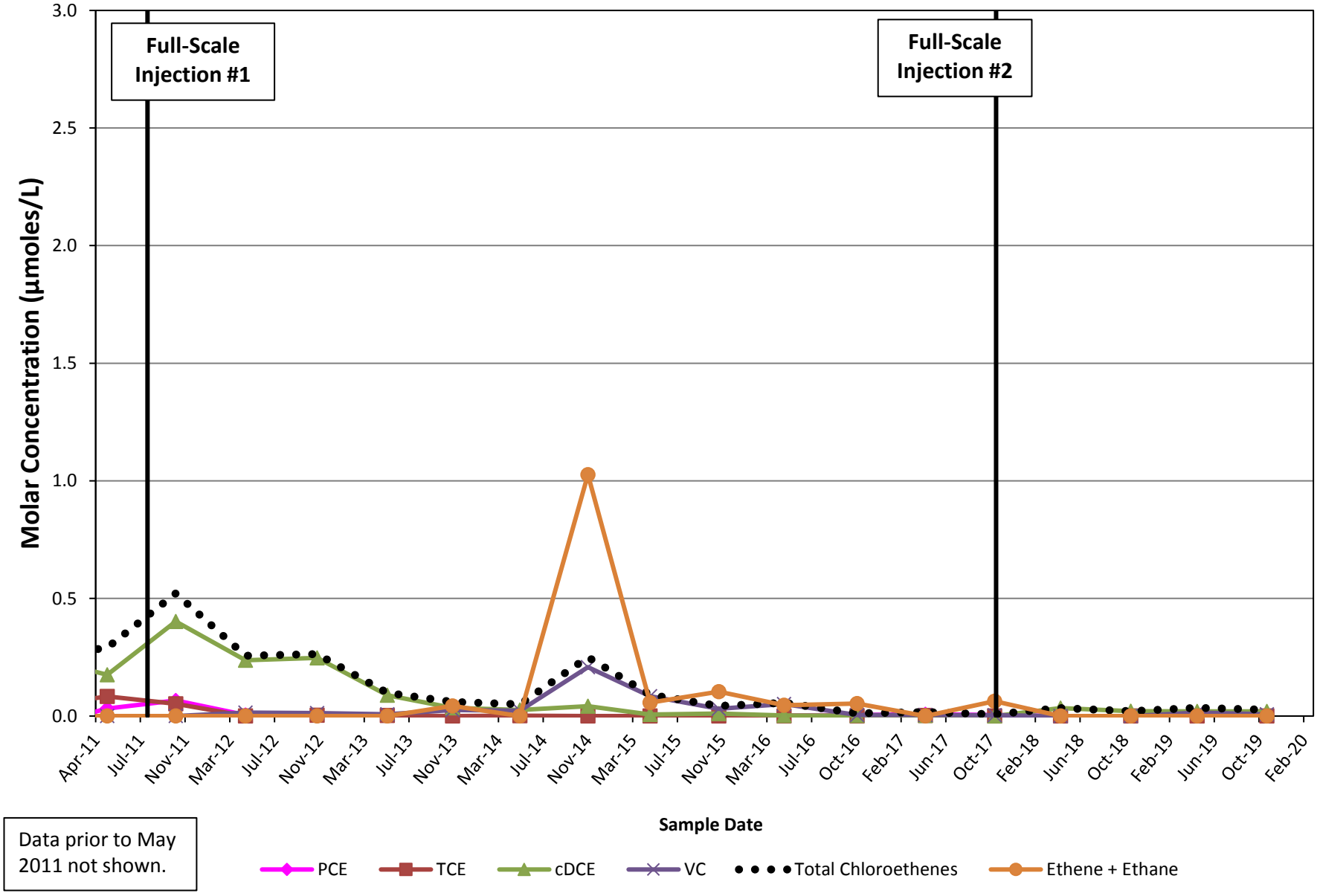
Boeing Developmental Center
Tukwila, Washington

SWMU-17 – Molar Equivalents
Source Zone Injection Well
BDC-05-02 VOCs

Figure
D-1



Data prior to May 2011 not shown.

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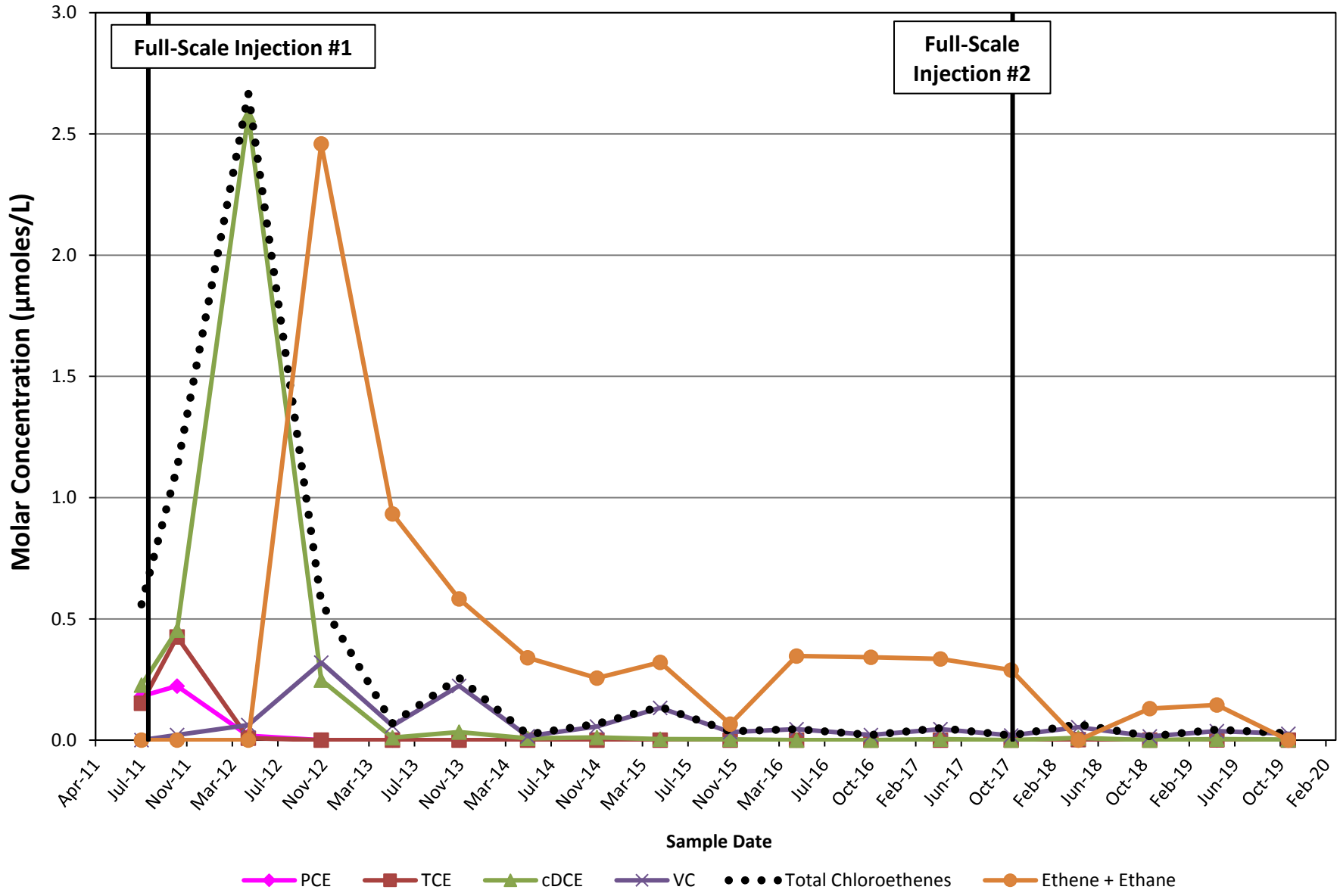
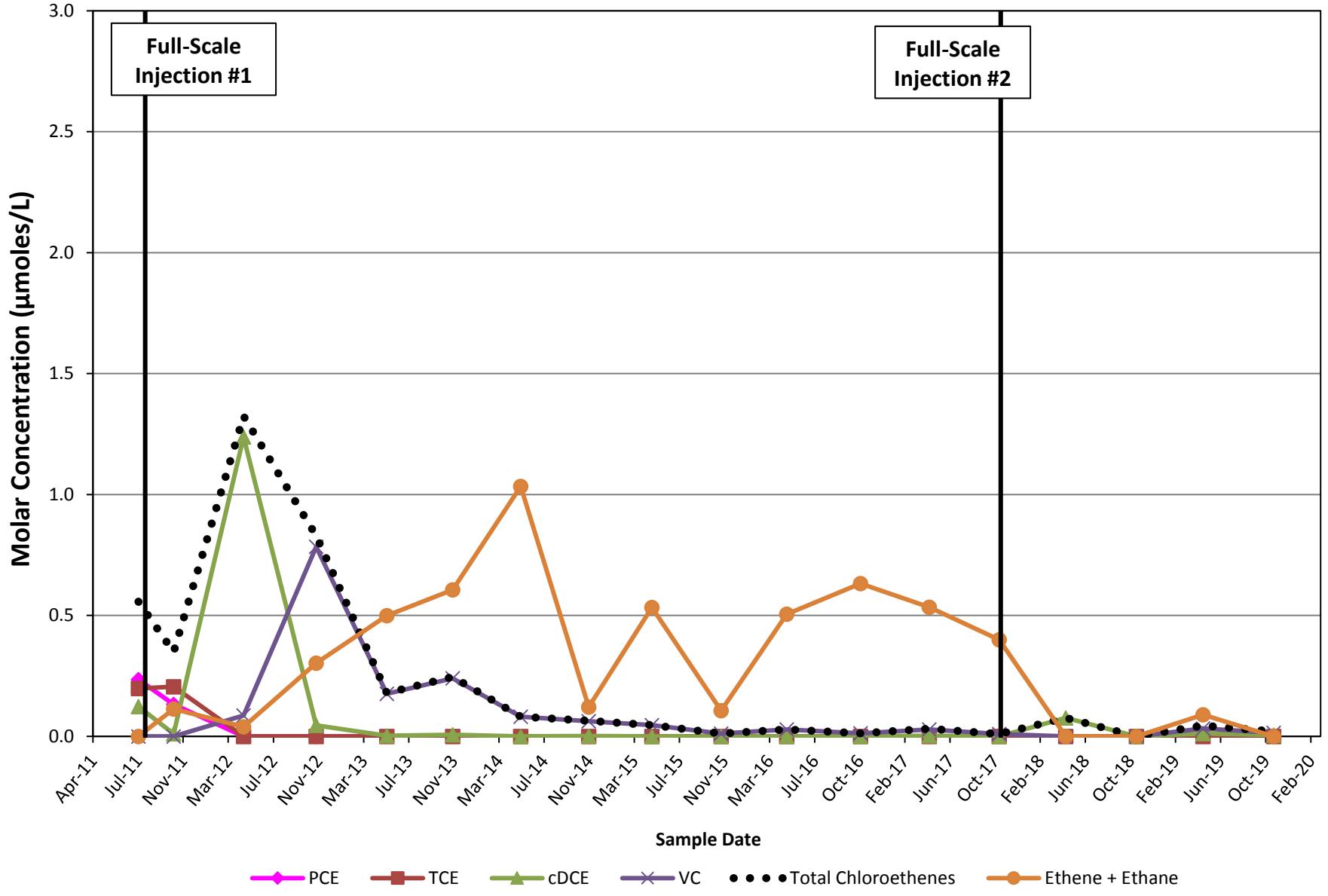
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Source Zone Injection Well BDC-05-07 VOCs**	Figure **D-2**



