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

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Prepared for

**The Boeing Company**
**Seattle, Washington**

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# LIST OF ABBREVIATIONS AND ACRONYMS

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
CUL ..... cleanup level
$CO_2$ ..... carbon dioxide
DC ..... Developmental Center
*Dhc* ..... *Dehalococcoides sp.*
DO ..... dissolved oxygen
Ecology ..... Washington State Department of Ecology
EPA ..... U.S. Environmental Protection Agency
$FeCl_2$ ..... ferrous chloride
ft ..... foot, feet (unit)
IA ..... interim action
IAWP ..... interim
LAI ..... Landau Associates, Inc.
mg/L ..... milligrams per liter
mg-N/L ..... milligrams per liter as nitrogen
MTCA ..... Model Toxics Control Act
NAPL ..... non-aqueous phase liquid
ORP ..... oxidation-reduction potential
ORC® ..... Oxygen Release Compound
PCE ..... perchloroethene
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
µg/L ..... micrograms per

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# 1.0 INTRODUCTION

This document presents a 2018 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 a new Agreed Order, which is anticipated to be finalized for the DC and per the information presented in the Interim Action Work Plan (IAWP; Landau Associates, Inc. [LAI] 2019).Beginning with this 2018 report, annual reporting for the three IAs will be 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 over 30 buildings on approximately 112 acres. 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 were evaluated in a comprehensive Summary Report prepared for Boeing by LAI (LAI 2002). Ecology approved the exclusion of most SWMUs and AOCs from further investigation based on the 2002 evaluation and the demonstration that they did not pose a threat to human health or the environment.

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 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. Site-wide groundwater elevation contours for May and November 2018 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 consisted of a 1,000-gallon steel underground storage tank (UST) designated as DC-01 and an associated pump island, which were located approximately 25 to 30 feet (ft) south of the southwest corner of Building 9-61. UST DC01 contained unleaded gasoline and was removed in 1985 after it was punctured by a measuring rod releasing approximately 830 gallons of unleaded gasoline (LAI 2004). The contaminants of concern 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 consisted of a 67-gallon sump and associated 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). The contaminants of concern 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 and just off the northeast corner of Building 9-90 (Figure 3). This SWMU consisted of a 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). The contaminants of concern in SWMU-20 are VOCs resulting from a suspected solvent leak from the former vapor degreaser pit. Specific VOCs of concern are PCE and TCE and transformation 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 2018 reporting period.

## 2.1 Remedial Approach

Anaerobic bioremediation is performed as the IA at AOC-05 through stimulation of micro-organisms present in the aquifer that can degrade petroleum hydrocarbons. The addition of nitrate (electron acceptor) allows native bacteria to utilize petroleum hydrocarbons (electron donors) as a source of energy. Biodegradation of TPH occurs via 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, micro-organisms preferentially use less oxidized electron acceptors in the following order: nitrate, manganese (IV), iron (III), sulfate, and $CO_2$. In anaerobic aquifers with naturally low dissolved oxygen (DO), like the aquifer at the DC, nitrate is the next best electron acceptor, making it the ideal substrate for enhanced anaerobic bioremediation.

Biodegradation of TPH can occur under both aerobic and anaerobic conditions. However, a 2002 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 decision was made to switch to anaerobic bioremediation using 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 2019) 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 2017 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 another 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 nitrate injection timeline is summarized as follows[1]:

- 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 as of 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.

Periods of substantial TPH-G rebound followed periods 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. Cumulative performance monitoring results are presented in Table 1.

As indicated in the AOC-05 Work Plan (LAI 2007b), Ecology requires 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. Semiannual monitoring for nitrate is required to continue at these four downgradient wells for 1 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 four downgradient wells since November 2009. Nitrate has not been detected at the four downgradient wells (BDC-05-04, MW-17A, MW-18A, and MW-21A) above the 10 mg-N/L action level. Cumulative downgradient nitrate results are included in Table 2.

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

## 2.3 2018 Activities

Activities in AOC-05 for this reporting period[2] included two quarterly monitoring events and two semiannual monitoring events to measure nitrate at downgradient wells. No nitrate injections were performed.

Bioremediation progress was evaluated through quarterly groundwater monitoring at the four AOC-05 wells (BDC-101 through BDC-104). Monitoring was performed in February, May, August, and November 2018. Groundwater levels were measured in May and November. In accordance with the AOC-05 Work Plan (LAI 2007b), 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. 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 2018 are presented on Figures 4 and 5, respectively. Cumulative groundwater level measurements are presented in Appendix B.

Semiannual monitoring for nitrate continued in May and November 2018 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. Semiannual monitoring for nitrate is required to continue at these four downgradient wells for 1 year after nitrate at wells BDC-101 and BDC-102 is no longer detected above the action level of 10 mg-N/L. 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.

## 2.4 2018 Results and Discussion

Monitoring results from 2018 continue to suggest that bioremediation of TPH-G and BTEX is nearing completion in AOC-05. This is indicated by the extended period of contaminant concentrations below the PCULs and continued slow nitrate utilization. Highlights from 2018 results are as follows:

- Contaminant Reduction: Contaminant concentrations at all four AOC-05 wells have remained below the PCULs and/or below the laboratory reporting limits for nearly 2 years beginning in February 2017, indicating enduring and effective biodegradation. At BDC-103, TPH-G and BTEX concentrations have been reduced by more than 99 percent compared to baseline.
- Nitrate: Nitrate at BDC-103 has remained elevated for 2 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 128 milligrams per liter (mg/L) in February 2018, 14

[2] The reporting period for AOC-05 is now the calendar year, per the IAWP (LAI 2019). The 2017 annual report for AOC-05 (most recent) included data from May 2017 through February 2018 (LAI 2018a). Activities and results from February 2018 are repeated in this site-wide 2018 annual report because of the adjusted reporting period.

months post-injection. Nitrate was depleted at 0.3 mg-N/L in November 2018; however, nitrate was back over 100 mg/L during the February 2019 event; nitrate availability will continue to be evaluated in 2019. The slower nitrate utilization in 2014 through 2015 and 2017 through 2018 coincident with low to non-detect levels of TPH-G and BTEX suggests that treatment TPH mass is nearing completion in the current saturated zone. No additional nitrate injection is needed at this time.

- Groundwater Elevations: Groundwater elevations in February 2018 were the second highest since treatment began (Figure 6), providing contact of injected nitrate with remaining contaminant mass that may be present in the higher smear zone.
- Downgradient Monitoring: Nitrate concentrations at BDC-101 and BDC-102 exceeded the action level during the May and August 2018 monitoring events, but were below the action level in February and November 2018. 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. Per the AOC-05 Work Plan (LAI 2007b), semiannual monitoring for nitrate will continue at the four downgradient wells for 1 year after nitrate at wells BDC-101 and BDC-102 drops below 10 mg-N/L.
- 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 0.32 mg-N/L at injection well BDC-103 in February 2018. Nitrite was also detected at downgradient well BDC-102 (0.17 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. Concentrations of TPH-G, benzene, and nitrate at BDC-103 and BDC-104 over time are presented on Figures 7 and 8, respectively. Cumulative monitoring results for wells BDC-101 through BDC-104 are presented in Table 1, with results compared to PCULs (LAI 2013a). Cumulative monitoring results for downgradient nitrate monitoring are presented in Table 2.

# 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 2018 reporting period.

## 3.1 Remedial Approach

IA at SWMU-17 consists of anaerobic bioremediation, which is accomplished through stimulation of micro-organisms present in the aquifer to enhance biodegradation of chlorinated ethenes. The addition of electron donor substrates stimulates biological reductive dechlorination of PCE and its breakdown products TCE, cDCE, and VC; PCE and its breakdown products are biodegraded as electron acceptors.

Reductive dechlorination of PCE and TCE occurs through microbially mediated (biotic) reactions, whereby micro-organisms obtain energy through redox reactions. Electron donors (hydrogen, fatty acids, etc.) are used by microbes together with various electron acceptors (oxygen, nitrate, manganese [IV], iron [III], sulfate, and $CO_2$). Bacteria obtain the greatest energy yield by using oxygen as an acceptor because it is highly oxidized (i.e. it can very readily accept electrons in these biotic redox reactions). When oxygen is depleted in an uncontaminated aquifer, 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 specific micro-organisms. 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.

Reductive dechlorination is enhanced through the injection of fermentable substrates (e.g., vegetable oil and lactate) as a source of electron donors for aquifer micro-organisms. 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. 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. Hydrogen is the required electron donor for the primary chlorinated ethene degraders (i.e. *Dehalococcoides sp*. [*Dhc*]) that can degrade PCE to harmless, non-chlorinated end products.

## 3.2 Summary of Prior Work and Findings

Prior to the reporting period, field activities consisted of pilot testing, installation of injection and monitoring wells, baseline sampling, and full-scale injections to stimulate anaerobic bioremediation, and performance groundwater monitoring. Two full-scale electron donor injection events have been performed through 2017; injection events and other IA work previously performed in SWMU-17 are described in detail in the IAWP (LAI 2019) 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 2010a). 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 2010a). 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 2013b). AMEE was added to a 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 2013b).

### 3.2.3 Full-Scale Electron Donor Injections

Two full-scale electron donor injections have been 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 microgram per liter (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 to complex with the sulfate present in the molasses. Iron sulfides are produced as a reactive coating on aquifer minerals when sulfate is reduced to sulfide and the sulfide complexes with ferrous iron. Abiotic reactions with iron sulfides can reduce PCE, TCE, and cDCE 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 2017 demonstrated substantial treatment in 75 months following the first donor injection. The final sampling event prior to the current reporting period was in November 2017 immediately before the second 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 due to 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 2017 indicated that bioremediation was substantially enhanced due to 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.

A summary of prior results leading up to the second injection are as follows:

- TOC: Through electron donor injection, TOC concentrations were enhanced for bioremediation throughout the core of the contaminant plume and many of the crossgradient and downgradient monitoring wells. TOC at injection wells ranged from 550 to 5,360 mg/L during the November 2011 sampling event conducted 2.5 months after the first donor injection. As of November 2017, TOC had declined to near baseline and below 10 mg/L at the five eastern injection wells near the head of the plume (BDC-05-04, BDC-05-09, BDC-05-10, BDC-05-11, and BDC 05-12), while it remained greater than 10 mg/L (11 to 33 mg/L) at BDC-05-02, BDC-05-07, and the five western injection wells (BDC-05-13 through BDC-05-17).
- Redox Conditions: Highly reducing aquifer redox conditions required for complete reductive dechlorination of PCE, TCE, and breakdown products occurred throughout the core of the plume as a result of the initial electron donor injection. The generally low concentrations of sulfate and elevated concentrations of methane in all injection wells through November 2017 were indicative of continued highly reduced redox conditions.
- Reductive Dechlorination: Following initial injection in 2011, reductive dechlorination was enhanced at all SWMU-17 wells with the exception of upgradient well BDC-05-05. Concentrations of PCE and TCE at BDC-05-10, which had the highest baseline concentration of PCE and the second highest concentration of TCE, remained less than the reporting limit (0.2 µg/L) since May 2012, representing a concentration reduction of more than 99 percent. Increases in one or more breakdown products (cDCE and VC) or end products (ethene and ethane) were observed at all injection wells. After peaking, cDCE concentrations decreased and remained below PCULs since November 2012. During 2017, PCE remained below the PCUL (5.3 µg/L) at all wells, and TCE was at or below the PCUL (1.4 µg/L) at all but two wells (BDC-05-02 and BDC-05-18). Both of these wells exceeding the TCE PCUL were targeted by the November 2017 donor injection.

  Evaluation of all SWMU-17 results on a molar basis indicated a steady shift from a predominance of chlorinated ethenes (PCE, TCE, cDCE, and VC) to non-chlorinated end products (ethene and/or ethane) at all wells that had significant baseline PCE and TCE concentrations.
- Arsenic and Copper: Concentrations of arsenic and copper increased at many SWMU-17 wells following the August 2011 injection, consistent with results observed during bioremediation pilot testing. However, as of November 2017, total and dissolved copper concentrations had decreased below the PCUL (0.008 mg/L) at all wells. Total or dissolved arsenic concentrations remained above the PCUL (0.008 mg/L) at 16 of 22 sampled wells in November 2017, with a maximum total arsenic result of 0.112 mg/L at well BDC-05-18. Solubilization of reduced arsenic (along with manganese and iron) is a localized and temporary phenomenon that occurs within the portion of the aquifer that has been artificially reduced through donor amendment. Once the injected donor has been consumed and natural redox conditions are re-established, these metals should return to the less soluble forms that existed prior to donor amendment (Solutions-EIS 2006; Suthersan et al. 2003).

## 3.3 2018 Activities

Activities in 2018 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 2018.

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 2018 semiannual sampling events. Consistent with previous measurements, groundwater flow is generally west-southwesterly in direction, with localized northerly and southerly components of flow near the head to middle portion of the plume. These groundwater flow directions are consistent with the southwest-trending contaminant plume. Groundwater elevation contours for May and November 2018 are presented on Figures 4 and 5, respectively. Cumulative groundwater elevation data for SWMU-17 wells are presented in Appendix B.

## 3.4 2018 Results and Discussion

This section presents discussion and interpretation of data collected during 2018. As of the November 2018 sampling event, all wells were below PCULs for PCE, TCE, cDCE, and VC. Groundwater monitoring results show that anaerobic bioremediation continues to be enhanced, as indicated by elevated TOC concentrations since the 2017 injection. Results also indicate enhanced aquifer redox conditions and enhanced reductive dechlorination. Detections of end products ethene and/or ethane demonstrate continued complete conversion of the toxic parent and breakdown products to non-toxic end products. November 2018 data were collected 87 months following the first electron donor injection in August 2011.

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, conversion to intermediary breakdown products cDCE and VC, and conversion 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 2018, 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-05-02).

At BDC-05-02, TCE was measured above the PCUL at a concentration of 3.75 µg/L in May and decreased to below the PCUL by November. This well was targeted by the November 2017 donor injection. November 2018 PCE/TCE concentrations in groundwater are presented on Figure 9.

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 2018; 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 have decreased below PCULs. 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 2018 (15.4 µg/L) was well below the PCUL. VC concentrations at BDC-05-09 (3.32 µg/L) and BDC-05-18 (3.42 µg/L ) were above the PCUL in May 2018, but decreased below the PCUL in November 2018. Ethene and ethane were also detected and predominant at BDC-05-09 in November 2018. November 2018 VC concentrations in groundwater are presented on Figure 10.

Complete reductive dechlorination is evidenced by occurrence and molar predominance of innocuous end products ethene and ethane. One or both of these compounds were detected at 4 of the 18 wells where analyzed in 2018. 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. Ethene+ethane predominance means that ethene+ethane constitutes a higher percentage of total ethenes (i.e. VOCs + end products) than do each of the chlorinated ethenes (PCE, TCE, cDCE, or VC). Ethene+ethane represented just 1.7 percent of the total ethenes (i.e. 1.7 percent molar fraction) during baseline sampling in July 2011. Due to biodegradation stimulated by the 2011 and 2017 injections, the ethene+ethane molar fraction increased to a maximum level of 91.5 percent in November 2016. Ethene+ethane was not detected in May 2018, following the November 2017 injection, but were detected November 2018 and constituted 55.6 percent of total ethenes.

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, average total chlorinated ethenes increased through May 2012 due to enhanced desorption, then decreased substantially through 2018. Average total chlorinated ethenes through November 2018 show a substantial reduction (approximately 92 percent) compared to baseline and a 94 percent reduction compared to the May 2012 peak. The temporary increase in total chlorinated ethenes in May 2018 is likely the result of enhanced mass desorption following the November 2017 focused injection.

In summary, data show that PCE and its associated breakdown products are being effectively converted to non-toxic end products by bioremediation. Comparison of current contaminant concentrations to PCULs indicates that treatment is in its final stages. As of November 2018, PCE, TCE, cDCE, and VC concentrations were below PCULs at all 22 wells. Detection of ethene and/or ethane at 4 of the 18 wells where analyzed in 2018 confirms continued 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. Due to 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 to 9,629 mg/L in May 2018.

As of November 2018, TOC has declined to near baseline at three 2011 injection wells in the middle of the plume (BDC-05-13, BDC-05-14, and BDC-05-17), while it remains greater than 10 mg/L (14 to 1,723 mg/L) at all other injection wells. 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 2018. These enhanced redox conditions have also been achieved at 10 monitoring wells. At other downgradient and crossgradient monitoring wells, redox changes have been 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).

### 3.4.3 Copper and Arsenic

Total and/or dissolved copper concentrations were above the PCUL (0.008 mg/L) at four of the five wells injected in 2017 as of the November 2018 sampling event. 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 2018, 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 above the PCUL for arsenic since the first injection, except for BDC-05-04 which, until November 2017, had been below the PCUL since May 2014. The highest November 2018 concentration was a total arsenic result of 0.044 mg/L at well BDC-05-02.

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 should 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 due to naturally reduced aquifer conditions, arsenic concentrations may not achieve the PCUL at project completion.

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 2018 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 microbiologically mediated process by which these compounds are reduced to transformation products, cDCE and VC, and non-toxic end products, ethene and ethane. Micro-organisms 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 2019) 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 due to 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 2019) 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 (CULs) at all SWMU-20 wells. Once TOC concentrations fall below approximately twice the baseline concentration at monitored wells, it is

anticipated that 1 to 2 years of semiannual monitoring will be required to demonstrate no rebound of VOCs above CULs before requesting a No Further Action determination from Ecology for SWMU-20 (LAI 2016).

### 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 2010b). The 2015 sampling reduction discontinued semiannual monitoring at 9 of the 18 sampled wells. The 9 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. Continued semiannual monitoring at these 9 wells will be used for the foreseeable future to evaluate ongoing monitored natural attenuation (MNA) in SWMU-20 (LAI 2015). 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 due to VOCs in the underlying shallow groundwater. These evaluations were performed for Building 9-101, which overlies the source, and Building 9-90, 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. 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 CULs (LAI 2006b).

## 4.3 2018 Activities

Activities in 2018 consisted of two semiannual performance monitoring events at nine wells in SWMU-20 to evaluate the progress of MNA following the bioremediation injection in 2015. No injections were performed in 2018.

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 (MEE, TOC, and sulfate). Laboratory analysis for VOCs, MEE, TOC, and sulfate was performed by ARI in Tukwila, Washington. Aquifer redox parameters DO, ORP, and pH were measured in the field.

## 4.4 2018 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. 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 2018. Results indicate aquifer redox conditions remain conducive to continued bioremediation following the fifth electron donor injection in October and November 2015 (LAI 2019); 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 2019 consist of two site-wide semiannual (May and November) monitoring events and reporting. Per the IAWP (LAI 2019), sampling in AOC-05 has been reduced from quarterly to semiannual only. Site-wide monitoring will be conducted in accordance with the updated sampling matrix (Table 6). Monitoring locations are presented on Figure 16.

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 2019 annual report will be submitted to Ecology by May 15, 2020.

# 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 Landau Associates. 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 Landau Associates, shall be at the user's sole risk. Landau Associates 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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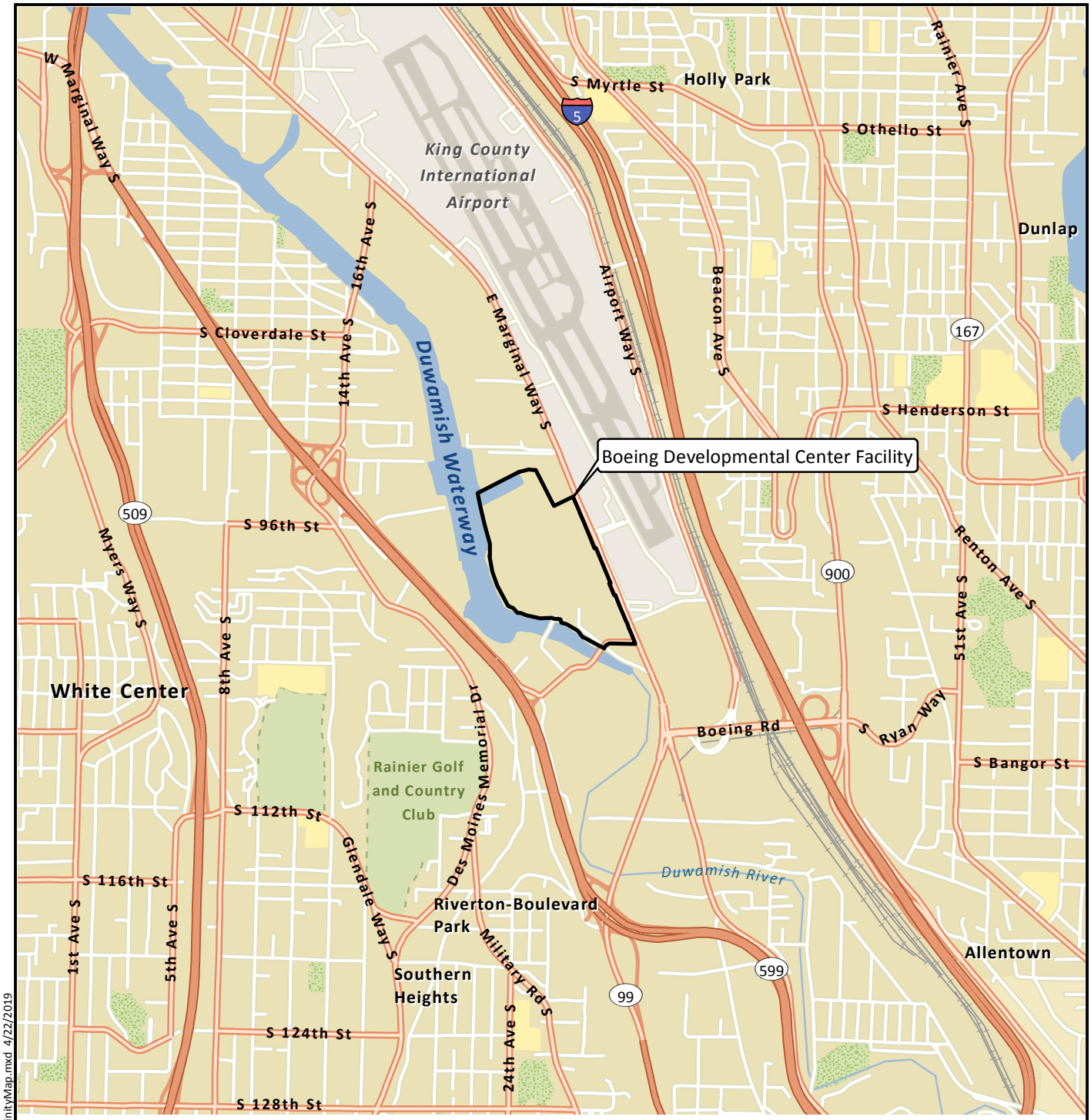


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Data Source: Esri 2012

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| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Vicinity Map** | Figure<br>1 |

G:\Projects\025\093\118\013\2018 Annual Report\F02FacilityBoundary.mxd 5/14/2019


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.

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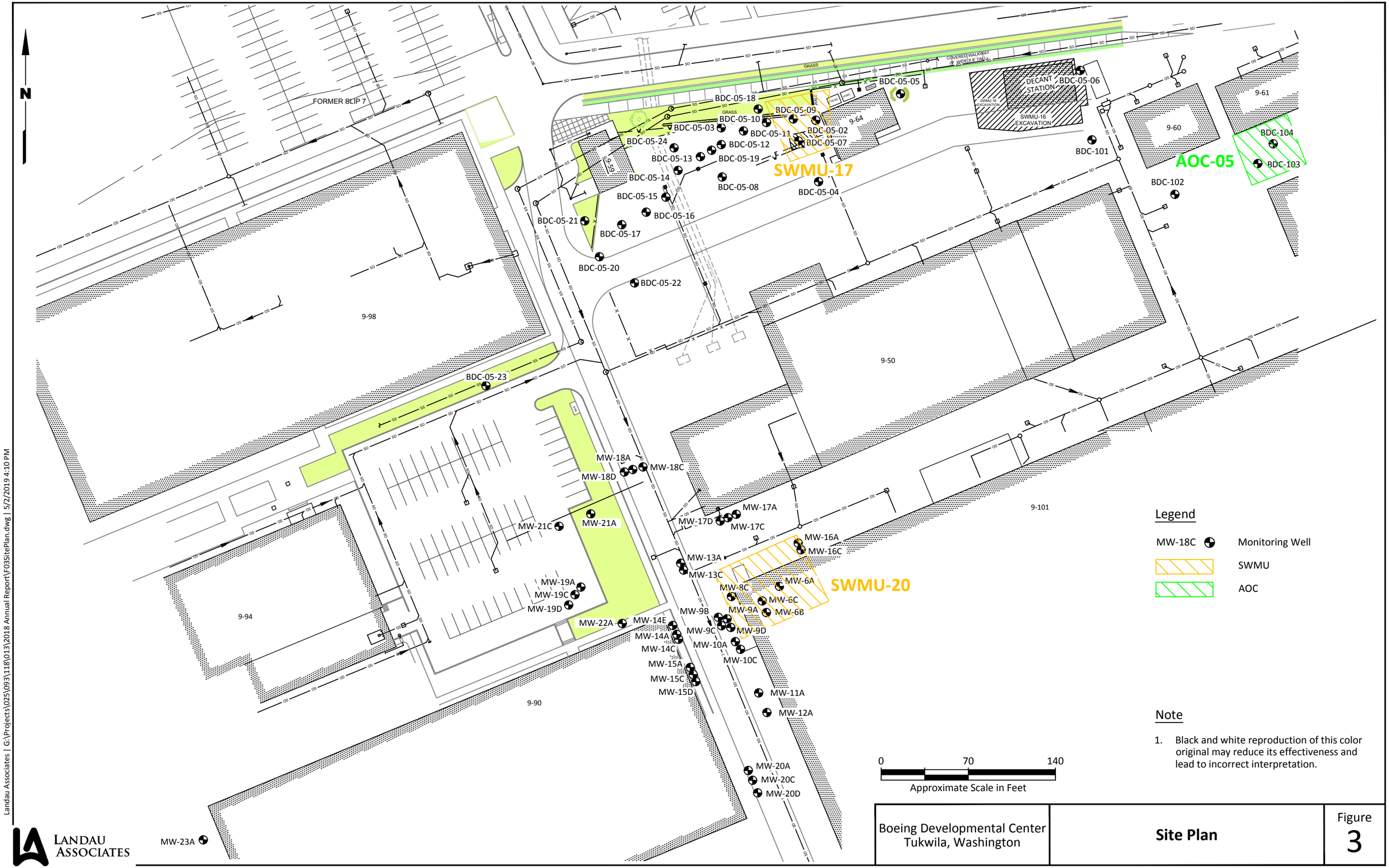
Data Sources: Boeing; Esri World Imagery.

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Facility Boundary** | Figure<br>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.

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| Boeing Developmental Center<br>Tukwila, Washington | **Site Plan** | Figure<br>3 |
|---|---|---|

G:\Projects\025\093\118\013\2018 Annual Report\F04GWContoursMay2018.mxd 4/23/2019

N

BDC-05-12* (2.78)
BDC-05-18 (2.60)
9-53
BDC-05-19 (2.59)
BDC-05-11 (2.69)
BDC-05-10 (2.67)
BDC-05-13* (2.98)
BDC-05-03* (2.47)
BDC-05-07 (2.65)
BDC-05-24 (2.53)
9-55
BDC-05-09 (2.62)
BDC-05-14 (2.51)
BDC-05-05 (2.86)
BDC-05-15* (2.71)
9-42
BDC-05-06
BDC-101 (3.06)
BDC-05-16 (2.56)
9-64
9-61
BDC-104 (3.28)
BDC-05-17 (2.48)
9-59
9-60
BDC-05-02 (2.65)
BDC-103 (3.24)
BDC-05-21 (2.37)
BDC-05-20 (2.43)
BDC-05-08 (2.55)
BDC-102 (3.09)
MW-18A (2.39)
BDC-05-04 (2.64)
9-98
MW-18D
BDC-05-22 (2.43)
9-50
BDC-05-23 (2.20)
MW-13A (2.37)
MW-16A (2.45)
MW-18C
MW-16C (2.32)
MW-21A (2.33)
MW-17C
MW-17A (2.42)
9-103
MW-8C
MW-13C (2.42)
MW-21C
MW-6A (2.51)
MW-6C
MW-17D
MW-19A
MW-6B (2.49)
MW-19C
MW-9B
9-94
MW-19D
MW-9A (2.29)
MW-22A (2.17)
MW-14E
MW-9D
9-101
MW-14A
MW-9C
MW-14C (2.17)
MW-11A (2.49)
MW-10C (2.25)
MW-15A
MW-15C (2.14)
MW-10A
MW-12A
MW-15D
MW-20A
MW-23A
MW-20C (2.19)
MW-20D
9-90
9-120

2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2

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

**Facility-Wide Groundwater Elevation Contours - May 2018**

Figure 4

G:\Projects\025\093\118\013\2018 Annual Report\F05GWContoursNov2018.mxd 4/22/2019

N

BDC-05-12 (2.07)
BDC-05-18 (1.92)
BDC-05-19 (2.08)
BDC-05-11 (2.05)
BDC-05-10 (1.99)
BDC-05-13 (1.99)
BDC-05-03* (1.83)
BDC-05-07 (2.03)
BDC-05-24 (1.93)
BDC-05-09 (2.01)
BDC-05-14 (1.96)
BDC-05-05 (2.12)
BDC-05-15 (1.95)
BDC-05-06
BDC-101 (2.27)
BDC-05-16 (1.93)
BDC-104 (2.37)
BDC-05-17 (1.88)
BDC-103 (2.34)
BDC-05-21 (1.82)
BDC-05-02 (2.02)
BDC-102 (2.30)
BDC-05-20 (1.85)
BDC-05-08 (1.93)
MW-18A (1.80)
BDC-05-04 (1.97)
MW-18D
BDC-05-22* (2.85)
BDC-05-23 (1.71)
MW-13A (1.77)
MW-16A (1.95)
MW-18C
MW-16C (1.88)
MW-21A (1.76)
MW-17C
MW-17A (1.85)
MW-8C
MW-13C (1.81)
MW-21C
MW-6A (1.90)
MW-6C
MW-17D
MW-19A
MW-6B (2.01)
MW-19C
MW-9B
MW-19D
MW-9A (1.91)
MW-22A (1.70)
MW-14E
MW-9D
MW-14A
MW-9C
MW-14C (1.83)
MW-11A (1.99)
MW-10C (1.82)
MW-15A
MW-15C (1.77)
MW-10A
MW-12A
MW-15D
MW-20A
MW-23A
MW-20C (1.76)
MW-20D

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

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

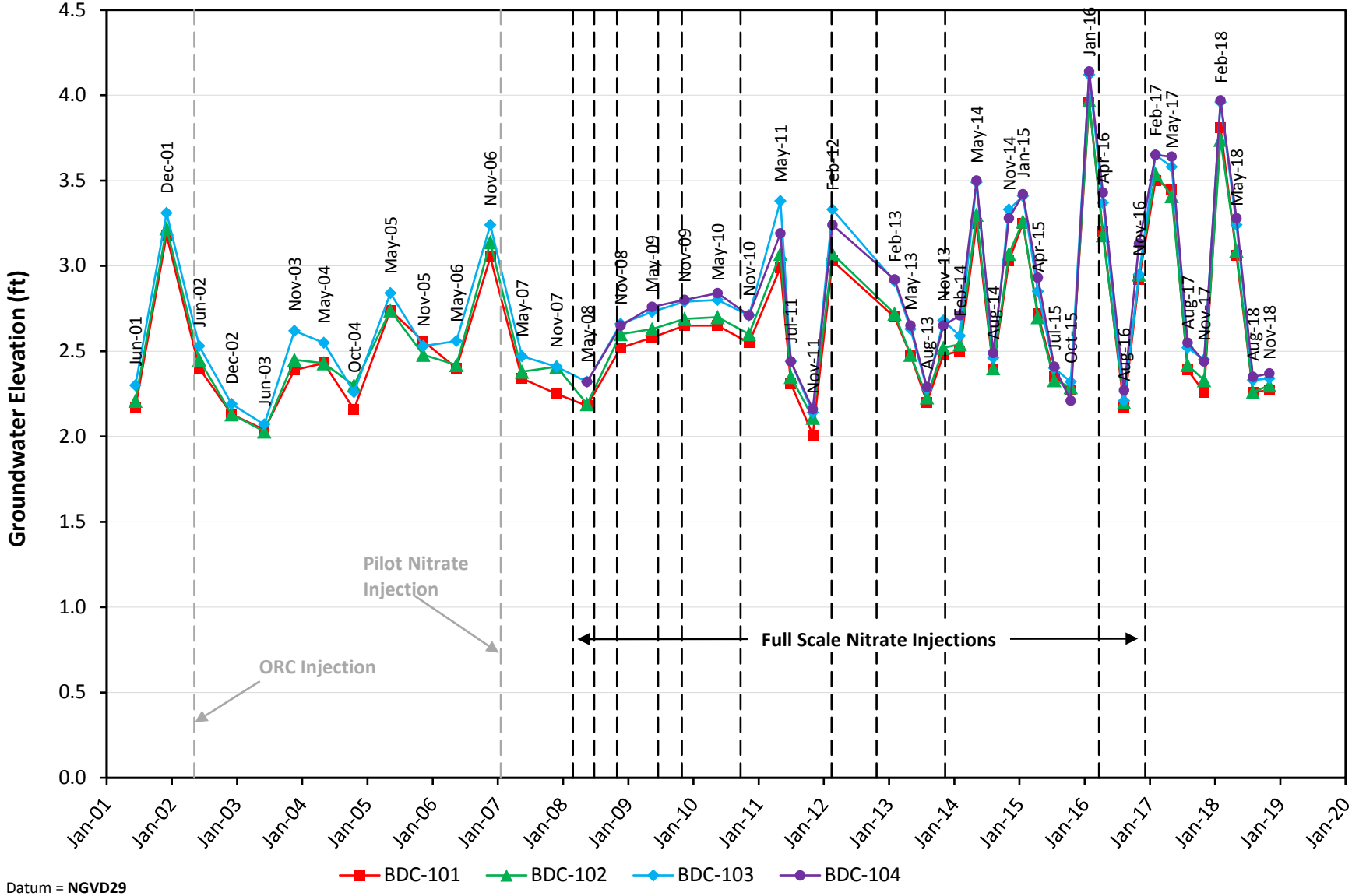
Scale in Feet

Data Sources: Boeing; Esri World Imagery.