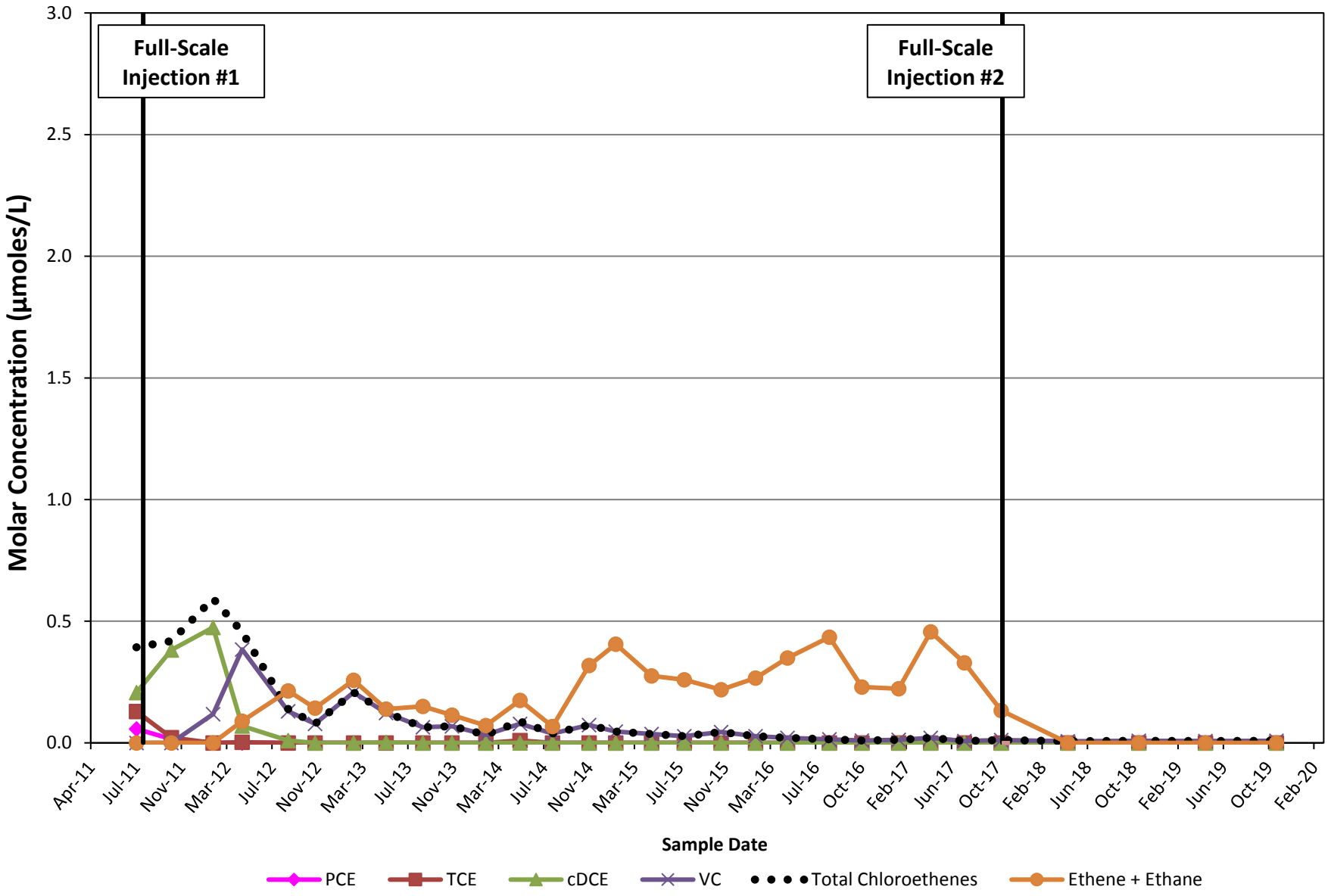
LANDAU ASSOCIATES	Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Plume Injection Well BDC-05-09 VOCs**

Figure
D-3



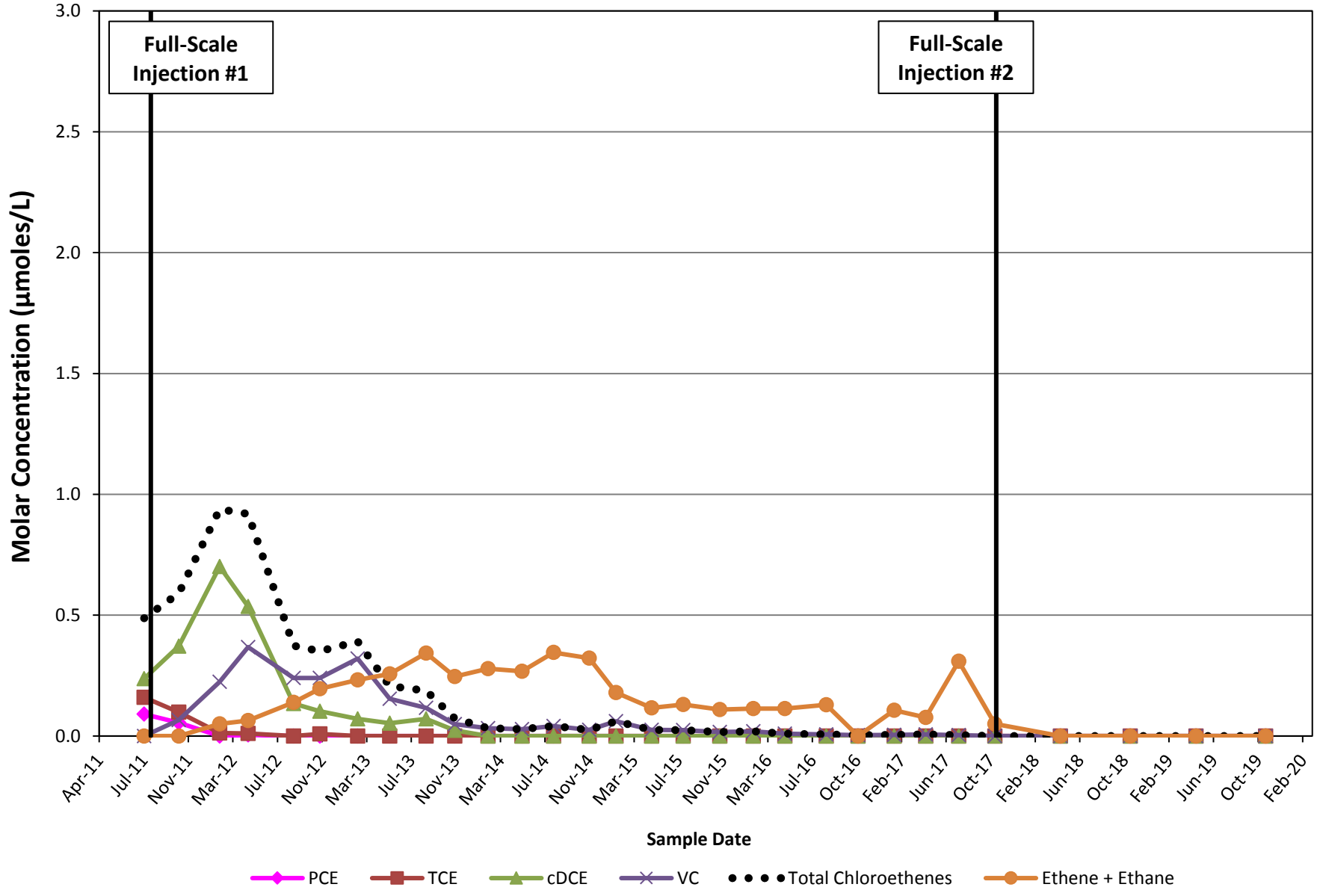
LANDAU ASSOCIATES	Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Plume Injection Well BDC-05-10 VOCs**

Figure
D-4



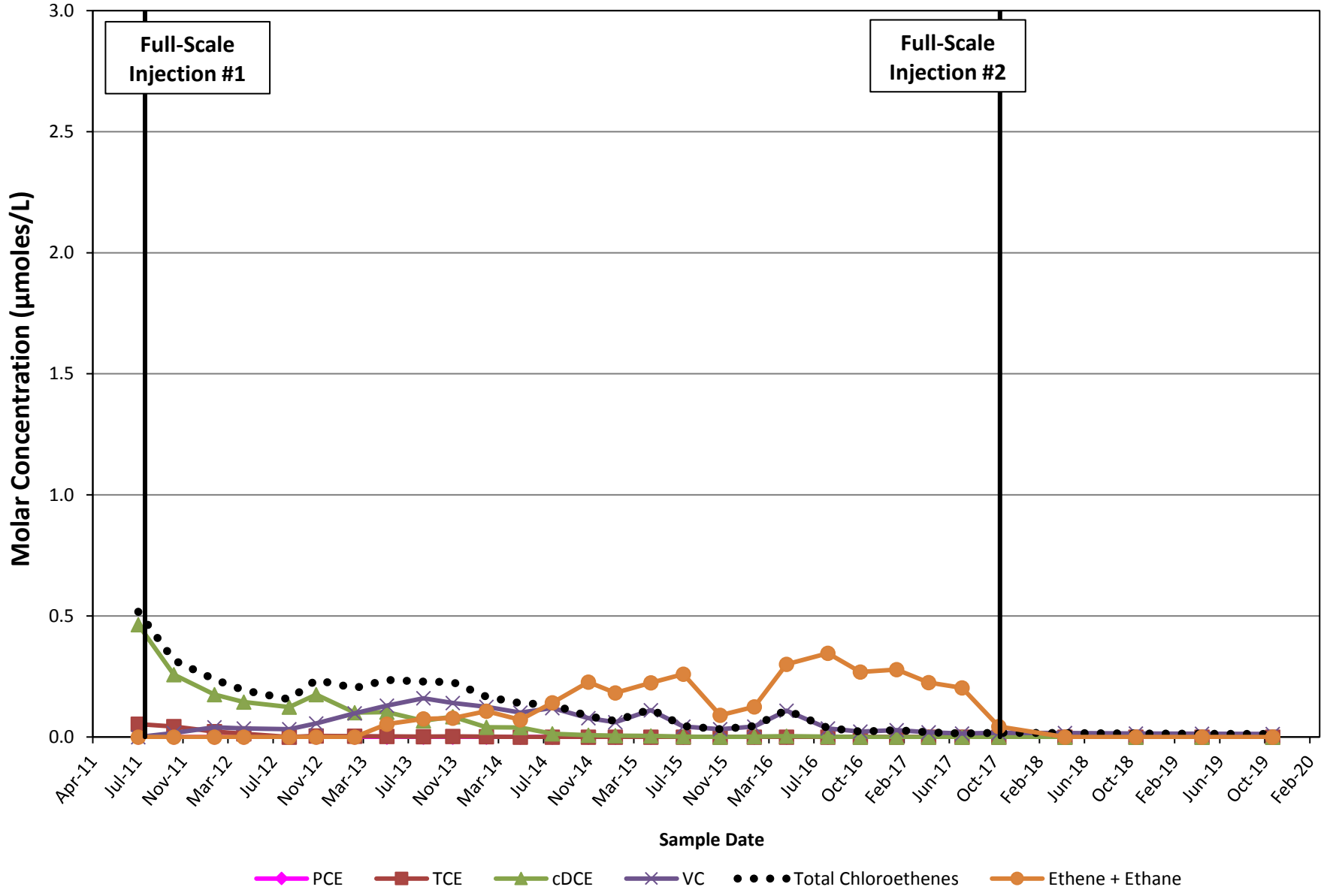
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Plume Injection Well BDC-05-16 VOCs**	Figure D-5

LANDAU ASSOCIATES



LANDAU ASSOCIATES	Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Plume Injection Well BDC-05-19 VOCs**

Figure
D-6



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Monitoring Well BDC-05-20 VOCs**	Figure D-7