LANDAU ASSOCIATES

| Boeing Developmental Center<br>Seattle, Washington | **Facility-Wide Groundwater Elevation Contours - November 2018** | Figure<br>5 |
|---|---|---|

Source: P:\025\093\WIP\T\Data\Master Data Tables\GW Elevations\AOC-05 GW Elev Plot

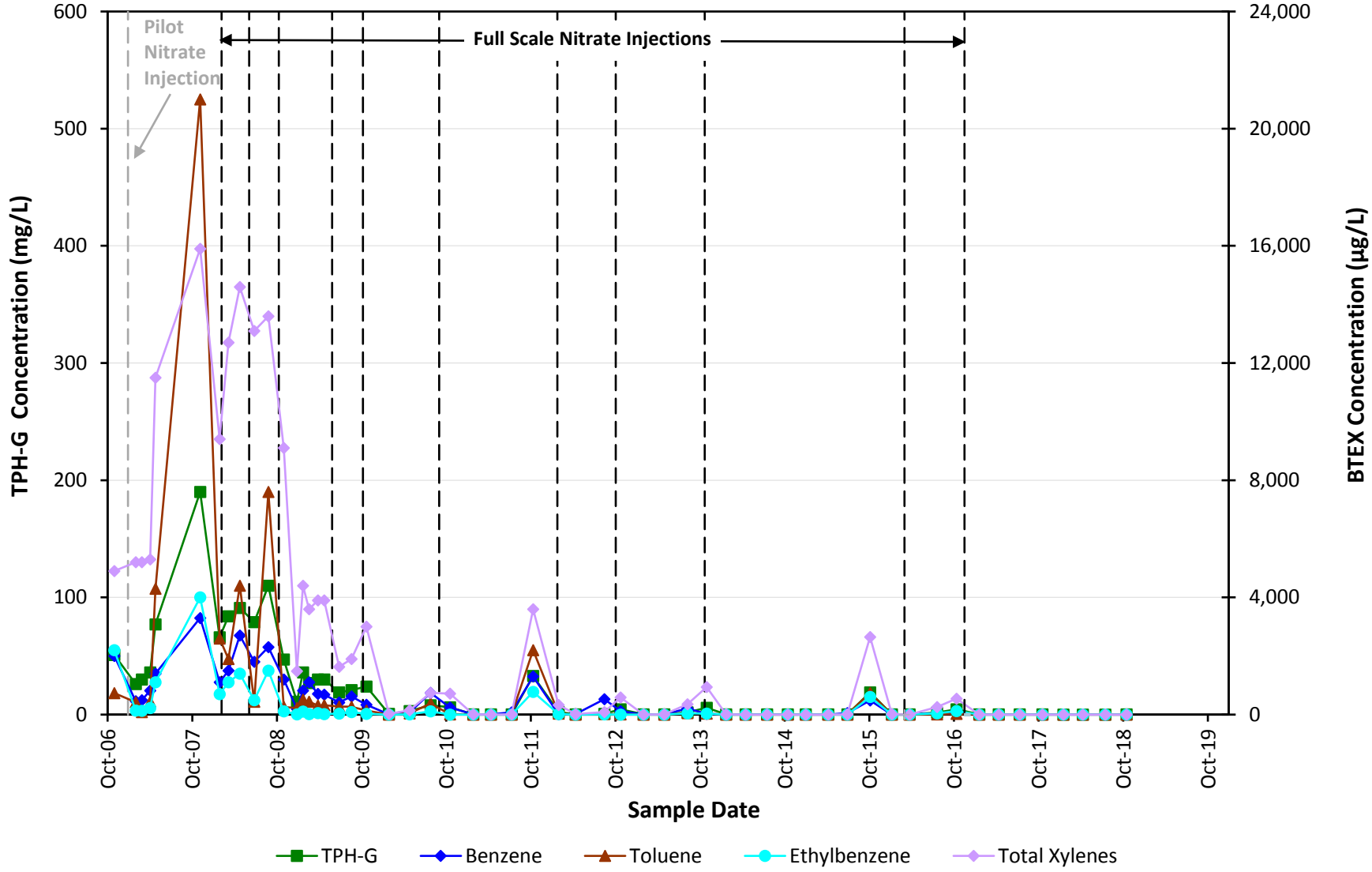



Datum = **NGVD29**

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **AOC-05: Groundwater Elevations** | Figure<br>6 |

LANDAU ASSOCIATES

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



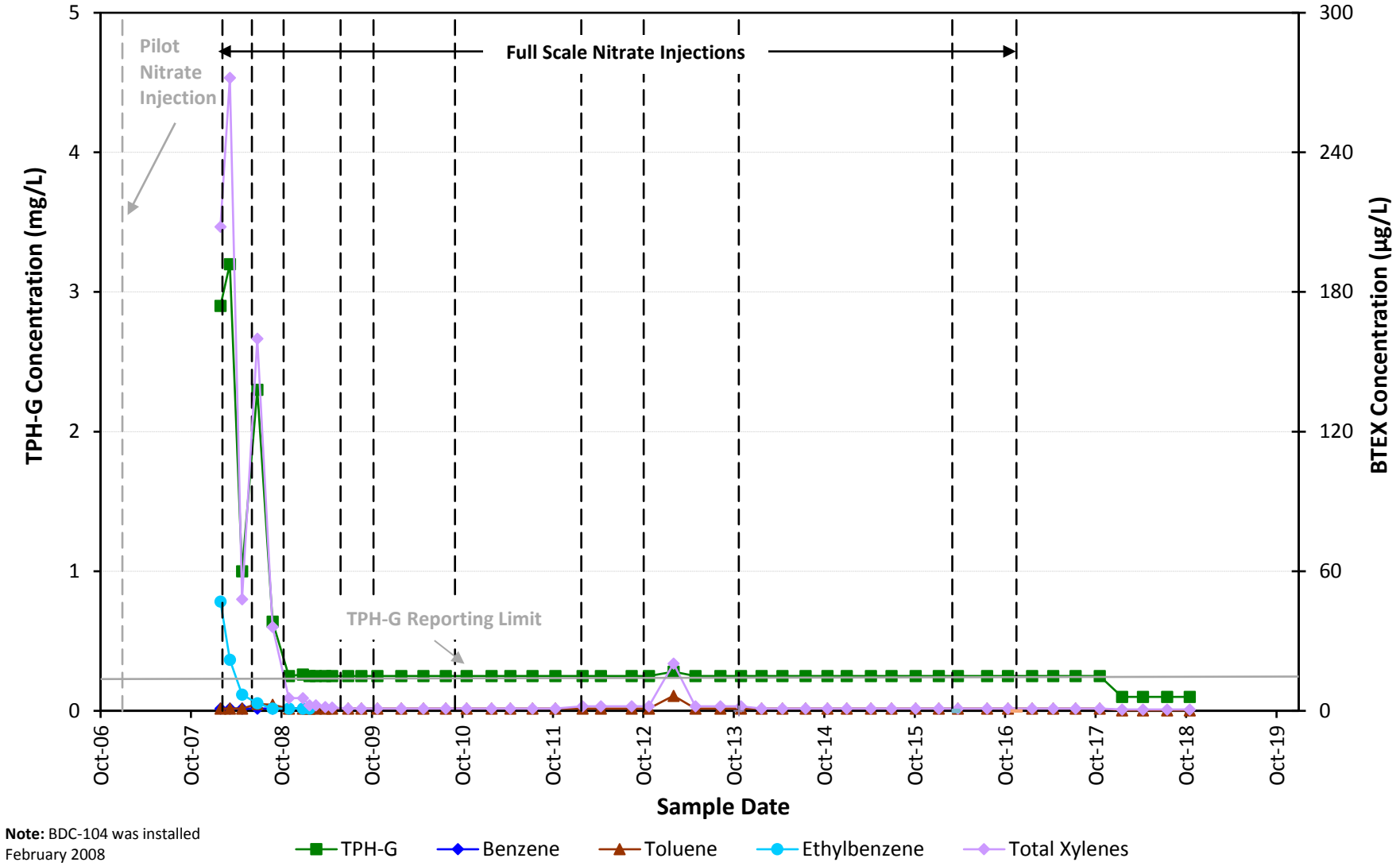

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

**AOC-05: BDC-103 Nitrate, TPH-G, and Benzene Concentrations**

Figure
7

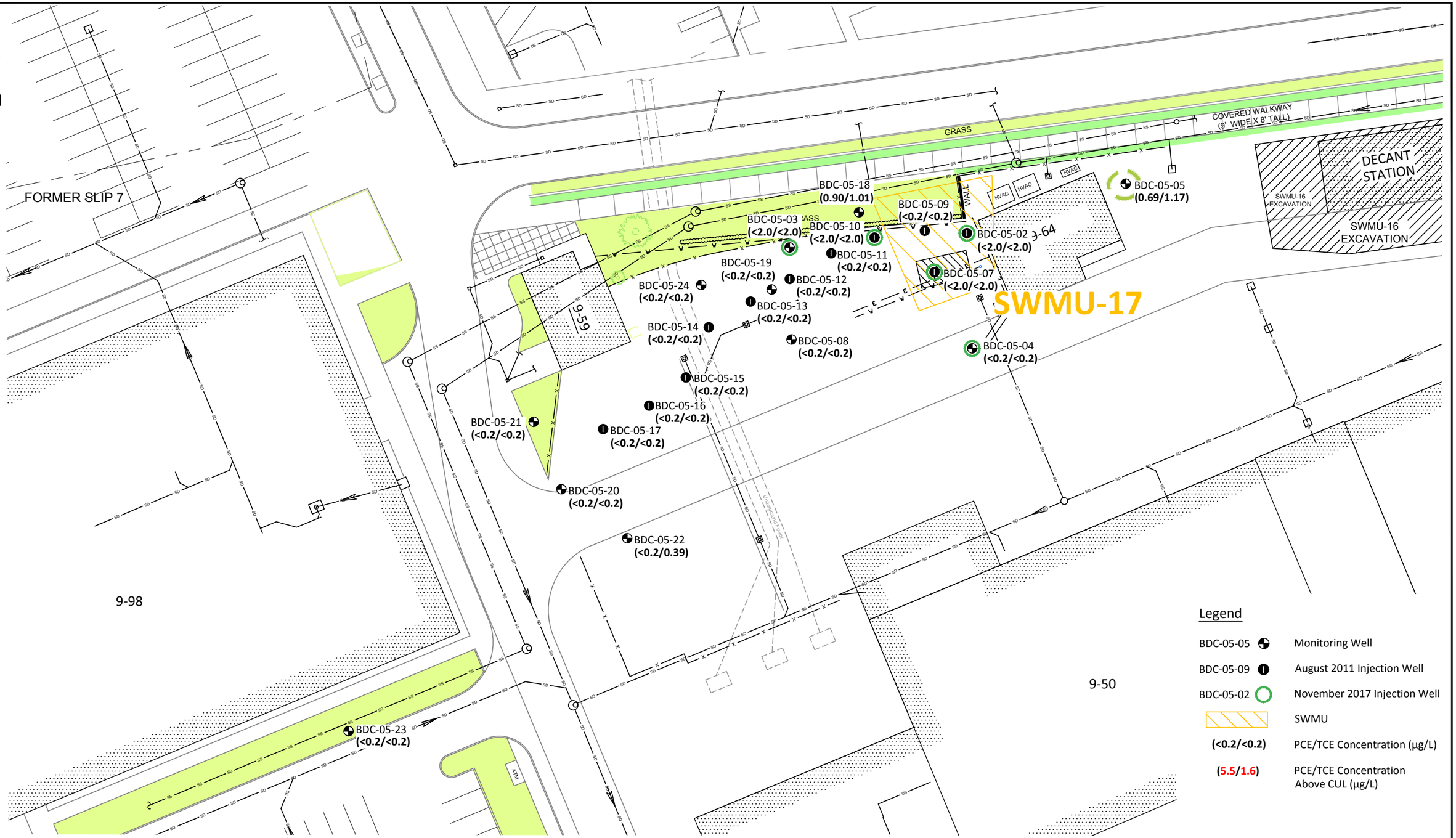
Source: P:\025\093\WIP\T\Data\Master Data Tables\AOC-5\AOC-5 cleanup action tables MASTER.xlsx




**Note:** BDC-104 was installed February 2008

| | | |
|---|---|---|
| LANDAU ASSOCIATES | Boeing Developmental Center<br>Tukwila, Washington | **AOC-05: BDC-104 Nitrate, TPH-G, and Benzene Concentrations** |

Figure
8




Legend

- BDC-05-05 — Monitoring Well
- BDC-05-09 — August 2011 Injection Well
- BDC-05-02 — November 2017 Injection Well
- SWMU
- (<0.2/<0.2) — PCE/TCE Concentration (µg/L)
- (5.5/1.6) — PCE/TCE Concentration Above CUL (µg/L)

Notes

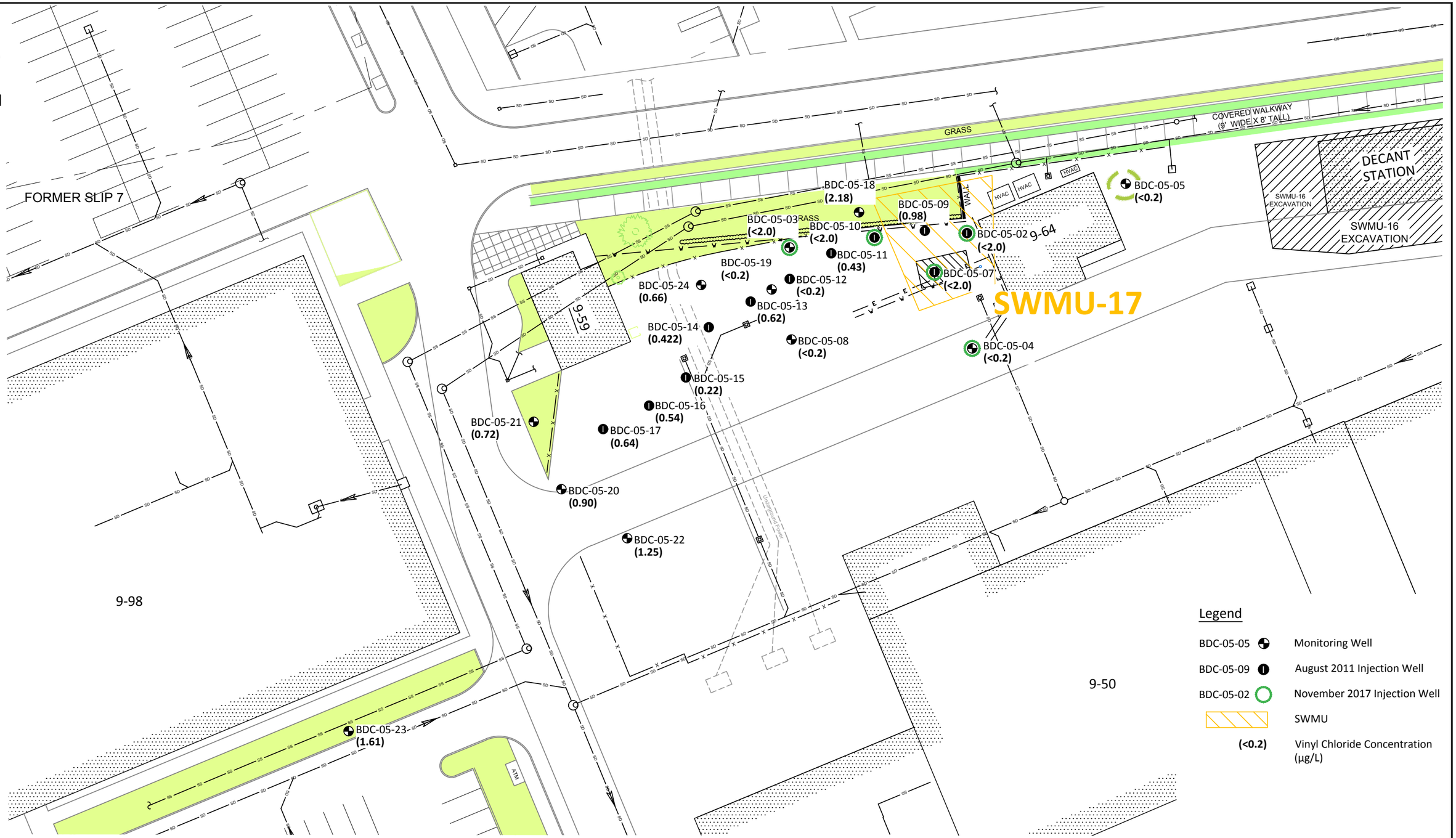
1. The proposed cleanup levels (PCULs) for tetrachloroethene (PCE) and trichloroethylene (TCE) are 5.3 and 1.4 µg/L respectively.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 40 80
Approximate Scale in Feet