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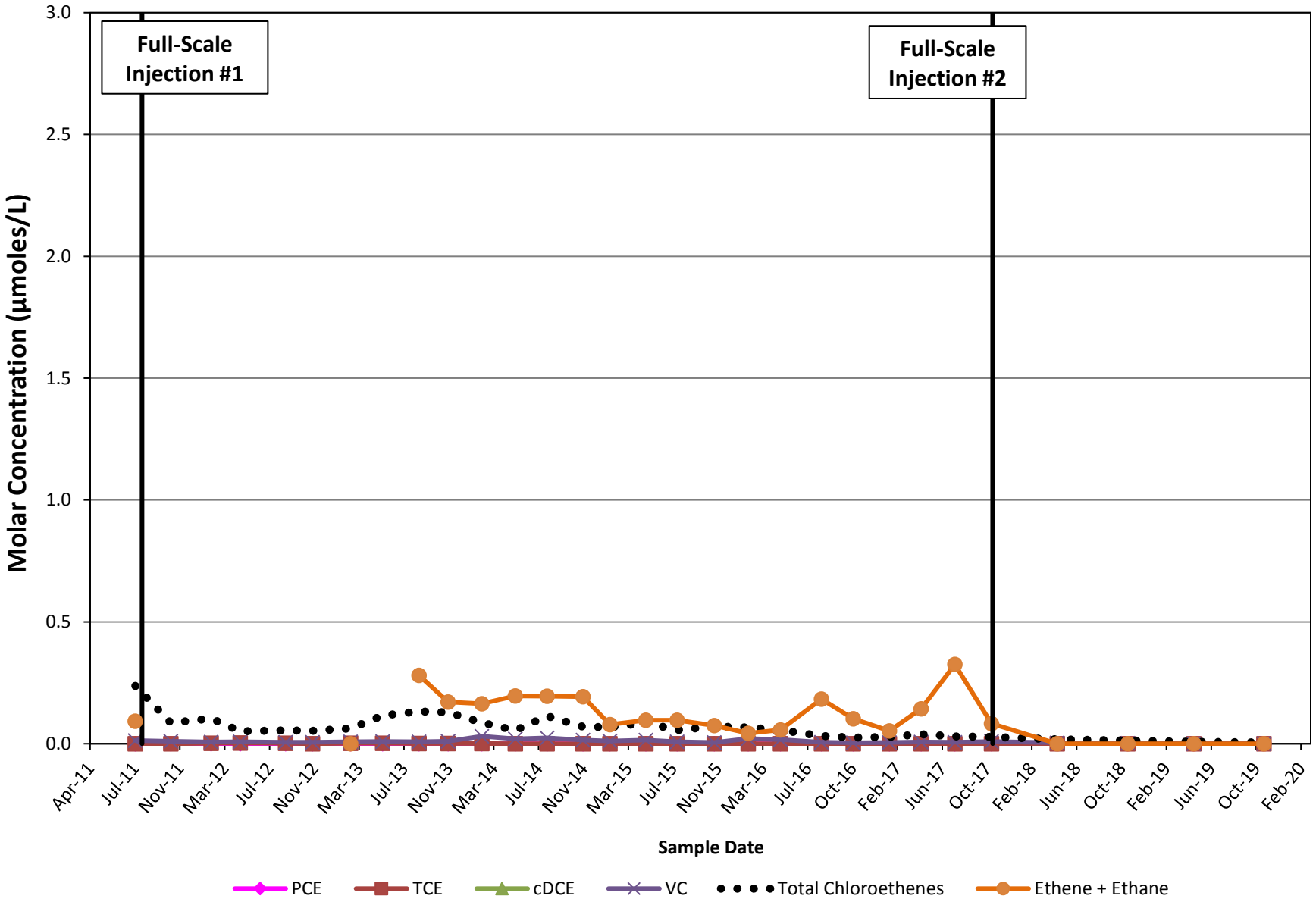
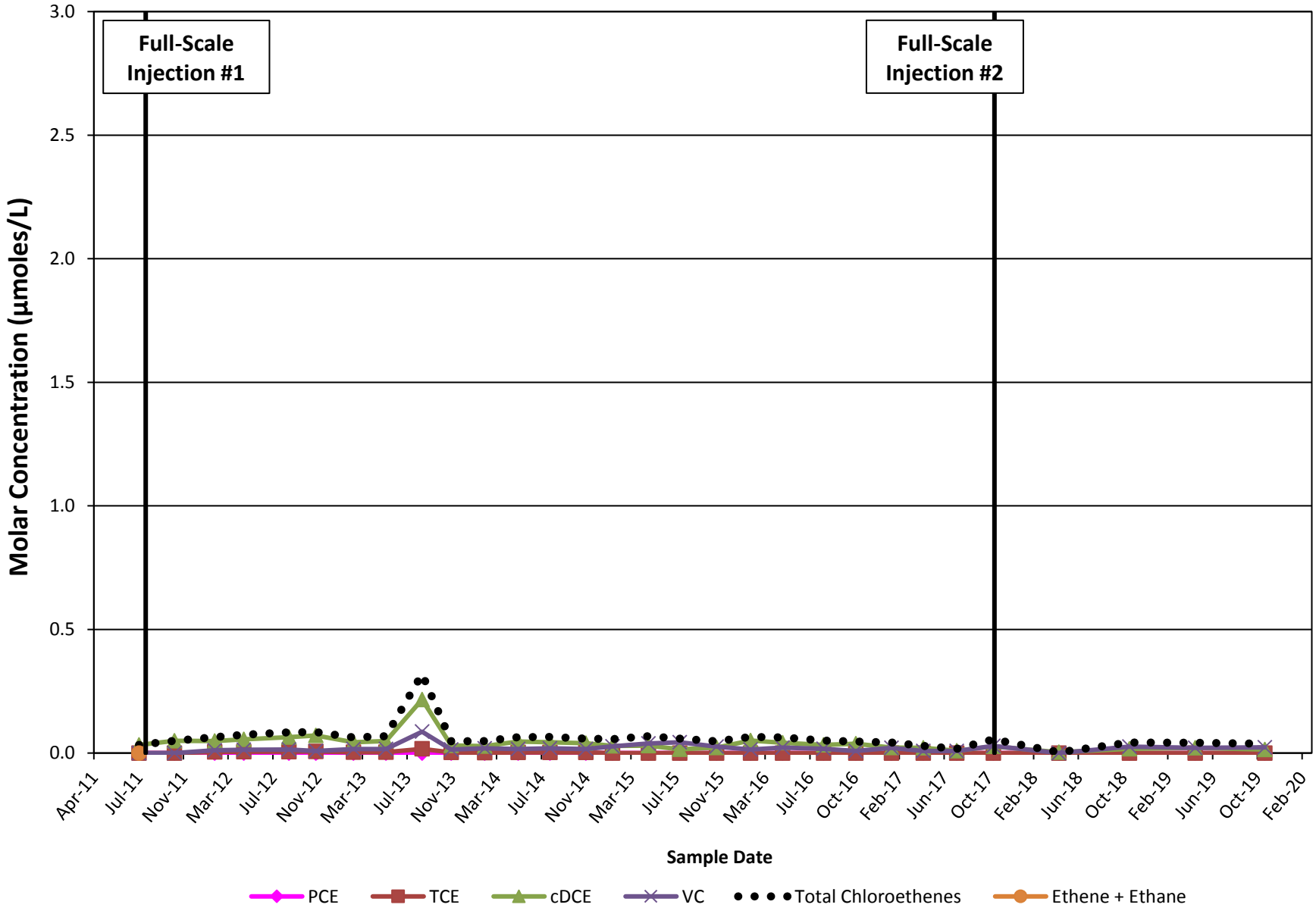


LANDAU ASSOCIATES	Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Monitoring Well BDC-05-21 VOCs**

Figure
D-8



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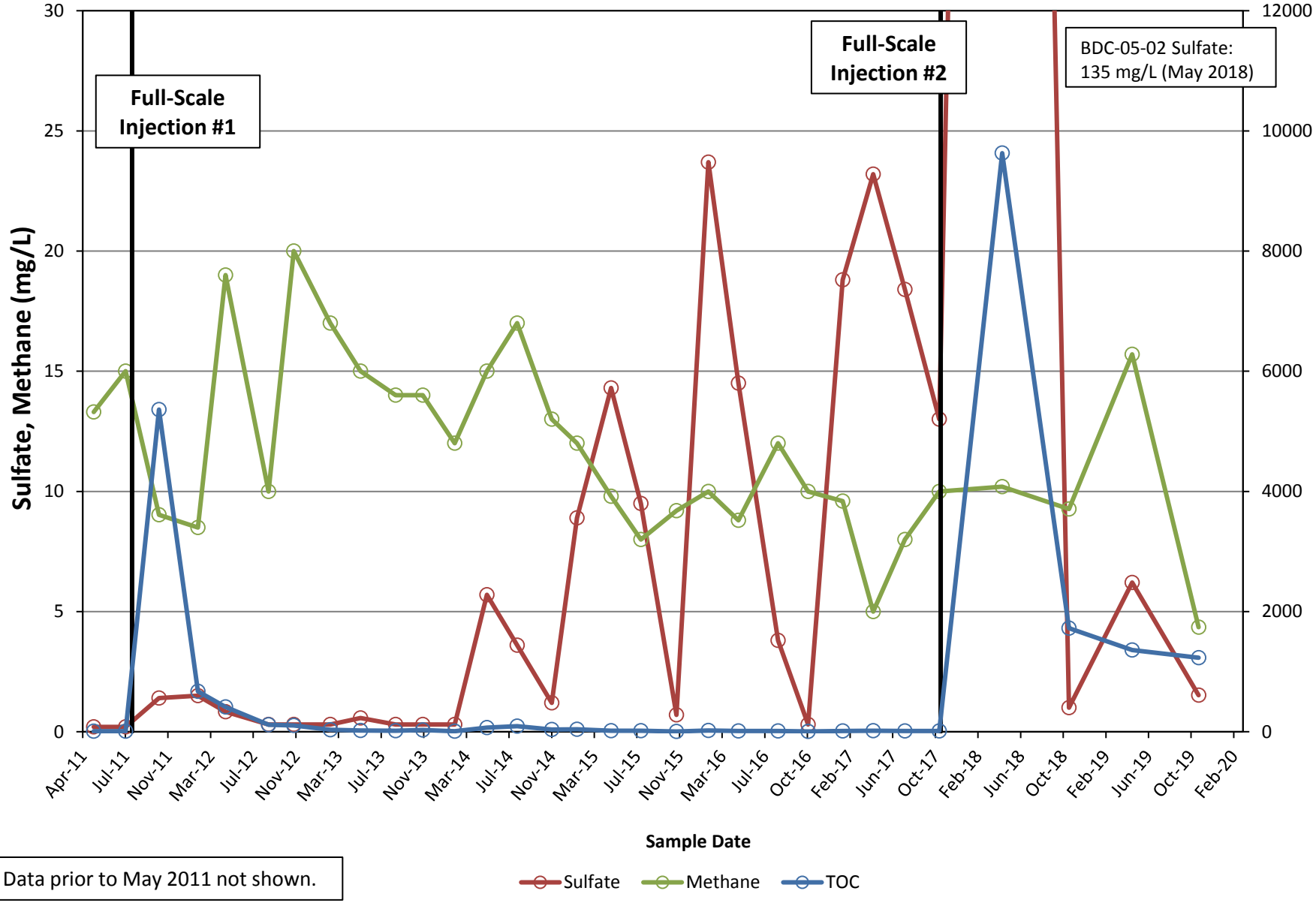
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Molar Equivalents Monitoring Well BDC-05-23 VOCs**	Figure D-9

APPENDIX E

SWMU-17 Time Plots: Redox Parameters and TOC



Boeing Developmental Center
Tukwila, Washington

SWMU-17 – Redox and TOC
Source Zone Injection Well BDC-05-02

Figure
E-1

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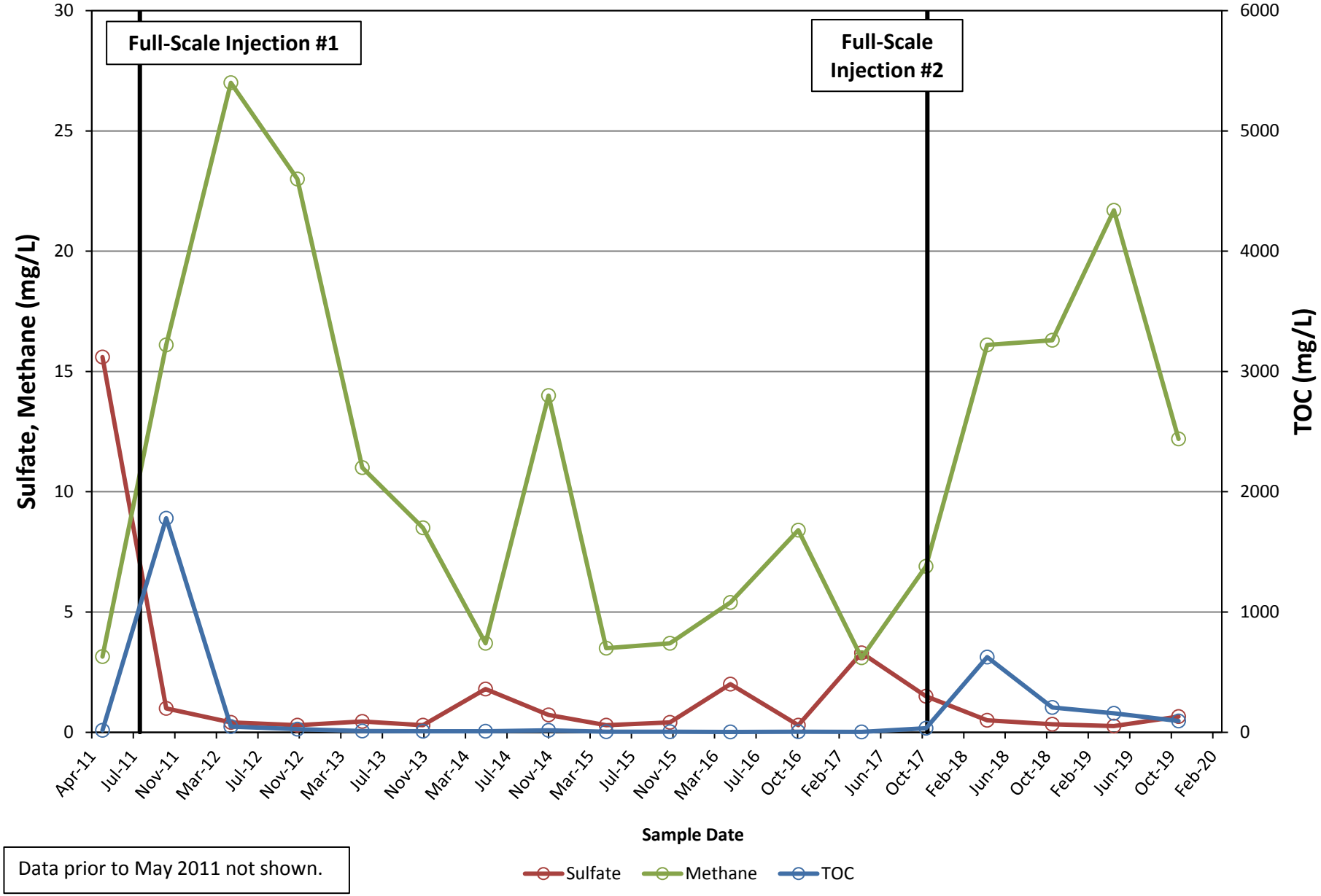

Data prior to May 2011 not shown.

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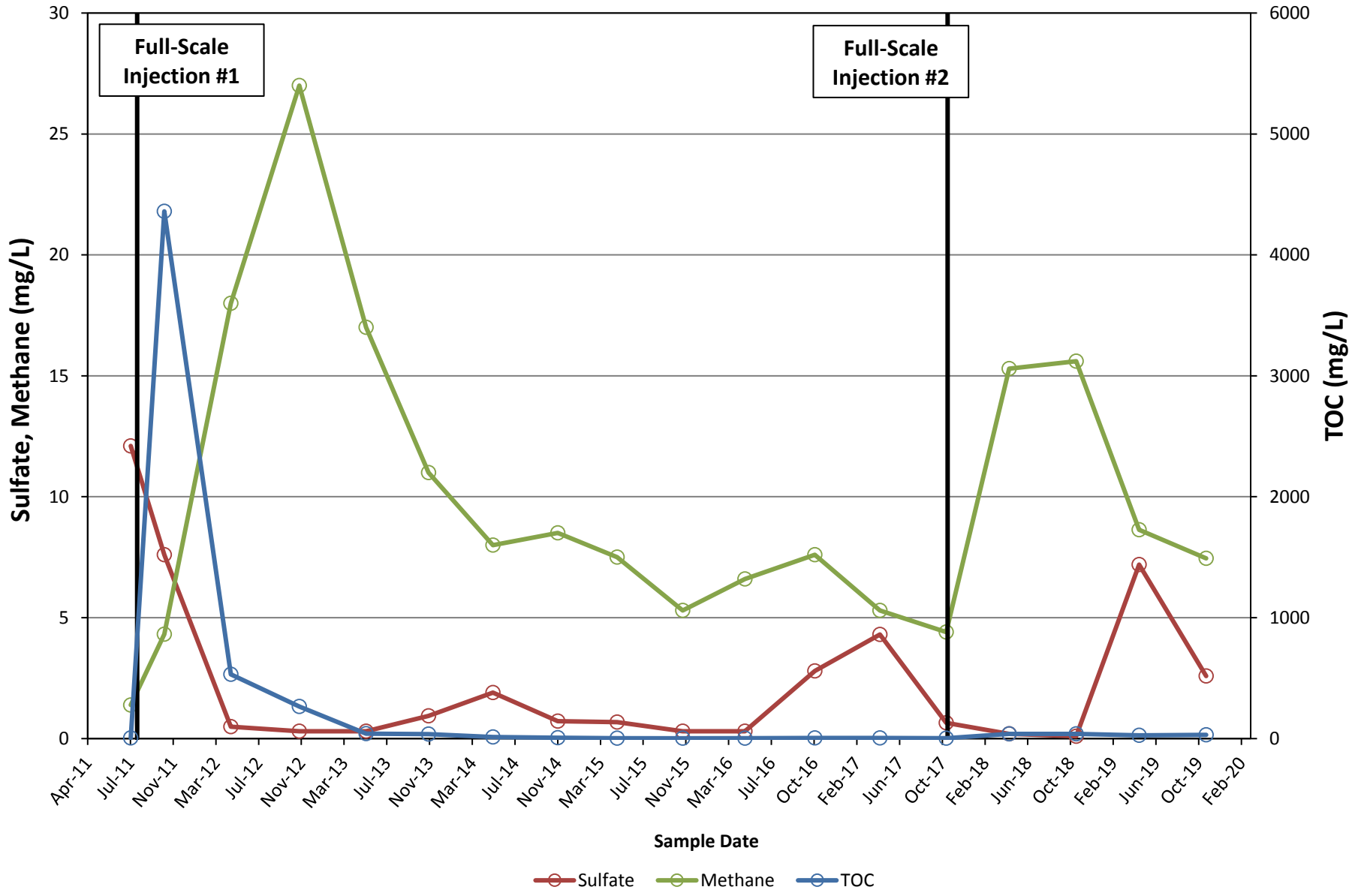
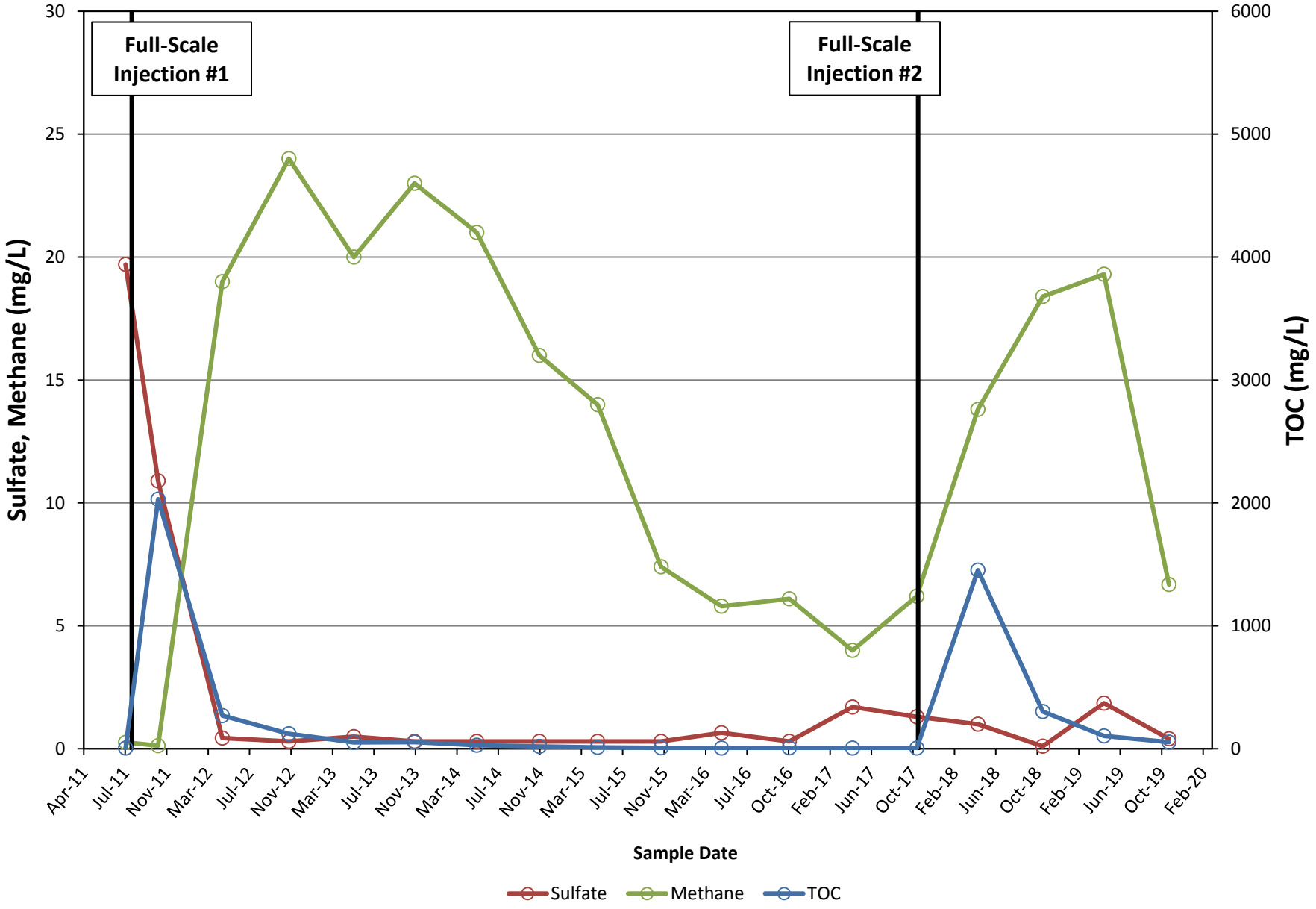
SWMU-17 – Redox and TOC
Source Zone Injection Well BDC-05-07

Figure
E-2



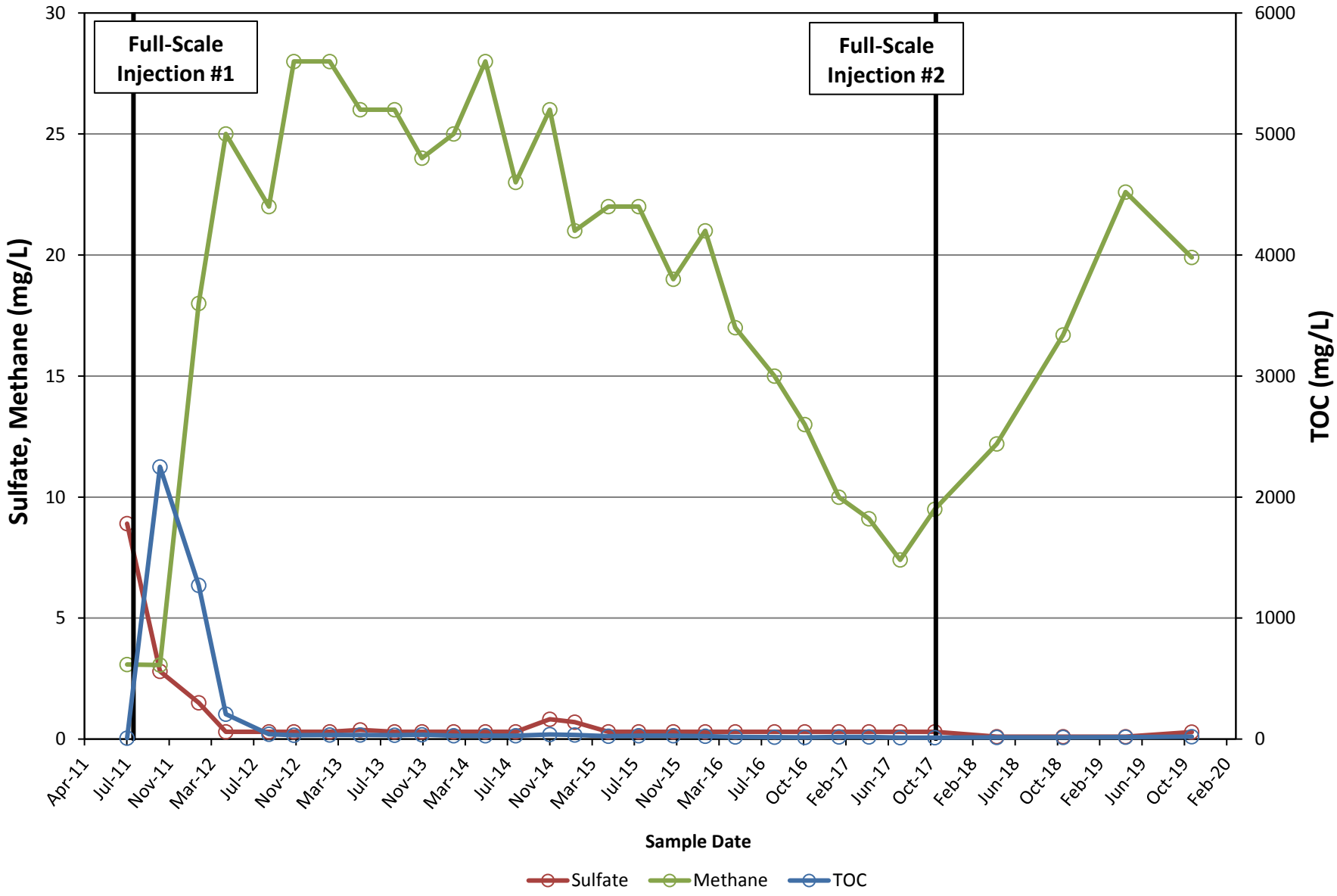
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Plume Injection Well BDC-05-09**	Figure **E-3**

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Plume Injection Well BDC-05-10**	Figure **E-4**

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Plume Injection Well BDC-05-16**	Figure E-5