LANDAU ASSOCIATES

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17: PCE / TCE in Groundwater November 2018** | Figure<br>9 |

Landau Associates | G:\Projects\025\093\118\013\2018 Annual Report\F10-F11PCT-TCE-VC November2018.dwg | 4/23/2019 7:28 AM




Note

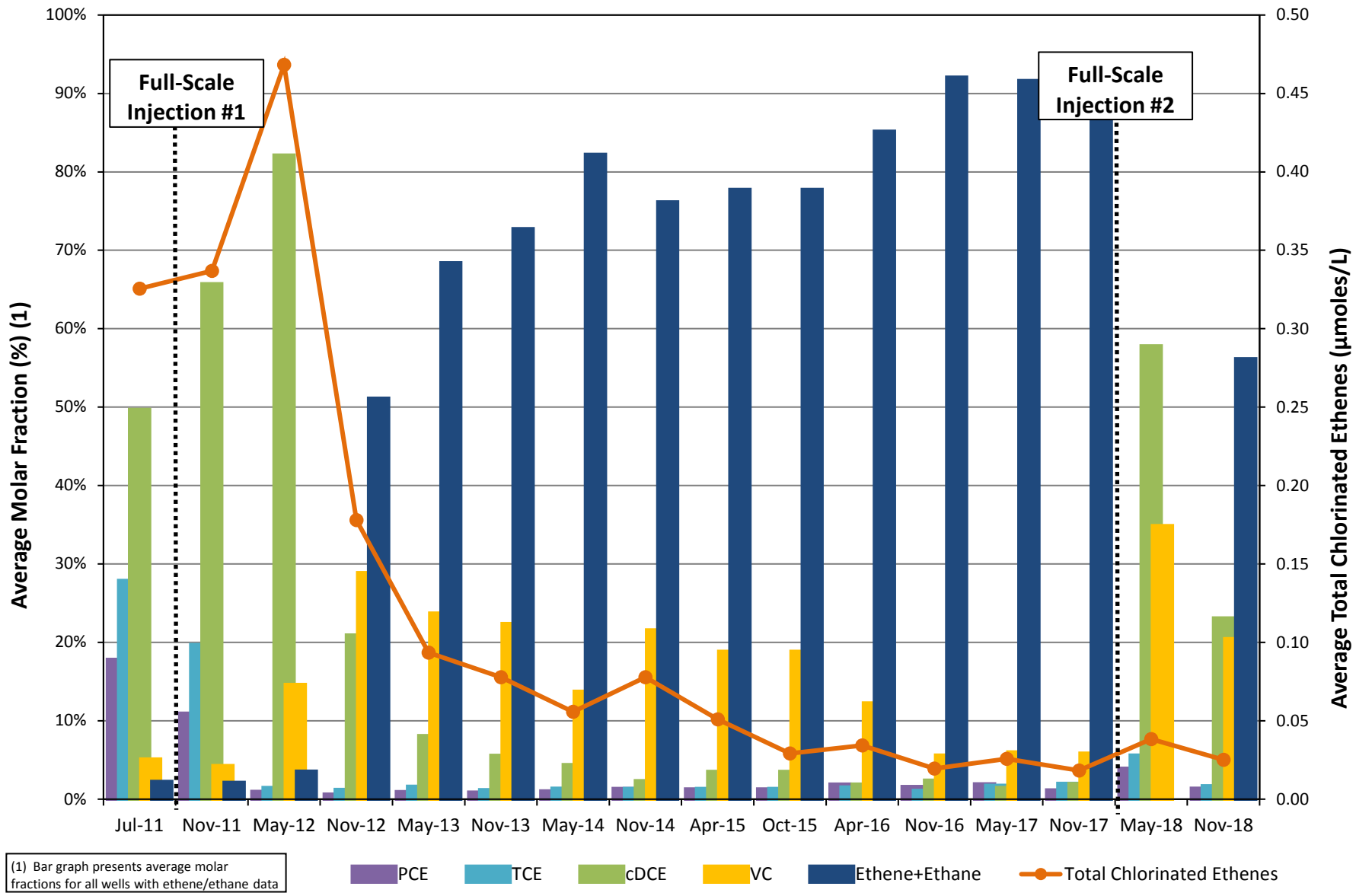
1. The proposed cleanup level for vinyl chloride is 2.4 µg/L.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 40 80
Approximate Scale in Feet

LANDAU ASSOCIATES

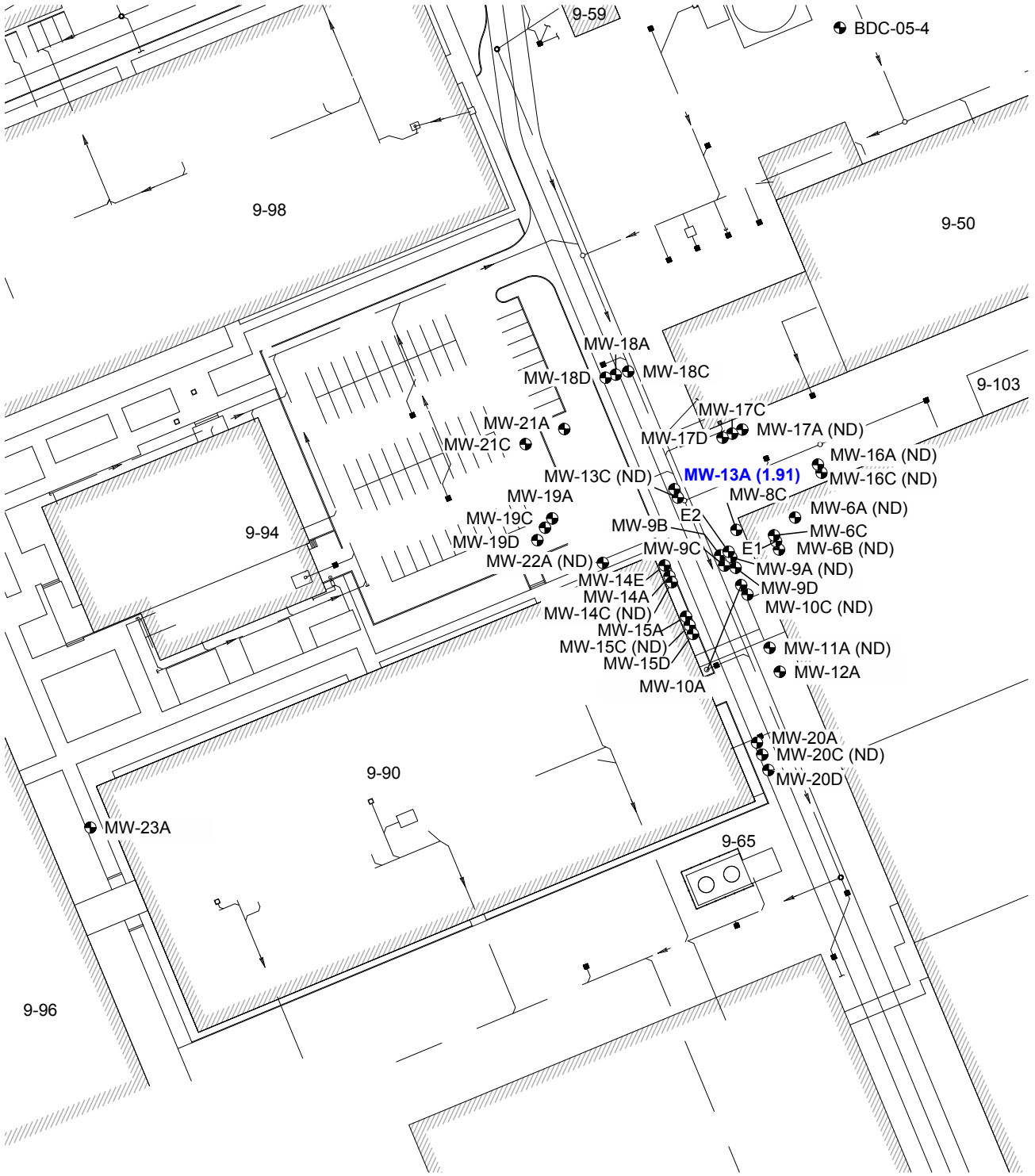
| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17: VC in Groundwater November 2018** | Figure<br>10 |

Landau Associates | G:\Projects\025\093\118\013\2018 Annual Report\F10-F11PCT-TCE-VC November2018.dwg | 4/23/2019 7:27 AM




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17: Average Molar Fraction and Average Chlorinated Ethenes** | Figure<br>11 |

LANDAU ASSOCIATES



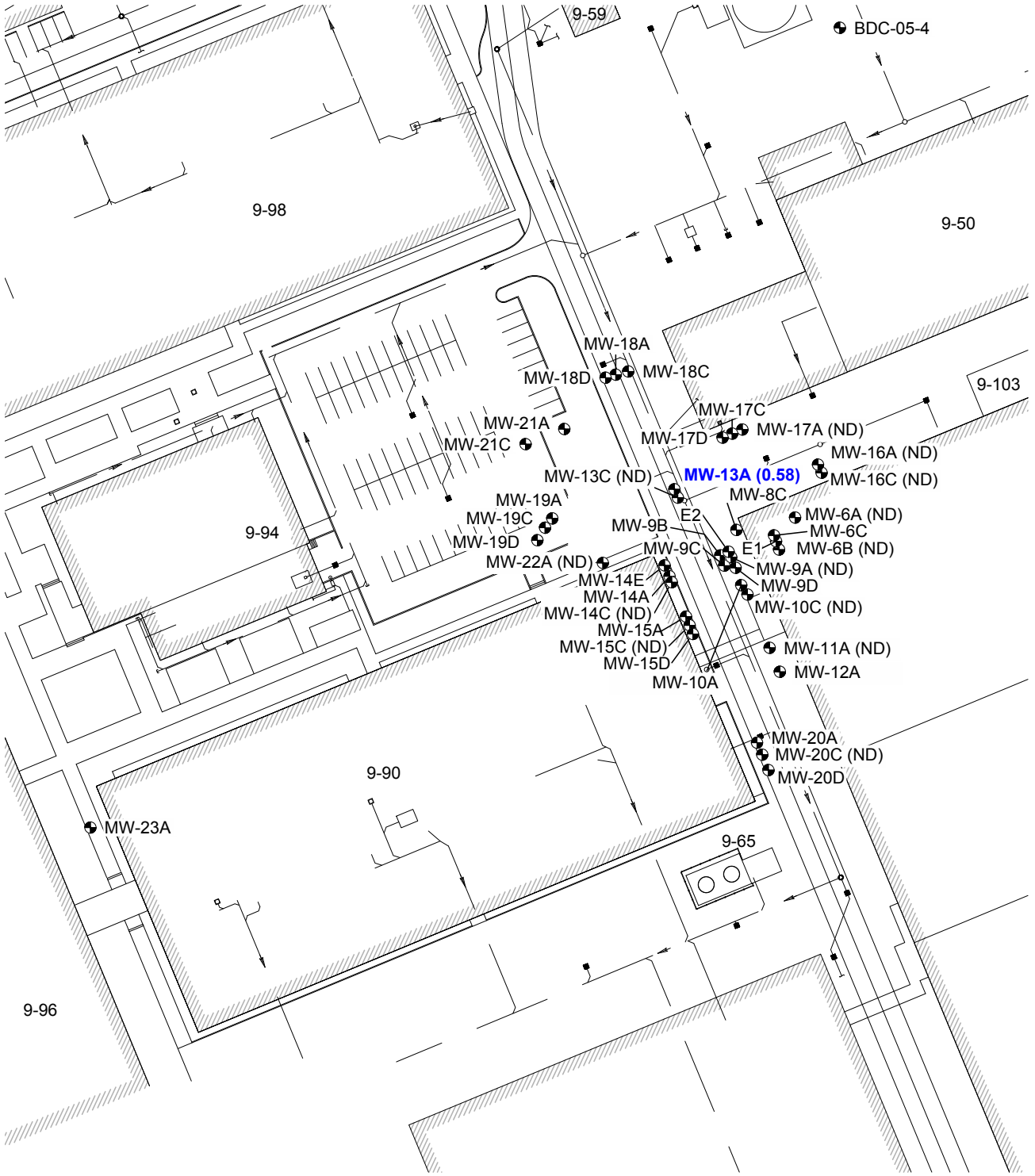

**Legend**

- 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\118\013\2018 Annual Report\Figure 12-15.dwg (A) "Figure 12" 5/6/2019

LANDAU ASSOCIATES

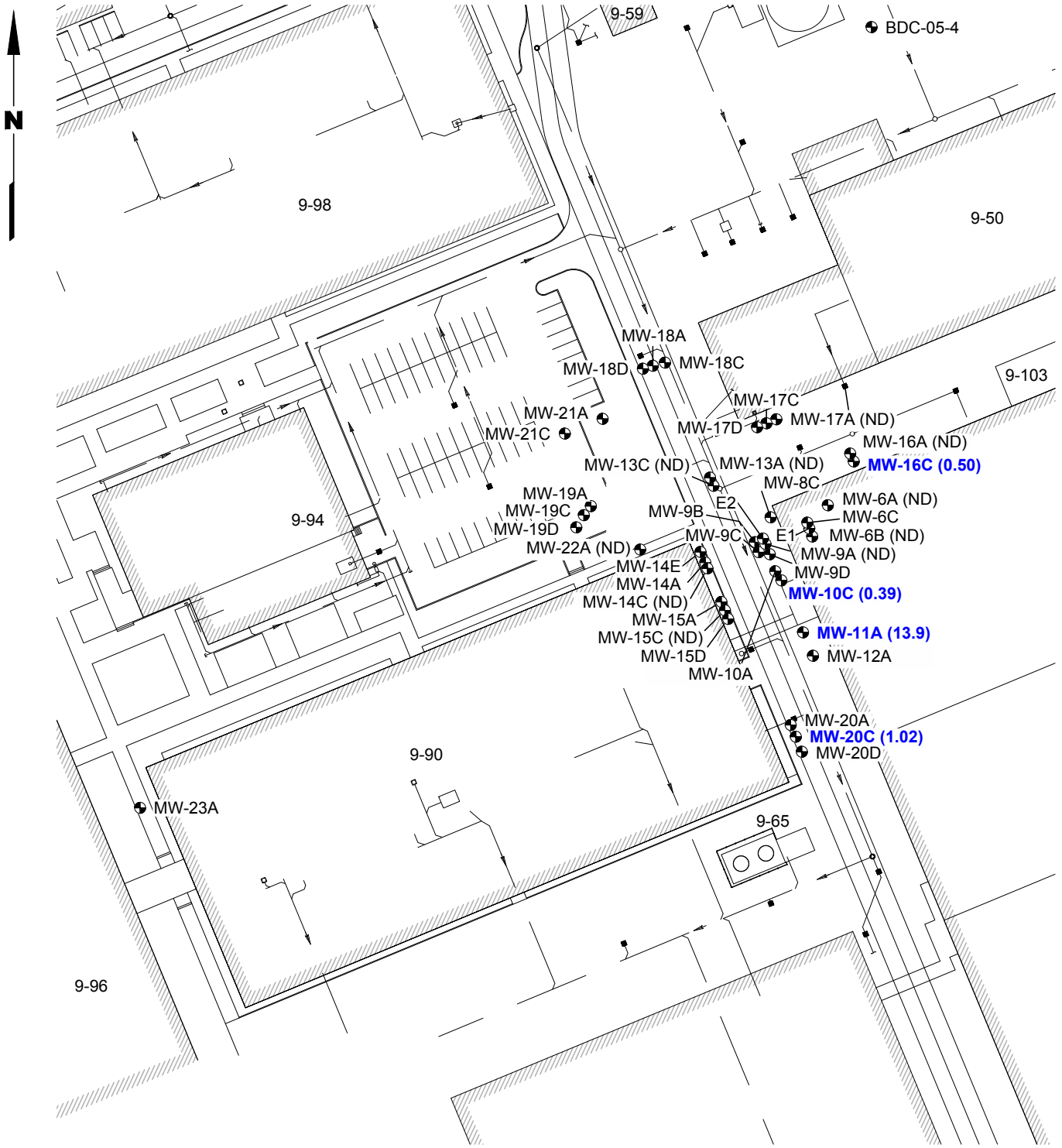
| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 PCE<br>November 2018<br>Groundwater Concentrations** | Figure<br>12 |