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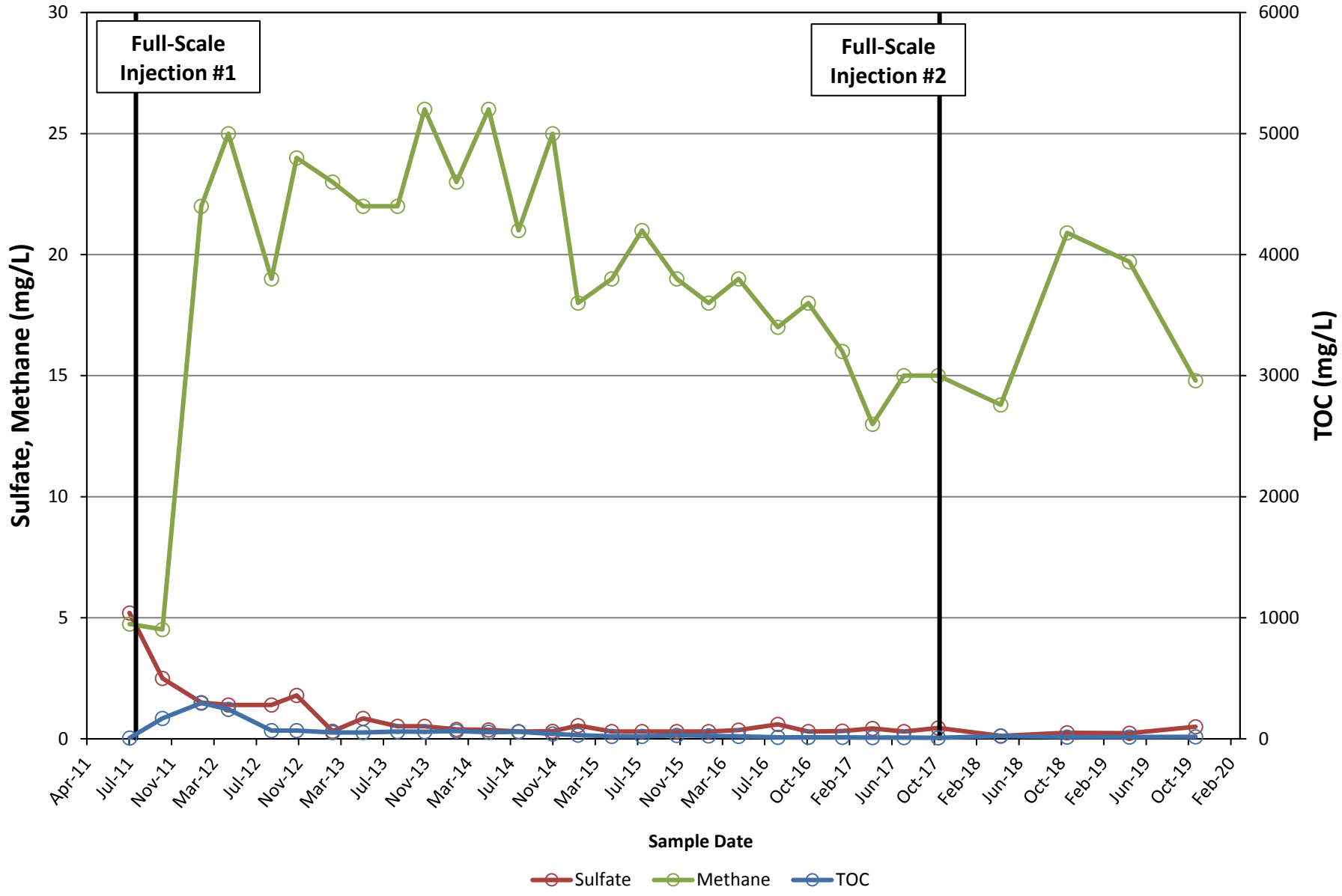
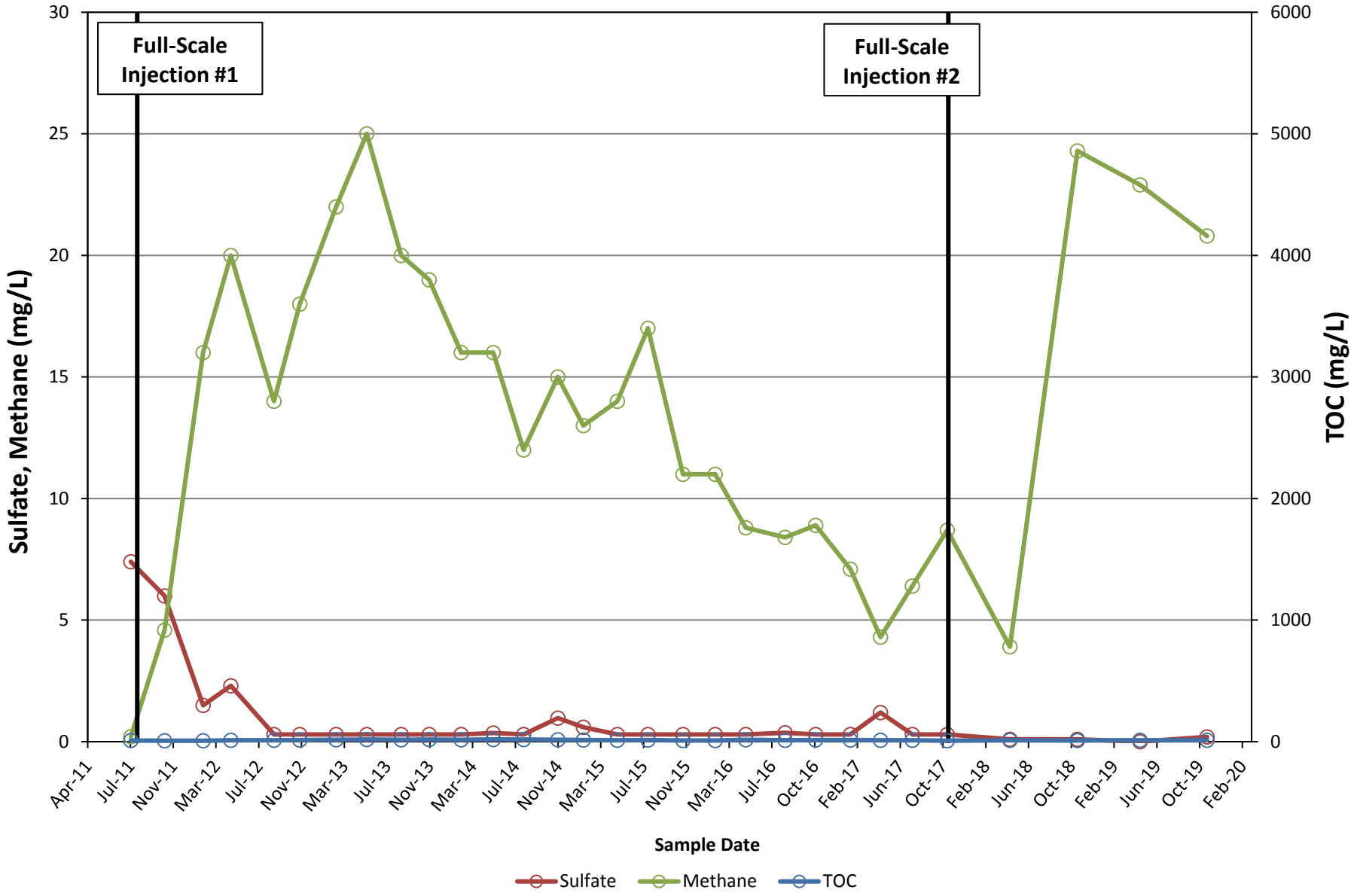


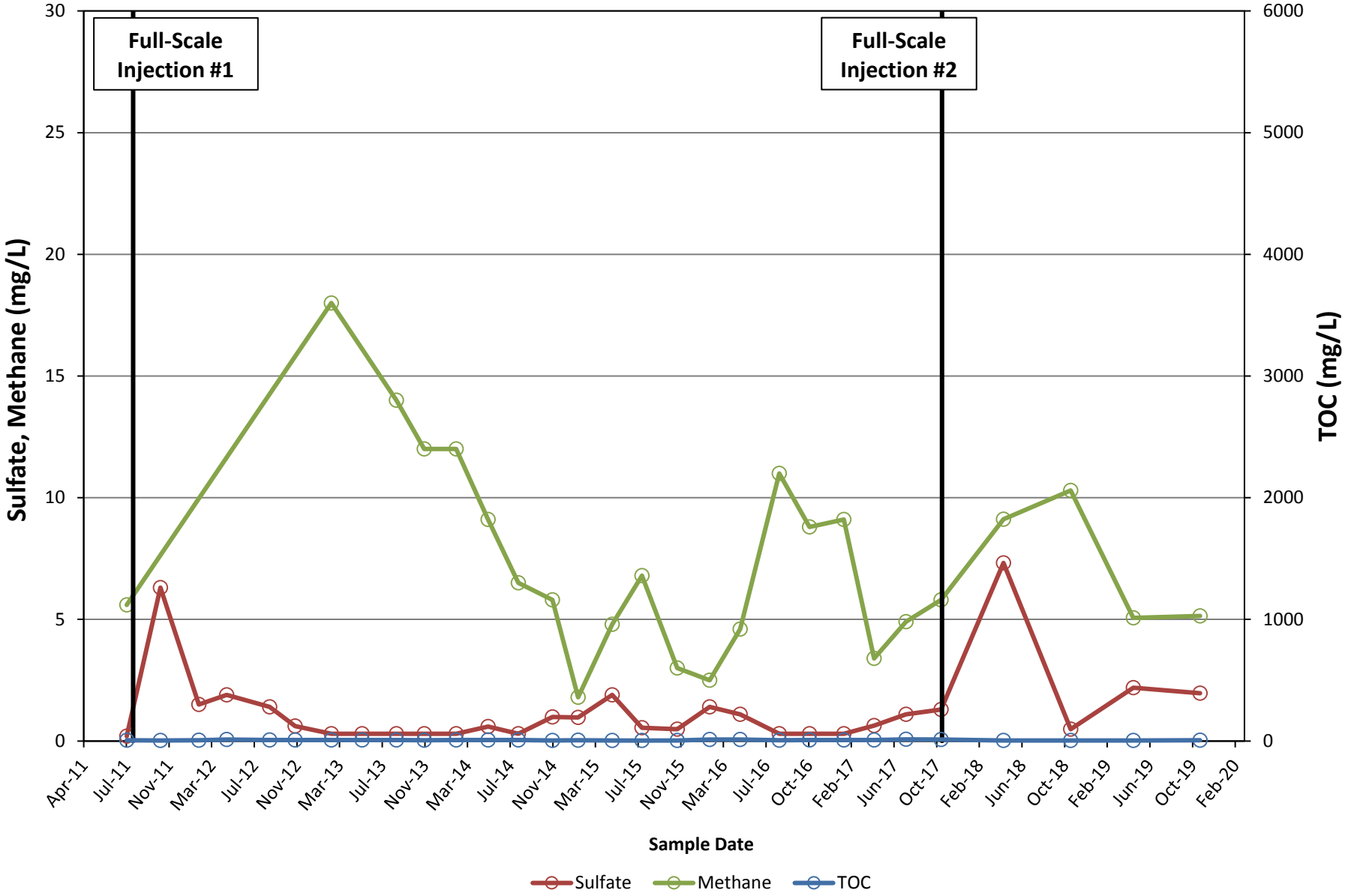
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Monitoring Well BDC-05-19**	Figure **E-6**

LANDAU ASSOCIATES



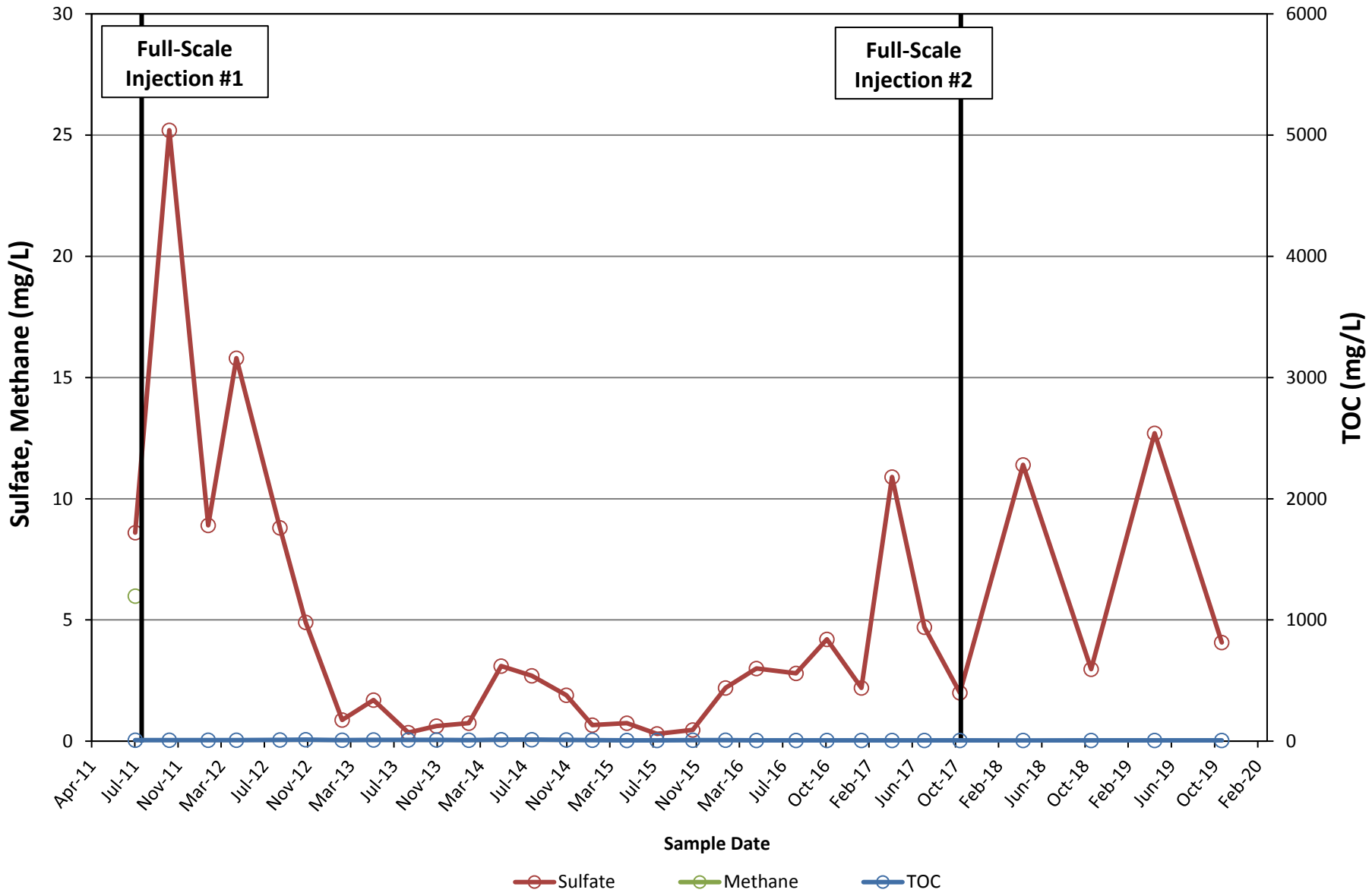
Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Monitoring Well BDC-05-20**	Figure **E-7**

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Monitoring Well BDC-05-21**	Figure **E-8**

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Redox and TOC Monitoring Well BDC-05-23**	Figure **E-9**

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APPENDIX F

SWMU-17 Time Plots: Copper and Arsenic

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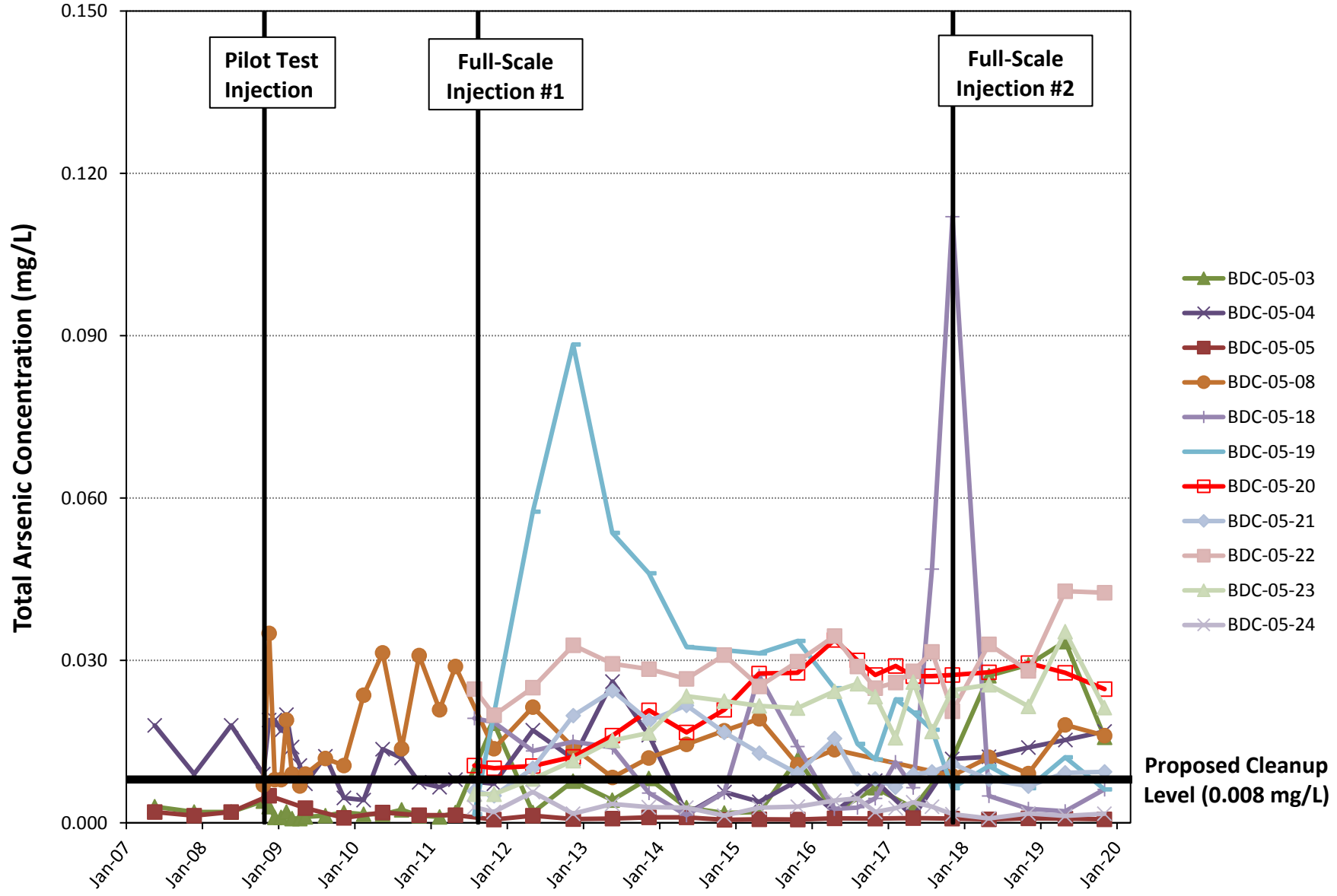

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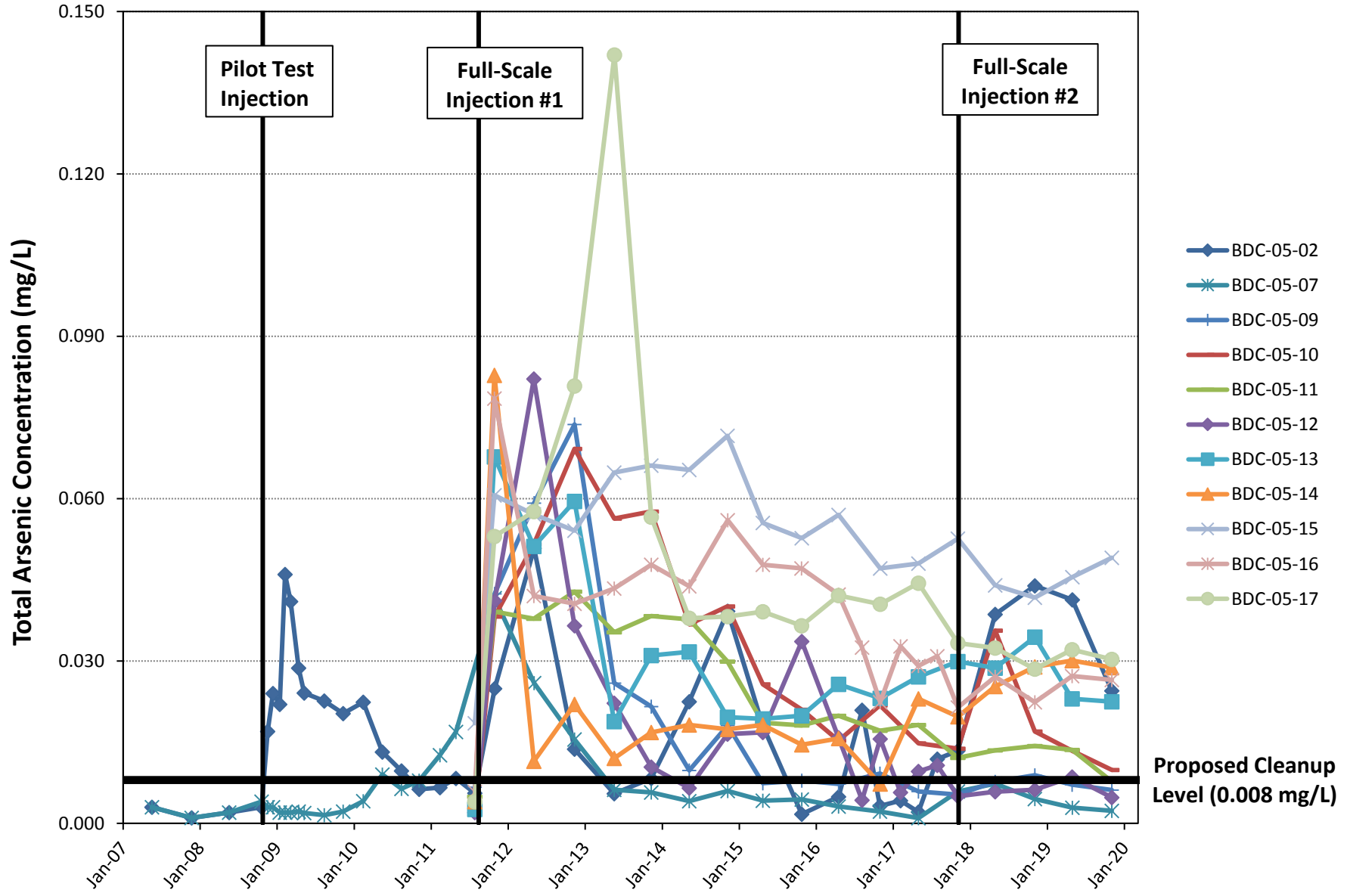
Boeing Developmental Center
Tukwila, Washington

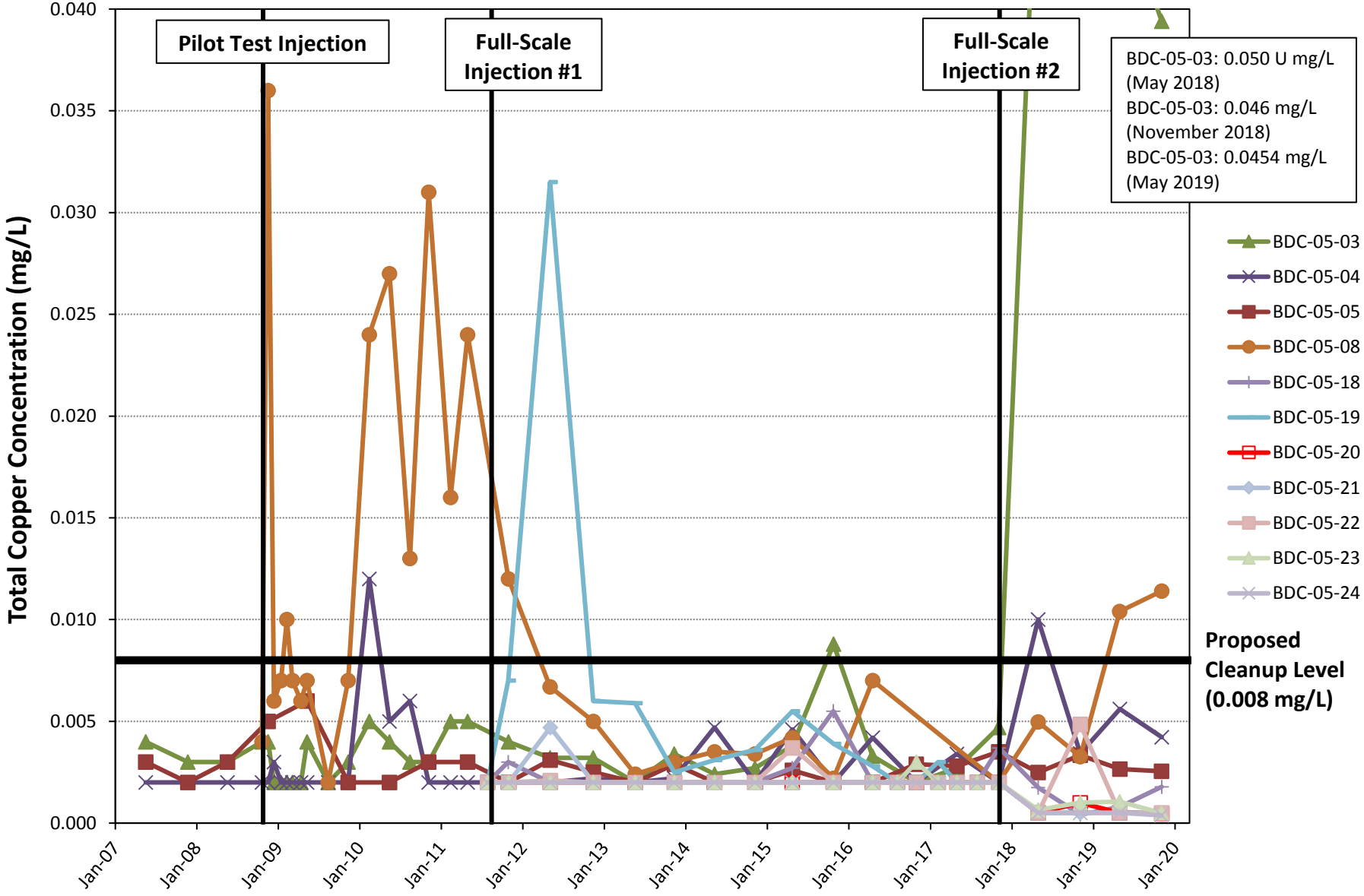
SWMU-17 – Total Arsenic at Monitoring Wells