Boeing/Developmental Center/Summary Report | G:\Projects\025\093\118\013\2018 Annual Report\Figure 12-15.dwg (A) "Figure 13" 5/6/2019

LANDAU ASSOCIATES

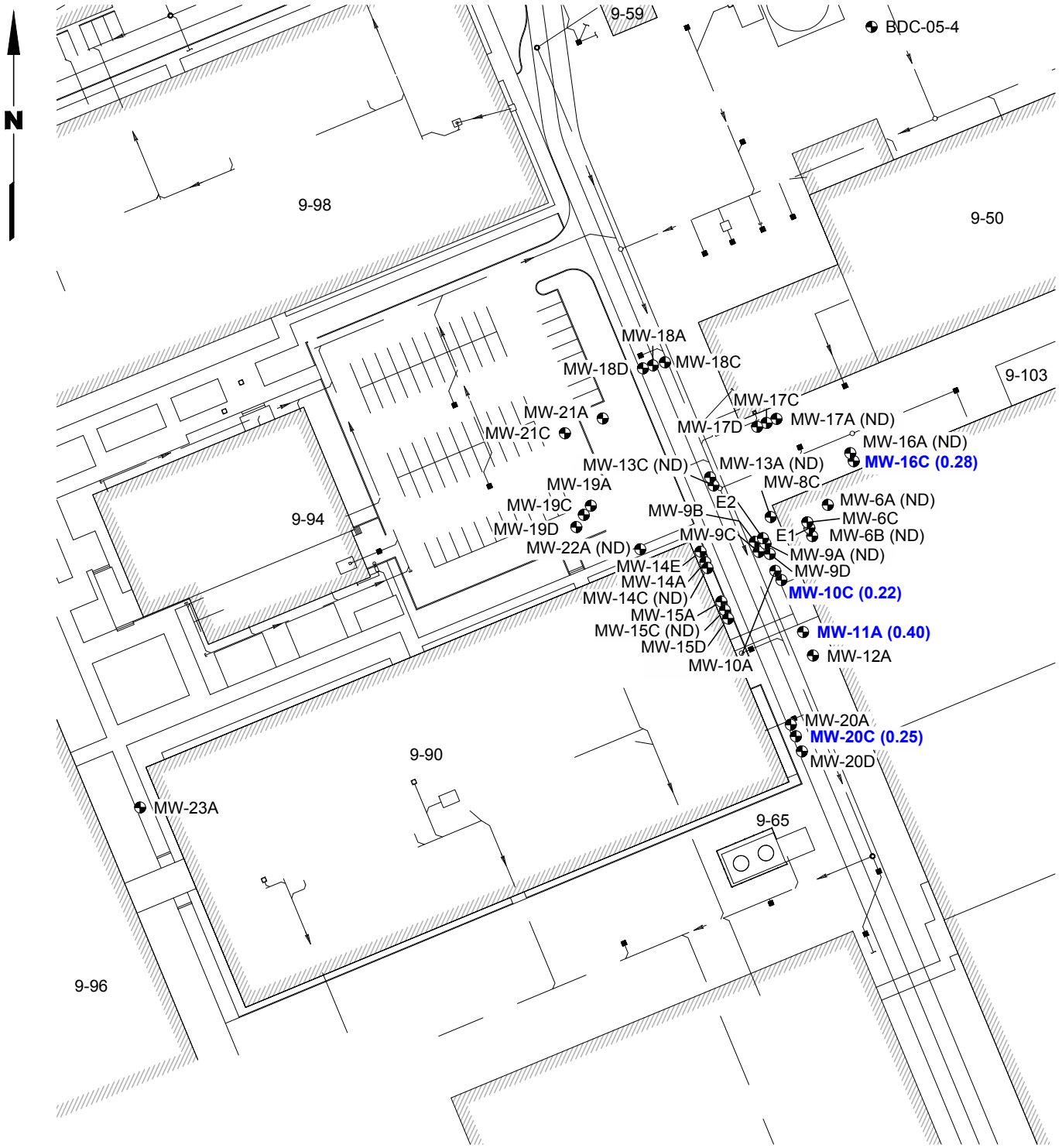
| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 TCE<br>November 2018<br>Groundwater Concentrations** | Figure<br>13 |




Boeing/Developmental Center/Summary Report | G:\Projects\025\093\118\013\2018 Annual Report\Figure 12-15.dwg (A) "Figure 14" 5/6/2019

LANDAU ASSOCIATES

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 cDCE<br>November 2018<br>Groundwater Concentrations** | Figure<br>14 |




**Legend**

- Monitoring Well Location
- (ND) Vinyl Chloride Not Detected at 0.2 µg/L Detection Limit
- (3.1) Vinyl Chloride Groundwater Concentration in µg/L

Boeing/Developmental Center/Summary Report | G:\Projects\025\093\118\013\2018 Annual Report\Figure 12-15.dwg (A) "Figure 15" 5/6/2019

LANDAU ASSOCIATES

Boeing Developmental Center
Tukwila, Washington

**SWMU-20 VC**
**November 2018**
**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-LO

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-8C

MW-6C

MW-9B

MW-9A

MW-6B

MW-14E

MW-9C

MW-9D

MW-22A

MW-14A

MW-10A

MW-14C

MW-10C

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<br>Tukwila, Washington | **Performance Monitoring Locations** | Figure<br>16 |

Landau Associates | G:\Projects\025\093\118\013\2018 Annual Report\F16PerformanceMonitoringLocations.dwg | 5/6/2019 11:38 AM

# Table 1
## AOC-05 Cleanup 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 (mg-N/L) | Nitrite (mg-N/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 Cleanup 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 (mg-N/L) | Nitrite (mg-N/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-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 Cleanup 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 (mg-N/L) | Nitrite (mg-N/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-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
## AOC-05 Cleanup Action Data Summary
## Boeing Developmental Center
## Tukwila, Washington

| | | ORC Injection | Pilot Injection | Full Scale Injection 1 | Full Scale Injection 2 | Full Scale Injection 3 | Full Scale Injection 4 | Full Scale Injection 5 | Full Scale Injection 6 | Full Scale Injection 7 | Full Scale Injection 8 | Full Scale Injection 9 | Full Scale Injection 10 | Full Scale Injection 11 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | BDC-103 | BDC-103 | BDC-103/104 | BDC-103/104 | BDC-103/104 | BDC-103/104 | BDC-103/104 | BDC-103 | BDC-103 | BDC-103 | BDC-103 | BDC-103 | 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 (mg-N/L) | Nitrite (mg-N/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-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 Cleanup 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 (mg-N/L) | Nitrite (mg-N/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 | |

**Abbreviations and Acronyms:**

µg/L = micrograms per liter
DO = dissolved oxygen
mg/L = milligrams per liter
mg-N/L = milligrams nitrogen 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 (mg-N/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-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 |

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

| | | | | Aquifer Redox Conditions | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Area | Well | Date | | DO (mg/L) | **Nitrate (mg-N/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-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 |

**Abbreviations and Acronyms:**

DO = dissolved oxygen
mg/L = milligrams per liter
mg-N/L = milligrams per liter as nitrogen
mV = millivolts
ORP = oxidation-reduction potential

**Notes:**

Nitrate 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 (mg-N/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-05-02 | 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 | 0.00 | 0.07 | 1.43 | 0.37 | 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-05-03 | 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 |
| 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 | |

# 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 (mg-N/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 | 11/13/2012 | 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-05-04 | 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-05-05 | 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 | |

# 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 (mg-N/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 | 5/6/2012 | 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-05-07 | 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 | 0.00 | 0.04 | 0.00 | 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 | 0.05 | 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 |
| 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-05-08 | 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 | |

# 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 (mg-N/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-05-08 | 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 | <0.0005 | 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 | <0.0005 | 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-05-09 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-10 | 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-05-11 | 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 | <0.0005 | 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-05-12 | 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 |

# 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 (mg-N/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-05-12 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-13 | 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 | 0.02 | 0.16 | 0.83 |
| 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 | 0.00 | 0.04 | 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 | <0.0005 | 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 | <0.0005 | 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-05-14 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-15 | 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 | 0.00 | 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 |

# 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 (mg-N/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-05-15 | 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 | <0.0005 | 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 | <0.0005 | 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-05-16 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-17 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-18 | 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 |

# 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 (mg-N/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-05-18 | 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 | <0.0005 | 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 | <0.0005 | 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-05-19 | 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 | | <0.002 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-20 | 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 | 0.00 | 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 | 0.00 | 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 | 0.00 | 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 | 0.00 | 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 | 0.00 | 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 | 0.00 | 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 | 0.00 | 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 | 0.00 | 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 | <0.0005 | 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 | <0.0005 | 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 |

# 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 (mg-N/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-05-21 | 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 30 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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-05-22 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | 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-05-23 | 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 | |

# 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 (mg-N/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-05-23 | 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 | <0.0005 | 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 | <0.0005 | 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-05-24 | 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 | <0.0005 | <0.0005 | 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 | <0.0005 | <0.0005 | 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 |

**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
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 | --- |

# Table 4
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| | | Elapsed Time from Injections (a) (days) | | | | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Parameters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Proposed Groundwater Cleanup Levels (d) | | | | | | | | | | | | | |
| | | | | | | | 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) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron II mg/L | Sulfate (mg/L) | Methane (µg/L) | pH | TOC (mg/L) | Notes |
| 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 |
| 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 | --- |

# Table 4
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| Well | Date | Elapsed Time from Injections (a) (days) | | | | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Parameters | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Proposed Groundwater Cleanup Levels (d) | | | | | | | | | | | | | |
| | | | | | | | 5.3 | 1.4 | 134 | 2.4 | --- | --- | | | | | | | | |
| | | 1st Injection | 2nd Injection | 3rd (b) Injection | 4th Injection | 5th Injection | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron II mg/L | Sulfate (mg/L) | Methane (µg/L) | pH | TOC (mg/L) | |
| 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 | --- |
| 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 |
| 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 | --- |

# Table 4
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| Well | Date | Elapsed Time from Injections (a) (days) | | | | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Parameters | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Proposed Groundwater Cleanup Levels (d) | | | | | | | | | | | | | |
| | | | | | | | 5.3 | 1.4 | 134 | 2.4 | --- | --- | | | | | | | | |
| | | 1st Injection | 2nd Injection | 3rd (b) Injection | 4th Injection | 5th Injection | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron II mg/L | Sulfate (mg/L) | Methane (µg/L) | pH | TOC (mg/L) | |
| 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 | --- |
| 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 | --- |

# Table 4
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| | | Elapsed Time from Injections (a) (days) | | | | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Parameters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Proposed Groundwater Cleanup Levels (d) | | | | | | | | | | | | | |
| | | | | | | | 5.3 | 1.4 | 134 | 2.4 | --- | --- | | | | | | | | |
| | | 1st | 2nd | 3rd (b) | 4th | 5th | PCE | TCE | cDCE | VC | Ethene | Ethane | DO | ORP | Iron II | Sulfate | Methane | pH | TOC | |
| Well | Date | Injection | Injection | Injection | Injection | Injection | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (mg/L) | (mV) | mg/L | (mg/L) | (µg/L) | | (mg/L) | Notes |
| 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 | --- |
| 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 | --- |
| 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 | --- |

# Table 4
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| Well | Date | Elapsed Time from Injections (a) (days) | | | | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Parameters | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Proposed Groundwater Cleanup Levels (d) | | | | | | | | | | | | | |
| | | | | | | | 5.3 | 1.4 | 134 | 2.4 | --- | --- | | | | | | | | |
| | | 1st Injection | 2nd Injection | 3rd (b) Injection | 4th Injection | 5th Injection | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron II mg/L | Sulfate (mg/L) | Methane (µg/L) | pH | TOC (mg/L) | |
| 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 | --- |
| 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 | --- |

# Table 4
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Source Zone

| Well | Date | Elapsed Time from Injections (a) (days) | | | | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Parameters | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Proposed Groundwater Cleanup Levels (d) | | | | | | | | | | | | | |
| | | | | | | | 5.3 | 1.4 | 134 | 2.4 | --- | --- | | | | | | | | |
| | | 1st Injection | 2nd Injection | 3rd (b) Injection | 4th Injection | 5th Injection | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron II mg/L | Sulfate (mg/L) | Methane (µg/L) | pH | TOC (mg/L) | |
| 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 |
| 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
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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 |
| 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-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 |

# Table 5
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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-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 |
| 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 |

# Table 5
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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-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** |
| 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-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** |

# Table 5
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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** |
| 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-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** |

# Table 5
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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-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-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 |
| 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** |

# Table 5
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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-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** |
| 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-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** |

# Table 5
## Boeing Developmental Center
## SWMU-20 Cleanup Action Summary
## Non-Source Zone

| 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-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 |
| 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** |

**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) | VOCs (8260C) [Non-preserved] | Short-list VOCs - PCE, TCE, cDCE, VC (8260C) | 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 |
| 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) | VOCs (8260C) [Non-preserved] | Short-list VOCs - PCE, TCE, cDCE, VC (8260C) | 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 paretheses 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.

**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 = perchloroethene
SWMU = solid waste management unit
TCE = trichloroethene
TOC = total organic carbon
VC = vinyl chloride
VOCs = volatile organic compounds

APPENDIX B

# Cumulative Groundwater Level Measurements

# Table B-1
## Cumulative Groundwater Level Measurements
## November 1999 to Present
## Boeing Developmental Center
## Tukwila, Washington