Figure
F-1



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Total Arsenic at Injection Wells**	Figure **F-2**

LANDAU ASSOCIATES



Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Total Copper at Monitoring Wells**	Figure **F-3**

LANDAU ASSOCIATES

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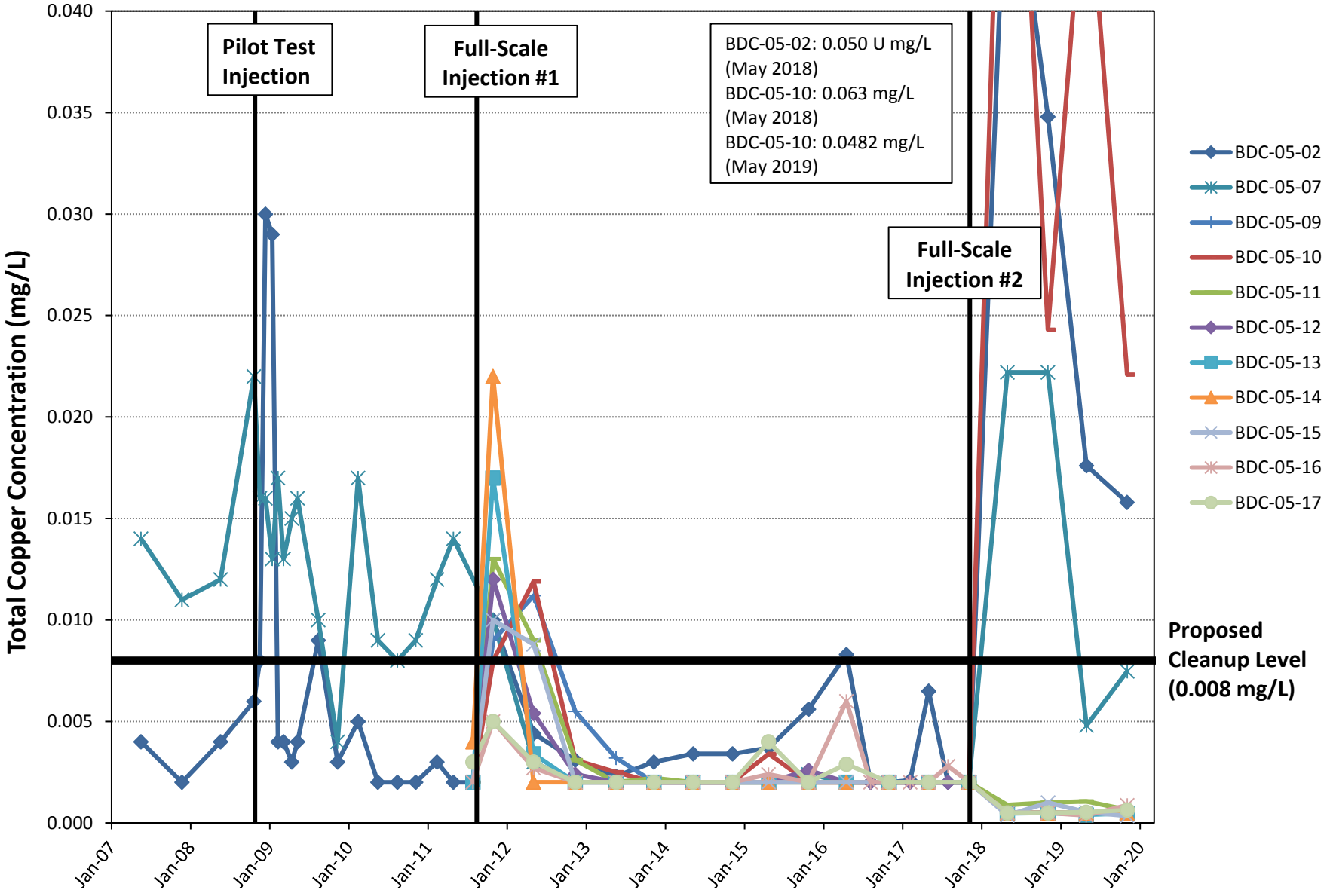

Boeing Developmental Center Tukwila, Washington	**SWMU-17 – Total Copper at Injection Wells**	Figure **F-4**

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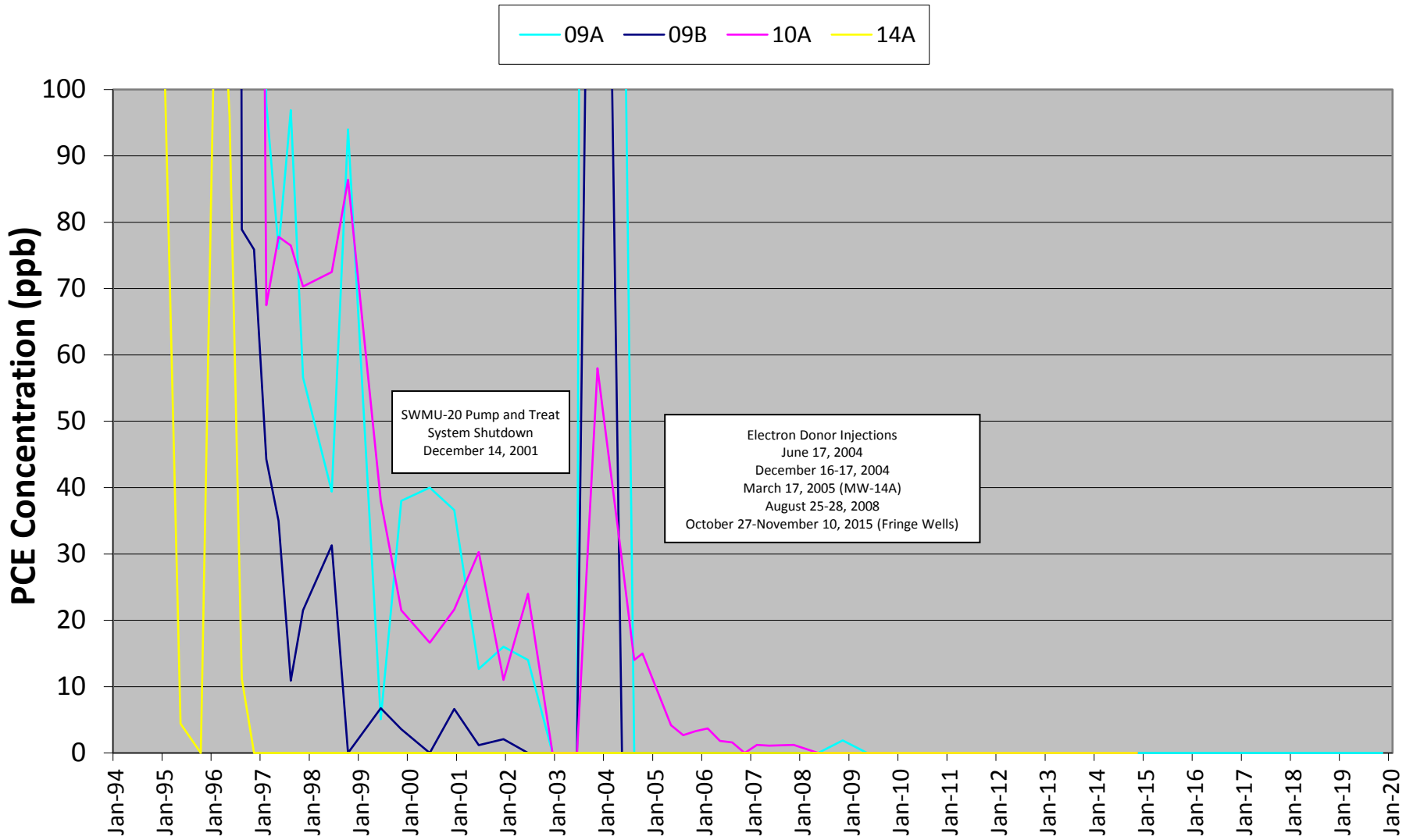
APPENDIX G

SWMU-20 Concentration Trend Charts

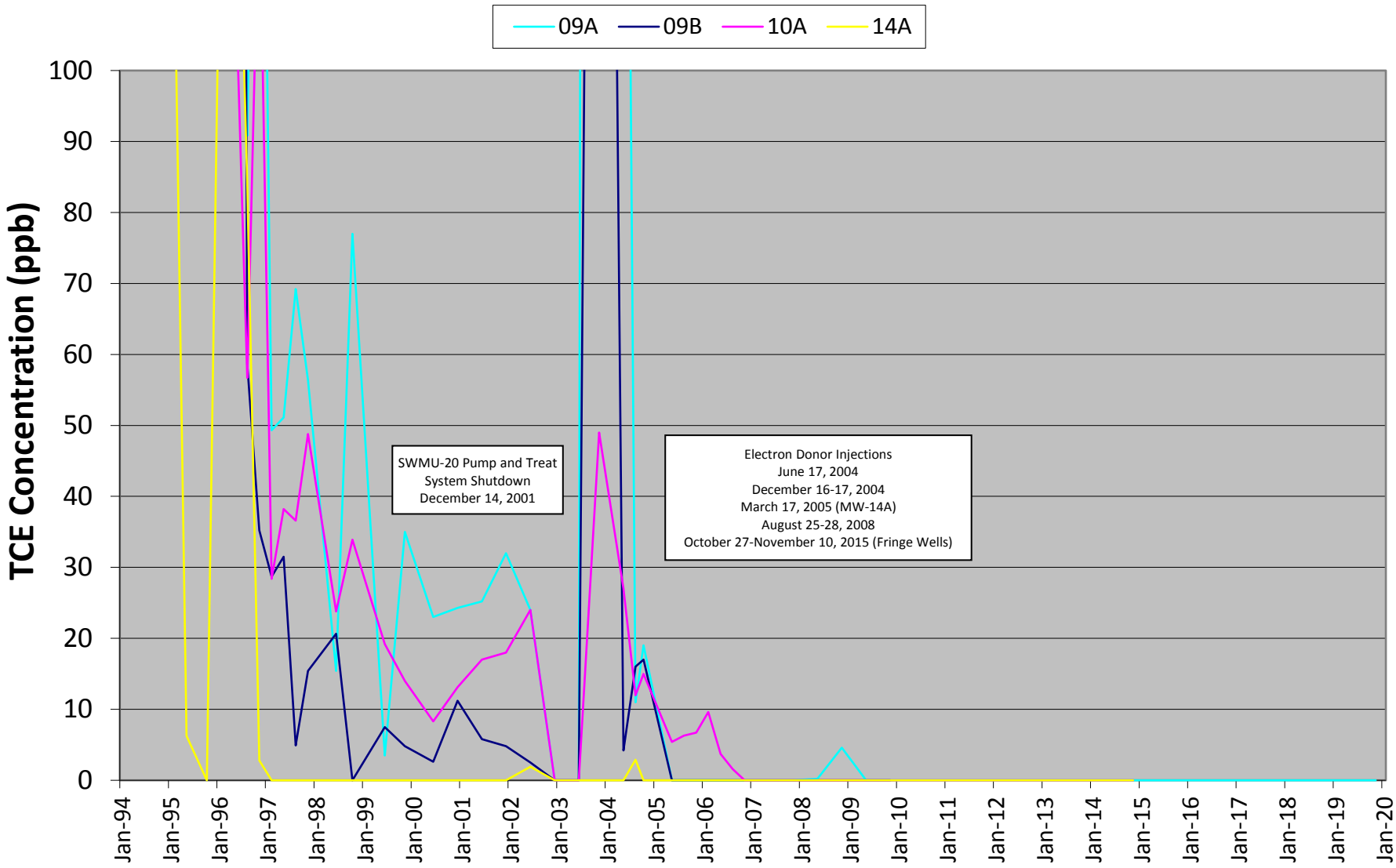


(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**SWMU-20 – PCE Concentration Trend Chart**	Figure G-1

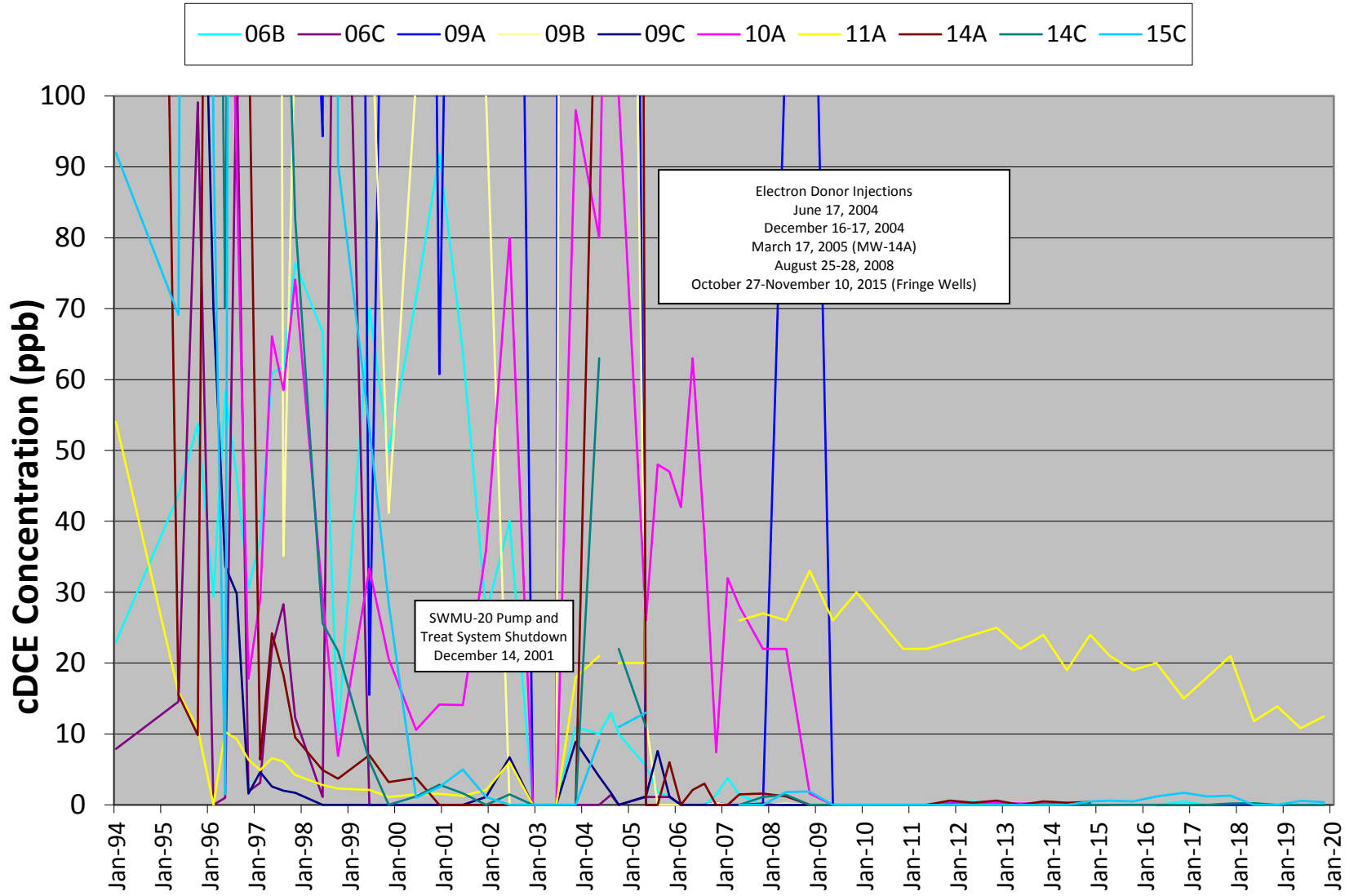


(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**SWMU-20 – TCE Concentration Trend Chart**	Figure G-2

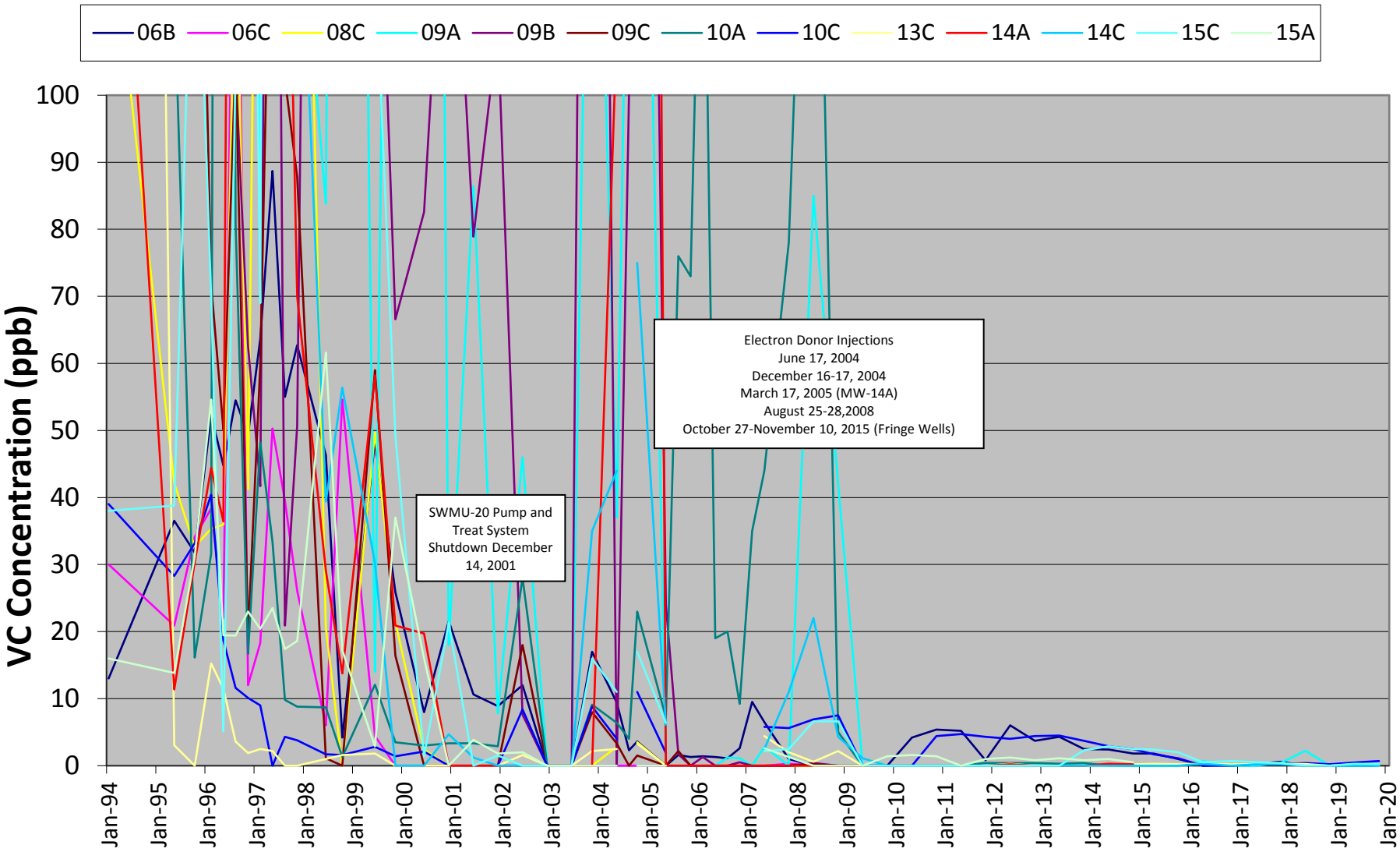


(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**SWMU-20 – cDCE Concentration Trend Chart**	Figure G-3



(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

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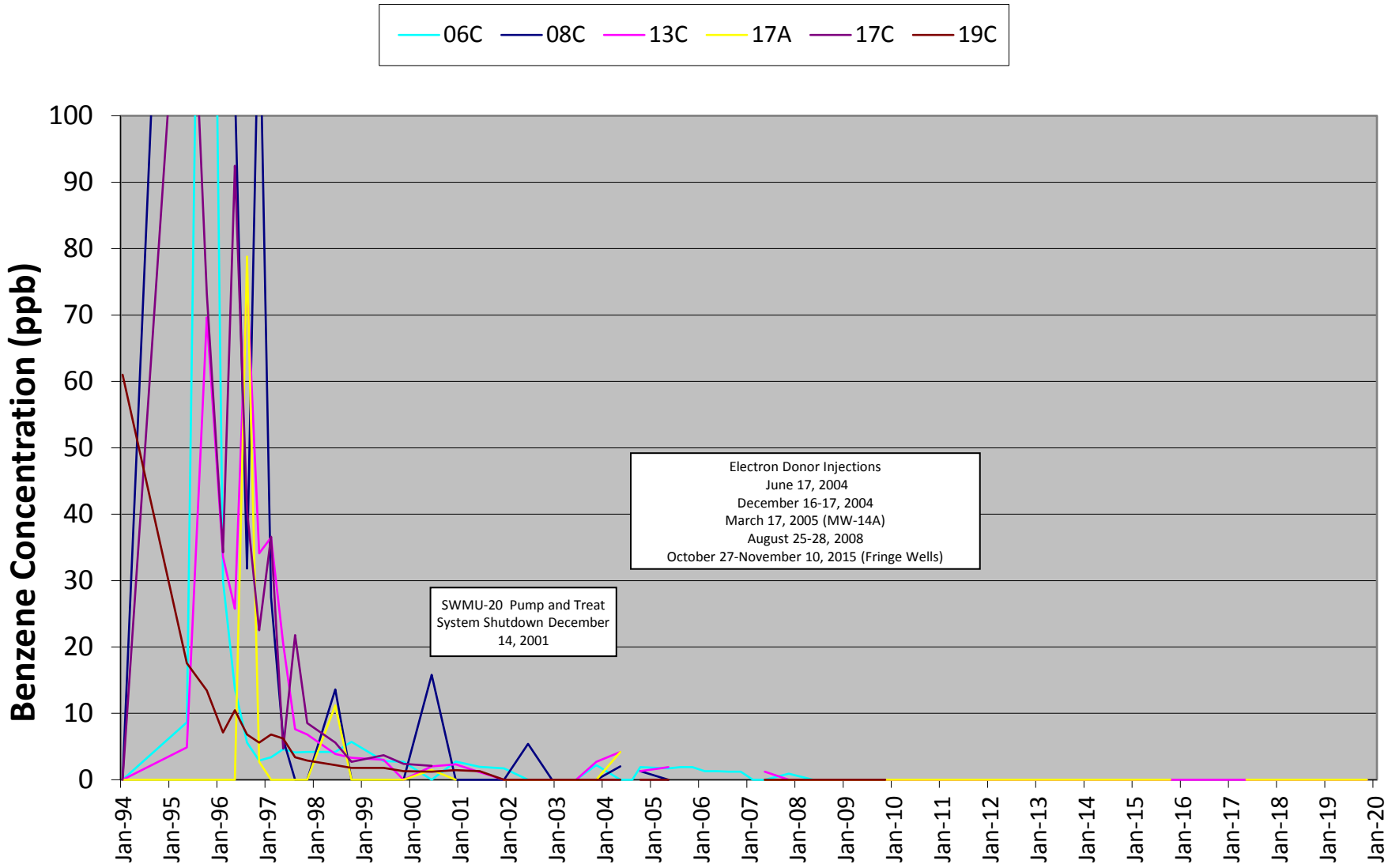
Boeing Developmental Center
Tukwila, Washington

SWMU-20 – VC Concentration Trend Chart

Figure
G-4



(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

Boeing Developmental Center Tukwila, Washington	**SWMU-20 – Benzene Concentration Trend Chart**	Figure G-5