| | | | November 2018 | | August 2018 | | May 2018 | | February 2018 | | November 2017 | | August 2017 | | May 2017 | | February 2017 | | November 2016 | | August 2016 | | April 2016 | | January 2016 | | October 2015 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 12.90 | 1.90 | | | 12.29 | 2.51 | | | 12.81 | 1.99 | | | 11.97 | 2.83 | | | 12.13 | 2.67 | | | 12.38 | 2.42 | | | 12.80 | 2.00 |
| 9-101-bldg. | MW-6B | 27.20 | 13.08 | 2.01 | | | 12.60 | 2.49 | | | 13.15 | 1.94 | | | 12.31 | 2.78 | | | 12.82 | 2.27 | | | 12.77 | 2.32 | | | 13.16 | 1.93 |
| 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 | | | 12.45 | 2.29 | | | 12.91 | 1.83 | | | 12.07 | 2.67 | | | 12.18 | 2.56 | | | 12.37 | 2.37 | | | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-10C | 40.40 | 12.82 | 1.82 | | | 12.39 | 2.25 | | | 12.86 | 1.78 | | | 11.97 | 2.67 | | | 12.16 | 2.48 | | | 12.37 | 2.27 | | | 12.66 | 1.96 |
| 9-101-bldg. | MW-11A | 19.90 | 12.89 | 1.99 | | | 12.39 | 2.49 | | | 12.96 | 1.92 | | | 12.03 | 2.85 | | | 12.14 | 2.74 | | | 12.47 | 2.41 | | | 12.87 | 2.01 |
| 9-101-bldg. | MW-12A | 20.20 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-13A | 19.37 | 12.37 | 1.77 | | | 11.77 | 2.37 | | | 12.28 | 1.86 | | | 11.57 | 2.57 | | | 11.55 | 2.59 | | | 11.82 | 2.32 | | | 12.23 | 1.91 |
| 9-101-bldg. | MW-13C | 35.62 | 12.21 | 1.81 | | | 11.60 | 2.42 | | | 12.10 | 1.92 | | | 11.39 | 2.63 | | | 11.41 | 2.61 | | | 11.71 | 2.31 | | | 12.08 | 1.94 |
| 9-101-bldg. | MW-14A | 19.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-14C | 33.30 | 12.14 | 1.83 | | | 11.80 | 2.17 | | | 12.10 | 1.87 | | | 11.40 | 2.57 | | | 11.33 | 2.64 | | | 11.78 | 2.19 | | | 11.95 | 2.02 |
| 9-101-bldg. | MW-14E | 82.10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-15A | 20.70 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-15C | 34.35 | 12.78 | 1.77 | | | 12.41 | 2.14 | | | 12.79 | 1.76 | | | 12.00 | 2.55 | | | 11.98 | 2.57 | | | 12.45 | 2.10 | | | 12.19 | 1.98 |
| 9-101-bldg. | MW-15D | 51.80 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-16A | 20.55 | 13.04 | 1.95 | | | 12.54 | 2.45 | | | 12.99 | 2.00 | | | 12.18 | 2.81 | | | 12.32 | 2.67 | | | 12.60 | 2.39 | | | 12.96 | 2.03 |
| 9-101-bldg. | MW-16C | 38.30 | 13.16 | 1.88 | | | 12.72 | 2.32 | | | 13.14 | 1.90 | | | 12.33 | 2.71 | | | 12.54 | 2.50 | | | 12.70 | 2.34 | | | 13.14 | 1.90 |
| 9-101-bldg. | MW-17A | 19.00 | 12.81 | 1.85 | | | 12.24 | 2.42 | | | 12.81 | 1.85 | | | 11.97 | 2.69 | | | 12.11 | 2.55 | | | 12.28 | 2.38 | | | 12.83 | 1.97 |
| 9-101-bldg. | MW-17C | 35.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-17D | 52.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-18A | 20.02 | 12.50 | 1.80 | | | 11.91 | 2.39 | | | 12.50 | 1.80 | | | 11.73 | 2.57 | | | 11.68 | 2.62 | | | 11.87 | 2.43 | | | 12.36 | 1.94 |
| 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 | 12.39 | 1.76 | | | 11.96 | 2.19 | | | 12.45 | 1.70 | | | 11.59 | 2.56 | | | 11.55 | 2.60 | | | 11.95 | 2.20 | | | 12.14 | 2.01 |
| 9-101-bldg. | MW-20D | 50.15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-22A | 19.20 | 12.55 | 1.70 | | | 12.08 | 2.17 | | | 12.55 | 1.70 | | | 11.79 | 2.46 | | | 11.79 | 2.46 | | | 12.12 | 2.13 | | | 12.34 | 1.91 |
| 9-101-bldg. | MW-23A | 19.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101/9-50 bldg. | MW-21A | 19.90 | 12.69 | 1.76 | | | 12.12 | 2.33 | | | 12.68 | 1.77 | | | 11.97 | 2.48 | | | 11.85 | 2.60 | | | 12.10 | 2.35 | | | 12.55 | 1.90 |
| 9-101/9-50 bldg. | MW-21C | 34.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-02 | 25.35 | 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 | 10.85 | 3.56 | 12.28 | 2.13 |
| 9-64-bldg. | BDC-05-03 | 25.47 | 12.58 | 1.83 | | | 11.94 | 2.47 | | | 12.45 | 1.96 | | | 11.58 | 2.83 | | | 11.71 | 2.70 | | | 11.86 | 2.55 | | | 12.33 | 2.08 |
| 9-64-bldg. | BDC-05-04 | 25.36 | 12.62 | 1.97 | | | 11.95 | 2.64 | | | 12.58 | 2.01 | | | 11.62 | 2.97 | | | 11.86 | 2.73 | | | 11.95 | 2.64 | | | 12.54 | 2.05 |
| 9-64-bldg. | BDC-05-05 | 24.18 | 12.32 | 2.12 | | | 11.58 | 2.86 | | | 12.27 | 2.17 | | | 11.19 | 3.25 | | | 11.52 | 2.92 | | | 11.57 | 2.87 | | | 12.18 | 2.26 |
| 9-64-bldg. | BDC-05-07 | 25.30 | 11.96 | 2.03 | | | 11.34 | 2.65 | | | 12.03 | 1.96 | | | 11.02 | 2.97 | | | 11.22 | 2.77 | | | 11.38 | 2.61 | | | 11.88 | 2.11 |
| 9-64-bldg. | BDC-05-08 | 26.75 | 12.74 | 1.93 | | | 12.12 | 2.55 | | | 12.71 | 1.96 | | | 11.88 | 2.79 | | | 11.95 | 2.72 | | | 12.11 | 2.56 | | | 12.62 | 2.05 |
| 9-64-bldg. | BDC-05-09 | 24.55 | 12.40 | 2.01 | | | 11.79 | 2.62 | | | 12.41 | 2.00 | | | 11.49 | 2.92 | | | 11.68 | 2.73 | | | 11.80 | 2.61 | | | 12.30 | 2.11 |
| 9-64-bldg. | BDC-05-10 | 24.57 | 12.42 | 1.99 | | | 11.74 | 2.67 | | | 12.44 | 1.97 | | | 11.31 | 3.10 | | | 11.62 | 2.79 | | | 11.80 | 2.61 | | | 12.27 | 2.14 |
| 9-64-bldg. | BDC-05-11 | 24.85 | 12.60 | 2.05 | | | 11.96 | 2.69 | | | 12.58 | 2.07 | | | 11.71 | 2.94 | | | 11.78 | 2.87 | | | 12.02 | 2.63 | | | 12.99 | 1.66 |
| 9-64-bldg. | BDC-05-12 | 24.87 | 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 | 11.21 | 3.51 | 12.59 | 2.13 |
| 9-64-bldg. | BDC-05-13 | 24.78 | 12.44 | 1.99 | | | 11.45 | 2.98 | | | 12.44 | 1.99 | | | 11.62 | 2.81 | | | 11.68 | 2.75 | | | 11.87 | 2.56 | | | 12.37 | 2.06 |
| 9-64-bldg. | BDC-05-14 | 24.85 | 12.26 | 1.96 | | | 11.71 | 2.51 | | | 12.25 | 1.97 | | | 11.39 | 2.83 | | | 11.52 | 2.70 | | | 11.71 | 2.51 | | | 12.18 | 2.04 |
| 9-64-bldg. | BDC-05-15 | 24.48 | 12.02 | 1.95 | | | 11.26 | 2.71 | | | 11.94 | 2.03 | | | 11.20 | 2.77 | | | 11.28 | 2.69 | | | 11.49 | 2.48 | | | 11.95 | 2.02 |
| 9-64-bldg. | BDC-05-16 | 24.89 | 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 | 10.79 | 3.28 | 12.10 | 1.97 |
| 9-64-bldg. | BDC-05-17 | 24.82 | 12.37 | 1.88 | | | 11.77 | 2.48 | | | 12.33 | 1.92 | | | 11.56 | 2.69 | | | 11.65 | 2.60 | | | 11.86 | 2.39 | | | 12.29 | 1.96 |
| 9-64-bldg. | BDC-05-18 | 24.69 | 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 | 10.34 | 3.45 | 11.77 | 2.02 |
| 9-64-bldg. | BDC-05-19 | 24.85 | 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 | 11.11 | 3.45 | 12.49 | 2.07 |
| 9-64-bldg. | BDC-05-20 | 24.80 | 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 | 11.08 | 3.26 | 12.37 | 1.97 |
| 9-64-bldg. | BDC-05-21 | 24.86 | 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 | 10.96 | 3.23 | 12.22 | 1.97 |
| 9-64-bldg. | BDC-05-22 | 25.07 | 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 | 10.89 | 3.27 | 12.19 | 1.97 |
| 9-64-bldg. | BDC-05-23 | 25.10 | 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 | 11.40 | 3.06 | 12.57 | 1.89 |
| 9-64-bldg. | BDC-05-24 | 24.73 | 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 | 10.81 | 3.38 | 12.15 | 2.04 |
| 9-60 bldg. | BDC-101 | 18.42 | 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 | 10.51 | 3.96 | 12.20 | 2.27 |
| 9-60 bldg. | BDC-102 | 18.83 | 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 | 10.30 | 3.97 | 11.98 | 2.29 |
| 9-60 bldg. | BDC-103 | 18.51 | 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 | 10.22 | 4.12 | 12.02 | 2.32 |
| 9-60 bldg. | BDC-104 | 18.90 | 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 | 10.02 | 4.14 | 11.95 | 2.21 |
| 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

| | | | July 2015 | | April 2015 | | January 2015 | | November 2014 | | August 2014 | | May 2014 | | February 2014 | | November 2013 | | August 2013 | | May 2013 | | February 2013 | | November 2012 | | May 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 | 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 | | | 12.65 | 2.15 | | | 12.22 | 2.58 | | | 12.10 | 2.70 | | | 12.82 | 1.98 | | | 12.92 | 1.88 | | | 12.82 | 1.98 | 12.61 | 2.19 |
| 9-101-bldg. | MW-6B | 27.20 | | | 13.02 | 2.07 | | | 12.58 | 2.51 | | | 14.44 | 0.65 | | | 13.16 | 1.93 | | | 13.27 | 1.82 | | | 13.17 | 1.92 | 12.96 | 2.13 |
| 9-101-bldg. | MW-6C | 40.55 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-8C | 40.20 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-9A | 21.30 | | | 12.64 | 2.10 | | | 12.18 | 2.56 | | | 12.07 | 2.67 | | | 12.88 | 1.86 | | | 12.80 | 1.94 | | | 12.83 | 1.91 | 12.54 | 2.20 |
| 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 | 12.55 | 2.14 |
| 9-101-bldg. | MW-10C | 40.40 | | | 12.57 | 2.05 | | | 12.06 | 2.56 | | | 11.91 | 2.71 | | | 12.73 | 1.89 | | | 12.65 | 1.97 | | | 12.70 | 1.92 | 12.49 | 2.13 |
| 9-101-bldg. | MW-11A | 19.90 | | | 12.74 | 2.14 | | | 12.31 | 2.57 | | | 12.10 | 2.78 | | | 12.89 | 1.99 | | | 12.84 | 2.04 | | | 12.19 | 2.69 | 12.65 | 2.23 |
| 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 | 12.70 | 2.13 |
| 9-101-bldg. | MW-13A | 19.37 | | | 12.19 | 1.95 | | | 11.71 | 2.43 | | | 11.62 | 2.52 | | | 12.37 | 1.77 | | | 12.36 | 1.78 | | | 12.27 | 1.87 | 12.20 | 1.94 |
| 9-101-bldg. | MW-13C | 35.62 | | | 12.07 | 1.95 | | | 11.59 | 2.43 | | | 11.49 | 2.53 | | | 12.23 | 1.79 | | | 12.22 | 1.80 | | | 12.11 | 1.91 | 12.06 | 1.96 |
| 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 | 12.46 | 1.91 |
| 9-101-bldg. | MW-14C | 33.30 | | | 11.95 | 2.02 | | | 11.54 | 2.43 | | | 11.49 | 2.48 | | | 12.17 | 1.80 | | | 12.25 | 1.72 | | | 12.07 | 1.90 | 12.09 | 1.88 |
| 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 | 12.16 | 2.01 |
| 9-101-bldg. | MW-15C | 34.35 | | | 12.29 | 1.88 | | | 11.70 | 2.47 | | | 11.71 | 2.46 | | | 12.42 | 1.75 | | | 12.54 | 1.63 | | | 12.27 | 1.90 | 12.36 | 1.81 |
| 9-101-bldg. | MW-15D | 51.80 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-16A | 20.55 | | | 12.85 | 2.14 | | | 12.40 | 2.59 | | | 12.22 | 2.77 | | | 13.06 | 1.93 | | | 13.07 | 1.92 | | | 13.02 | 1.97 | 12.81 | 2.18 |
| 9-101-bldg. | MW-16C | 38.30 | | | 13.02 | 2.02 | | | 12.58 | 2.46 | | | 12.32 | 2.72 | | | 13.24 | 1.80 | | | 13.25 | 1.79 | | | 13.17 | 1.87 | 13.01 | 2.03 |
| 9-101-bldg. | MW-17A | 19.00 | | | 12.67 | 2.13 | | | 12.25 | 2.55 | | | 12.11 | 2.69 | | | 12.90 | 1.90 | | | 12.98 | 1.82 | | | 12.78 | 2.02 | 12.26 | 2.54 |
| 9-101-bldg. | MW-17C | 35.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-17D | 52.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-18A | 20.02 | | | 12.26 | 2.04 | | | 11.86 | 2.44 | | | 11.70 | 2.60 | | | 12.23 | 2.07 | | | 12.58 | 1.72 | | | 12.39 | 1.91 | 11.90 | 2.40 |
| 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 | | | 12.19 | 1.96 | | | 11.61 | 2.54 | | | 11.58 | 2.57 | | | 12.40 | 1.75 | | | 12.50 | 1.65 | | | 12.22 | 1.93 | 12.18 | 1.97 |
| 9-101-bldg. | MW-20D | 50.15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101-bldg. | MW-22A | 19.20 | | | 12.33 | 1.92 | | | 11.96 | 2.29 | | | 11.90 | 2.35 | | | 12.42 | 1.83 | | | 12.72 | 1.53 | | | 12.42 | 1.83 | 12.35 | 1.90 |
| 9-101-bldg. | MW-23A | 19.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-101/9-50 bldg. | MW-21A | 19.90 | | | 12.48 | 1.97 | | | 12.06 | 2.39 | | | 11.90 | 2.55 | | | 12.39 | 2.06 | | | 12.80 | 1.65 | | | 12.60 | 1.85 | 12.13 | 2.32 |
| 9-101/9-50 bldg. | MW-21C | 34.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-02 | 25.35 | 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 | 11.81 | 2.60 |
| 9-64-bldg. | BDC-05-03 | 25.47 | | | 12.19 | 2.22 | | | 11.79 | 2.62 | | | 11.76 | 2.65 | | | 12.43 | 1.98 | | | 12.36 | 2.05 | | | 12.36 | 2.05 | 11.95 | 2.46 |
| 9-64-bldg. | BDC-05-04 | 25.36 | | | 12.26 | 2.33 | | | 11.95 | 2.64 | | | 11.93 | 2.66 | | | 12.51 | 2.08 | | | 12.17 | 2.42 | | | 12.52 | 2.07 | 12.05 | 2.54 |
| 9-64-bldg. | BDC-05-05 | 24.18 | | | 11.86 | 2.58 | | | 11.53 | 2.91 | | | 11.47 | 2.97 | | | 12.15 | 2.29 | | | 12.13 | 2.31 | | | 13.40 | 1.04 | 11.65 | 2.79 |
| 9-64-bldg. | BDC-05-07 | 25.30 | | | 11.67 | 2.32 | | | 11.37 | 2.62 | | | 11.29 | 2.70 | | | 11.96 | 2.03 | | | 11.92 | 2.07 | | | 11.97 | 2.02 | 11.40 | 2.59 |
| 9-64-bldg. | BDC-05-08 | 26.75 | | | 12.47 | 2.20 | | | 12.10 | 2.57 | | | 12.07 | 2.60 | | | 12.72 | 1.95 | | | 12.64 | 2.03 | | | 12.64 | 2.03 | 12.28 | 2.39 |
| 9-64-bldg. | BDC-05-09 | 24.55 | | | 12.10 | 2.31 | | | 11.79 | 2.62 | | | 11.71 | 2.70 | | | 12.37 | 2.04 | | | 12.31 | 2.10 | | | 12.36 | 2.05 | 11.90 | 2.51 |
| 9-64-bldg. | BDC-05-10 | 24.57 | | | 12.11 | 2.30 | | | 11.72 | 2.69 | | | 11.70 | 2.71 | | | 12.36 | 2.05 | | | 12.31 | 2.10 | | | 12.30 | 2.11 | 11.95 | 2.46 |
| 9-64-bldg. | BDC-05-11 | 24.85 | | | 12.33 | 2.32 | | | 11.93 | 2.72 | | | 11.91 | 2.74 | | | 12.59 | 2.06 | | | 12.51 | 2.14 | | | 12.55 | 2.10 | 12.13 | 2.52 |
| 9-64-bldg. | BDC-05-12 | 24.87 | 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 | 12.24 | 2.48 |
| 9-64-bldg. | BDC-05-13 | 24.78 | | | 12.20 | 2.23 | | | 11.85 | 2.58 | | | 11.86 | 2.57 | | | 12.44 | 1.99 | | | 12.40 | 2.03 | | | 12.44 | 1.99 | 12.02 | 2.41 |
| 9-64-bldg. | BDC-05-14 | 24.85 | | | 12.03 | 2.19 | | | 11.70 | 2.52 | | | 11.68 | 2.54 | | | 12.25 | 1.97 | | | 12.21 | 2.01 | | | 12.29 | 1.93 | 11.83 | 2.39 |
| 9-64-bldg. | BDC-05-15 | 24.48 | | | 11.83 | 2.14 | | | 11.47 | 2.50 | | | 11.42 | 2.55 | | | 12.04 | 1.93 | | | 12.07 | 1.90 | | | 11.97 | 2.00 | 11.63 | 2.34 |
| 9-64-bldg. | BDC-05-16 | 24.89 | 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 | 11.78 | 2.29 |
| 9-64-bldg. | BDC-05-17 | 24.82 | | | 12.12 | 2.13 | | | 11.86 | 2.39 | | | 11.83 | 2.42 | | | 12.34 | 1.91 | | | 12.30 | 1.95 | | | 12.27 | 1.98 | 11.65 | 2.60 |
| 9-64-bldg. | BDC-05-18 | 24.69 | 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 | 11.34 | 2.45 |
| 9-64-bldg. | BDC-05-19 | 24.85 | 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 | 12.15 | 2.41 |
| 9-64-bldg. | BDC-05-20 | 24.80 | 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 | 12.08 | 2.26 |
| 9-64-bldg. | BDC-05-21 | 24.86 | 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 | 11.94 | 2.25 |
| 9-64-bldg. | BDC-05-22 | 25.07 | 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 | 11.87 | 2.29 |
| 9-64-bldg. | BDC-05-23 | 25.10 | 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 | 12.39 | 2.07 |
| 9-64-bldg. | BDC-05-24 | 24.73 | 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 | 11.82 | 2.37 |
| 9-60 bldg. | BDC-101 | 18.42 | 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 | 11.32 | 3.15 |
| 9-60 bldg. | BDC-102 | 18.83 | 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 | 11.13 | 3.14 |
| 9-60 bldg. | BDC-103 | 18.51 | 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 | 11.09 | 3.25 |
| 9-60 bldg. | BDC-104 | 18.90 | 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 | 10.93 | 3.23 |
| 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

| | | | 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) |
| 9-101-bldg. | MW-6A | 24.25 | 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 | 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 | 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 | 12.97 | 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 | 12.90 | 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 | 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 | 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 | 12.66 | 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 | 12.52 | 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 | 12.71 | 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 | 12.20 | 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 | 12.51 | 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 | 12.44 | 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 | 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 | 13.33 | 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 | 12.73 | 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 | 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 | 12.76 | 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 | 12.52 | 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 | 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 | 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 | 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 | 12.82 | 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 | 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 | 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 | 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 | 12.68 | 1.73 | 12.27 | 2.13 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-10 | 24.57 | 12.74 | 1.67 | 12.27 | 2.14 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-11 | 24.85 | 12.92 | 1.73 | 12.60 | 2.05 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-12 | 24.87 | 13.00 | 1.72 | 12.57 | 2.15 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-13 | 24.78 | 12.78 | 1.65 | 12.35 | 2.08 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-14 | 24.85 | 12.55 | 1.67 | 12.23 | 1.99 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-15 | 24.48 | 12.34 | 1.63 | 11.95 | 2.02 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-16 | 24.89 | 12.44 | 1.63 | 12.05 | 2.02 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-17 | 24.82 | 12.60 | 1.65 | 12.27 | 1.98 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-18 | 24.69 | 12.10 | 1.69 | 11.84 | 1.95 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-19 | 24.85 | 12.90 | 1.66 | 12.59 | 1.97 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-20 | 24.80 | 12.75 | 1.59 | 12.47 | 1.87 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-21 | 24.86 | 12.59 | 1.60 | 12.34 | 1.85 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-22 | 25.07 | 12.54 | 1.62 | 12.27 | 1.89 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-23 | 25.10 | 13.08 | 1.38 | 12.79 | 1.67 | | | | | | | | | | | | | | | | | | | | | | |
| 9-64-bldg. | BDC-05-24 | 24.73 | 12.59 | 1.60 | 12.28 | 1.91 | | | | | | | | | | | | | | | | | | | | | | |
| 9-60 bldg. | BDC-101 | 18.42 | 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 | 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 | 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 | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 9-101/9-50 bldg. | MW-21C | 34.00 | | | | | | | | | | | | | | | | | | | | | | | | | 10.53 | 1.67 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 9-60 bldg. | BDC-104 | 18.90 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | 9.96 | 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

| | | | June 2002 | | 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) | Depth to Water (ft) | Water Elevation (ft) |
| 9-101-bldg. | MW-6A | 24.25 | | | | | | | | | | | | |
| 9-101-bldg. | MW-6B | 27.20 | 13.21 | 1.62 | 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 | 13.36 | 1.63 | 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 | 13.27 | 1.65 | 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 | 12.94 | 1.70 | 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 | 13.00 | 1.72 | 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 | 12.94 | 1.74 | 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 | 13.20 | 1.46 | 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 | 12.94 | 1.75 | 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 | 12.84 | 1.78 | 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 | 12.97 | 1.91 | 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 | 13.03 | 1.80 | 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 | 12.50 | 1.64 | 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 | 12.31 | 1.71 | 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 | 12.85 | 1.62 | 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 | 12.33 | 1.64 | 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 | 7.64 | 6.54 | 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 | 12.52 | 1.65 | 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 | 12.50 | 1.67 | 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 | 13.02 | 1.39 | 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 | 13.02 | 1.97 | 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 | 13.29 | 1.75 | 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 | 13.07 | 1.73 | 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 | 12.92 | 1.71 | | | 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 | 10.71 | 1.52 | | | 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 | 12.55 | 1.60 | | | 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 | 12.74 | 1.71 | 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 | 10.52 | 1.68 | 9.87 | 2.33 | 10.50 | 1.70 | | | | | | |
| 9-64-bldg. | BDC-05-02 | 25.35 | 12.25 | 2.12 | 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 | 12.47 | 1.94 | 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 | 12.57 | 2.02 | 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 | 12.22 | 2.22 | 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 | 12.02 | 1.97 | 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 | 12.07 | 2.40 | 11.29 | 3.18 | 12.30 | 2.17 | | | | | | |
| 9-60 bldg. | BDC-102 | 18.83 | 11.82 | 2.45 | 11.05 | 3.22 | 12.06 | 2.21 | | | | | | |
| 9-60 bldg. | BDC-103 | 18.51 | 11.81 | 2.53 | 11.03 | 3.31 | 12.04 | 2.30 | | | | | | |
| 9-60 bldg. | BDC-104 | 18.90 | | | | | | | | | | | | |
| 9-52-bldg. | 952MW-1 | 17.40 | 11.10 | 2.38 | 10.21 | 3.27 | 11.25 | 2.23 | 11.50 | 1.98 | | | 10.97 | 2.51 |
| 9-52-bldg. | 952MW-2 | 17.54 | 11.37 | 2.63 | 10.46 | 3.54 | 11.48 | 2.52 | 11.76 | 2.24 | | | 11.25 | 2.75 |
| 9-52-bldg. | 952MW-3 | 17.95 | 11.40 | 2.36 | 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.

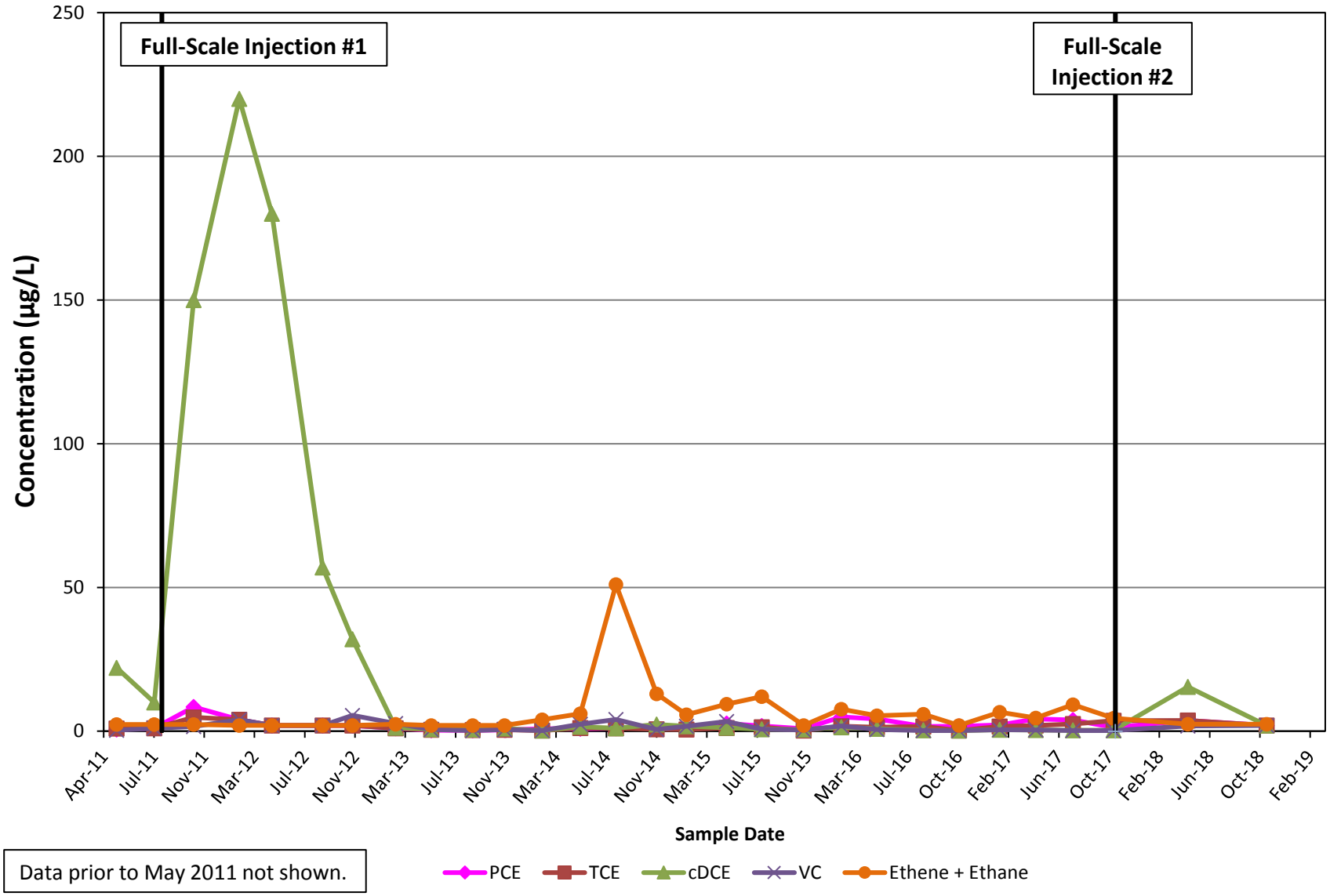
Top of casing elevation was lowered in well MW-14A by 0.10 ft on 3/17/2005; resurveyed 9/9/05.

Top of casing elevation at wells MS-22A and MW-23A measured 9/9/05.

BDC-05-02 was modifed 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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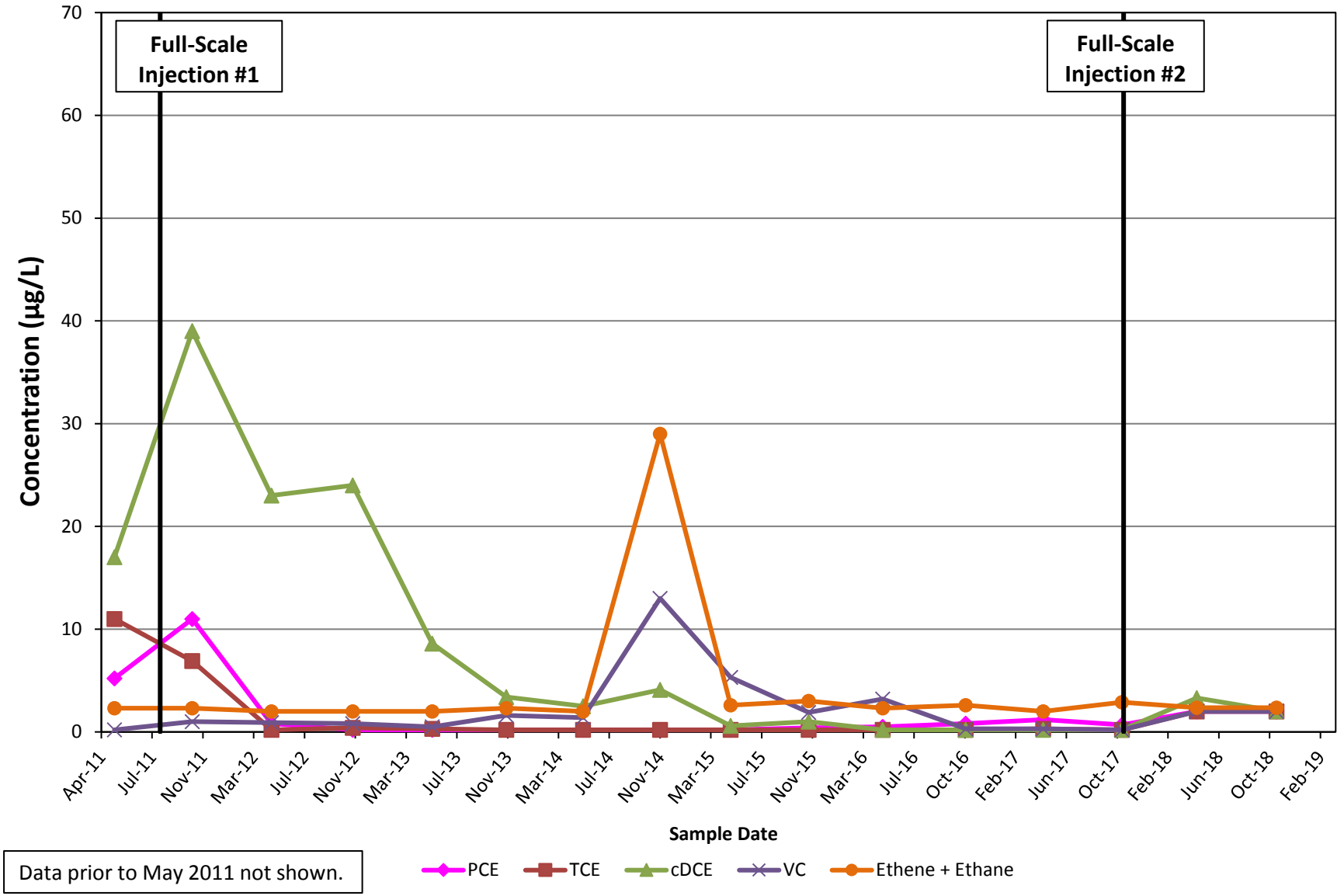
**SWMU-17 – VOCs at Source Zone Injection Well BDC-05-02**

Figure
C-1




Data prior to May 2011 not shown.

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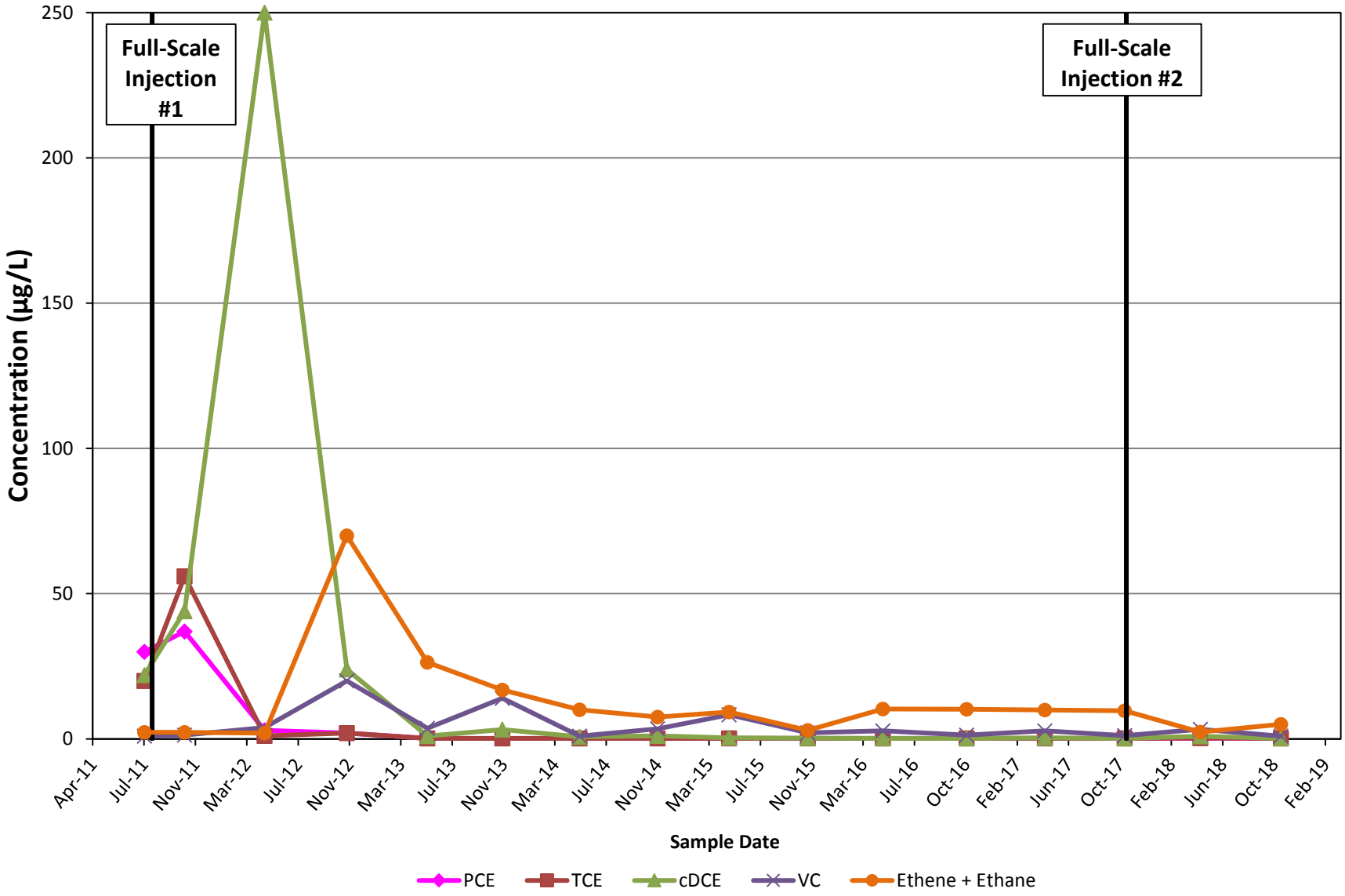
Tukwila, Washington

**SWMU-17 – VOCs at Source Zone Injection Well BDC-05-07**

Figure
C-2

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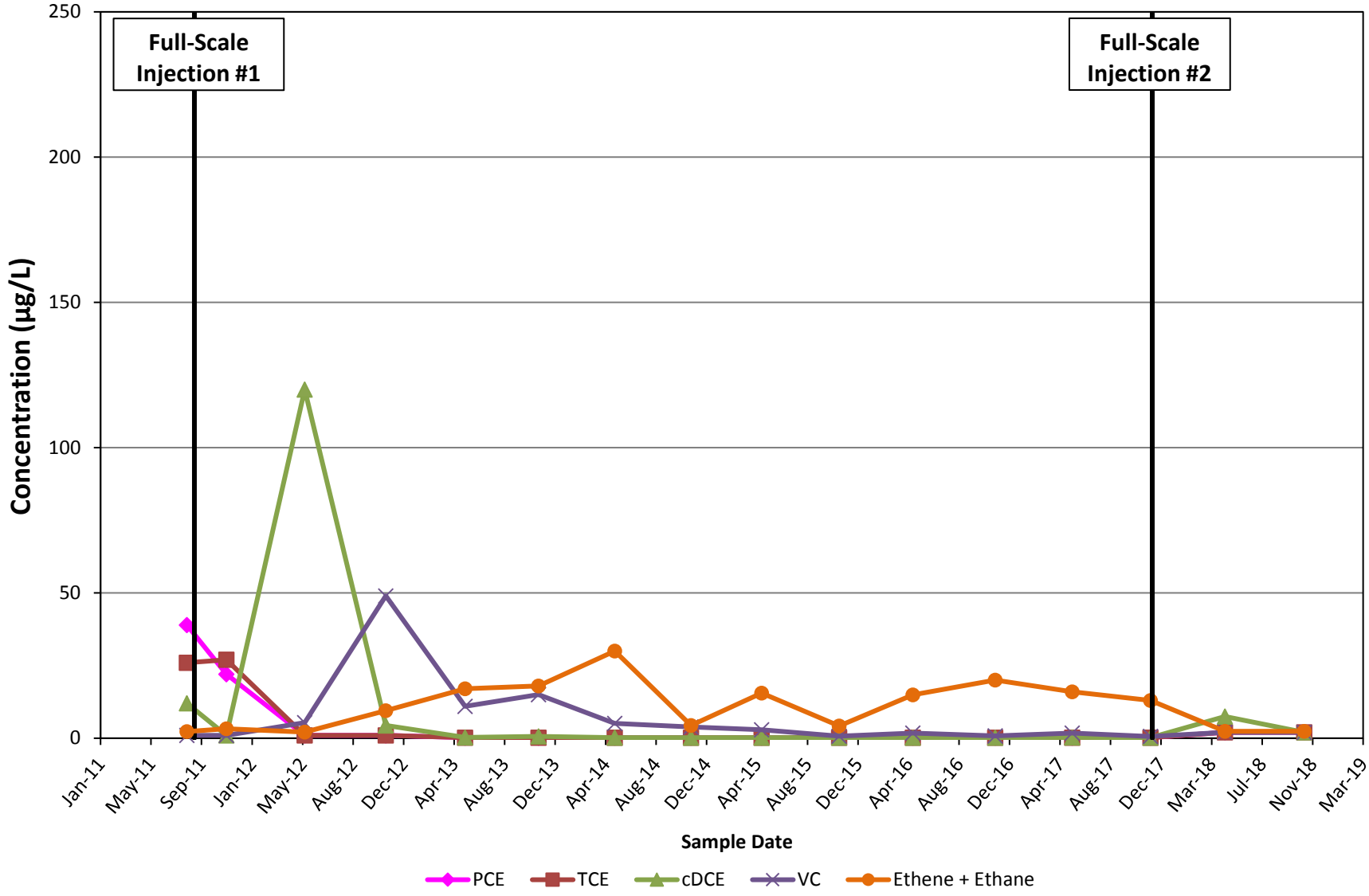
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17 – VOCs at Plume Injection Well BDC-05-09** | Figure<br>C-3 |




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17 – VOCs at<br>Plume Injection Well BDC-05-10** | Figure<br>C-4 |

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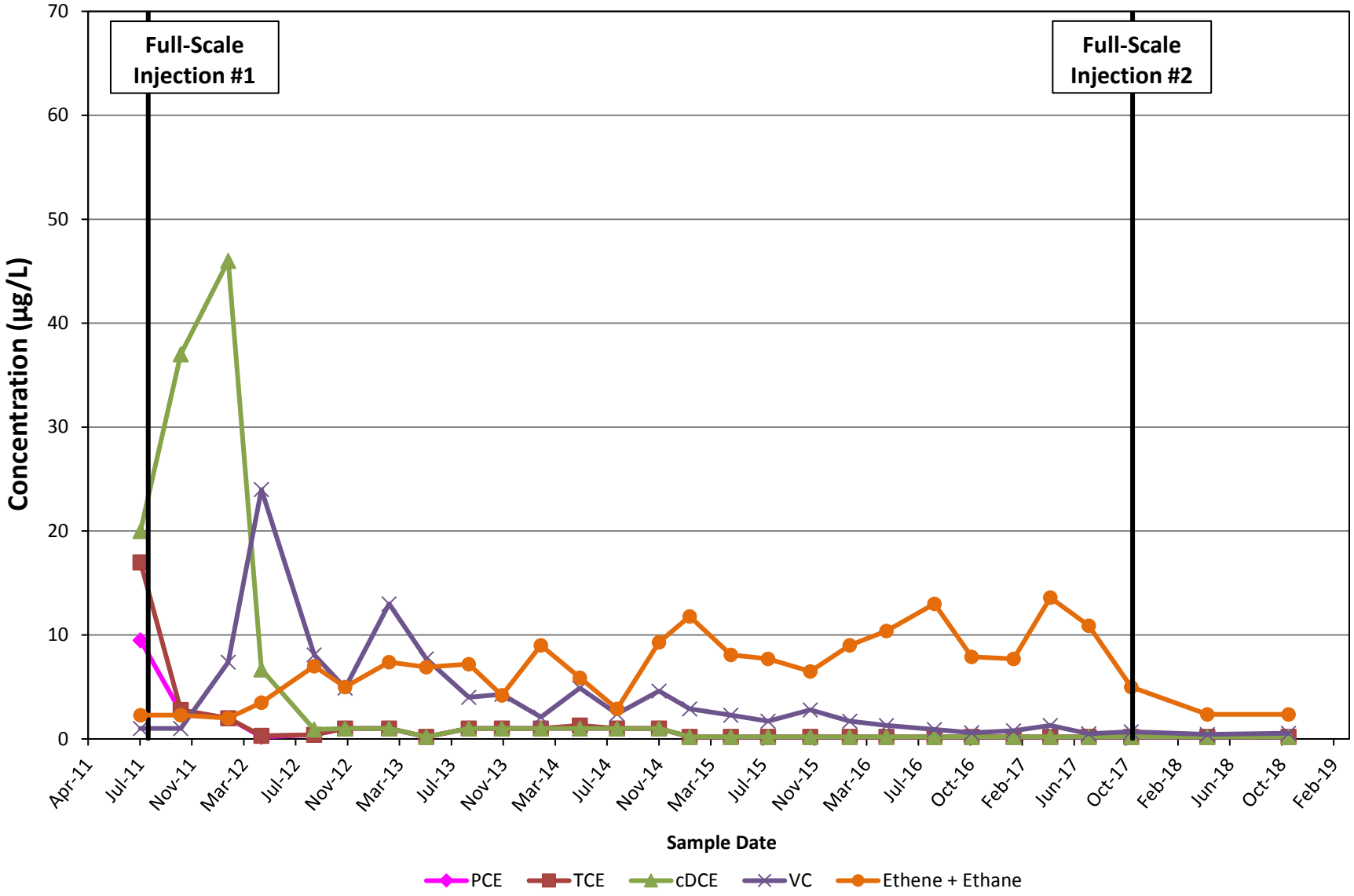


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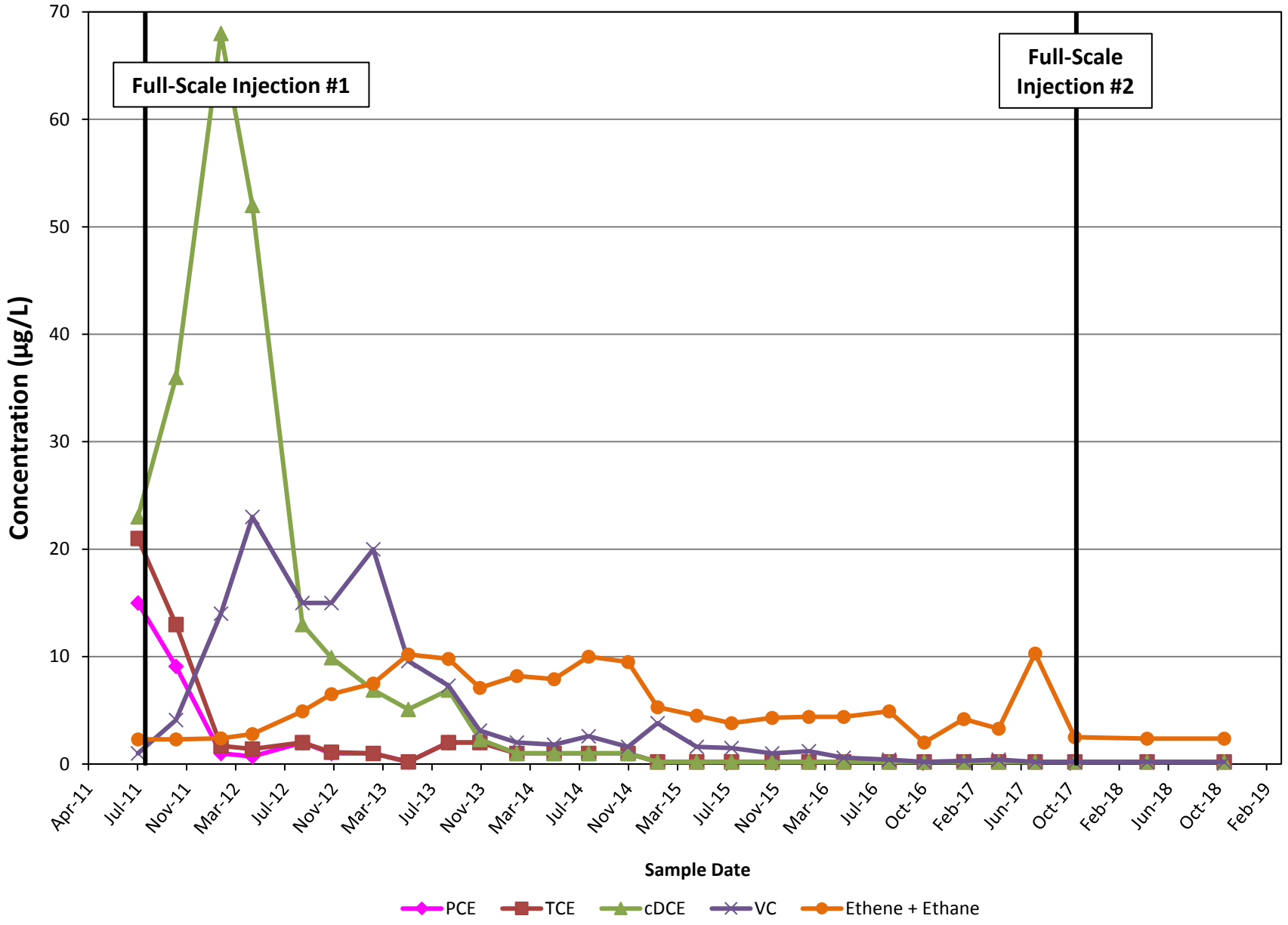
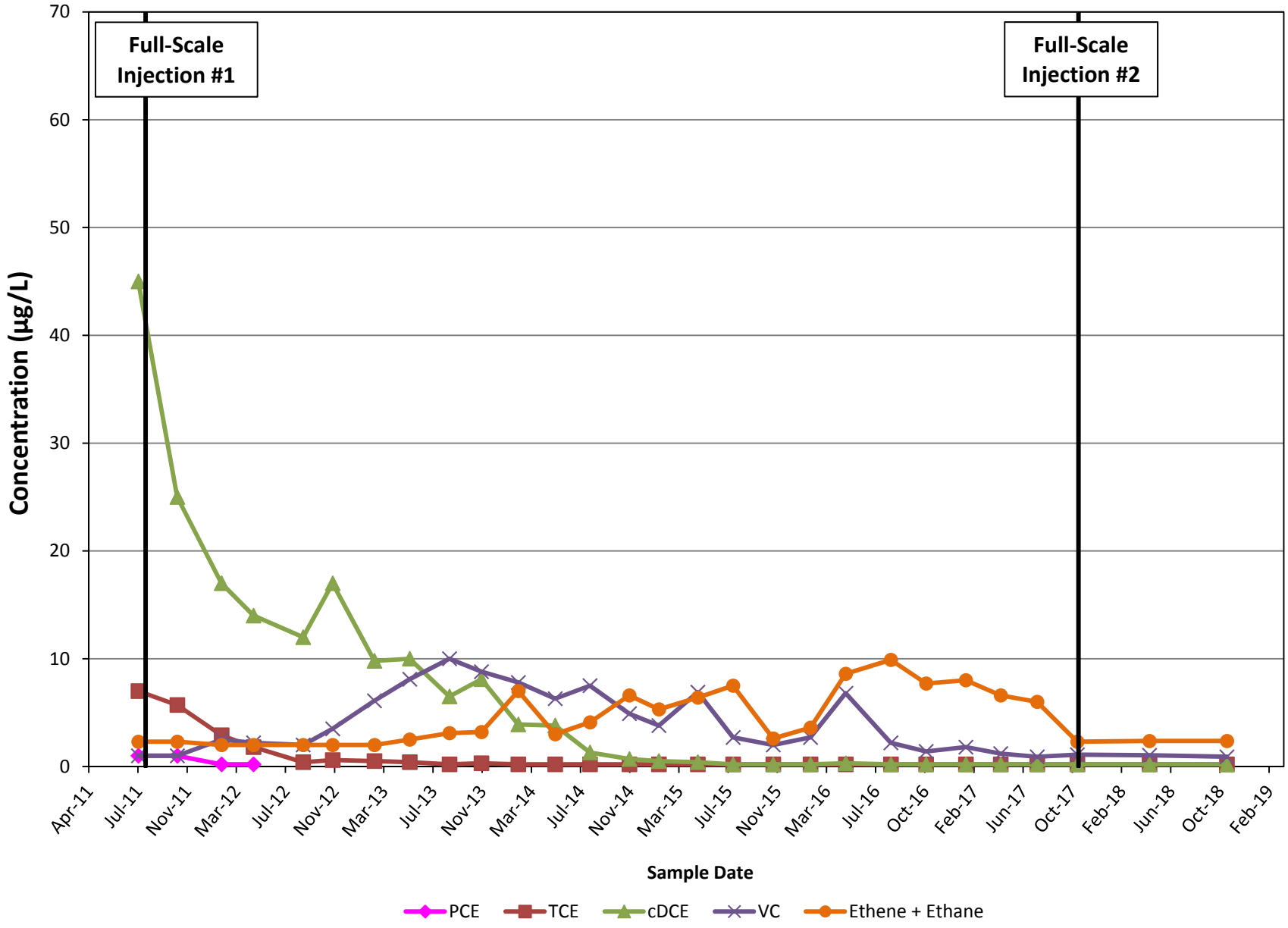
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17 – VOCs at Non-Source Zone Injection Well BDC-05-16** | Figure<br>C-5 |




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17 – VOCs at Monitoring Well BDC-05-19** | Figure<br>C-6 |

LANDAU ASSOCIATES




Boeing Developmental Center
Tukwila, Washington

**SWMU-17 – VOCs at Monitoring Well BDC-05-20**

Figure
C-7

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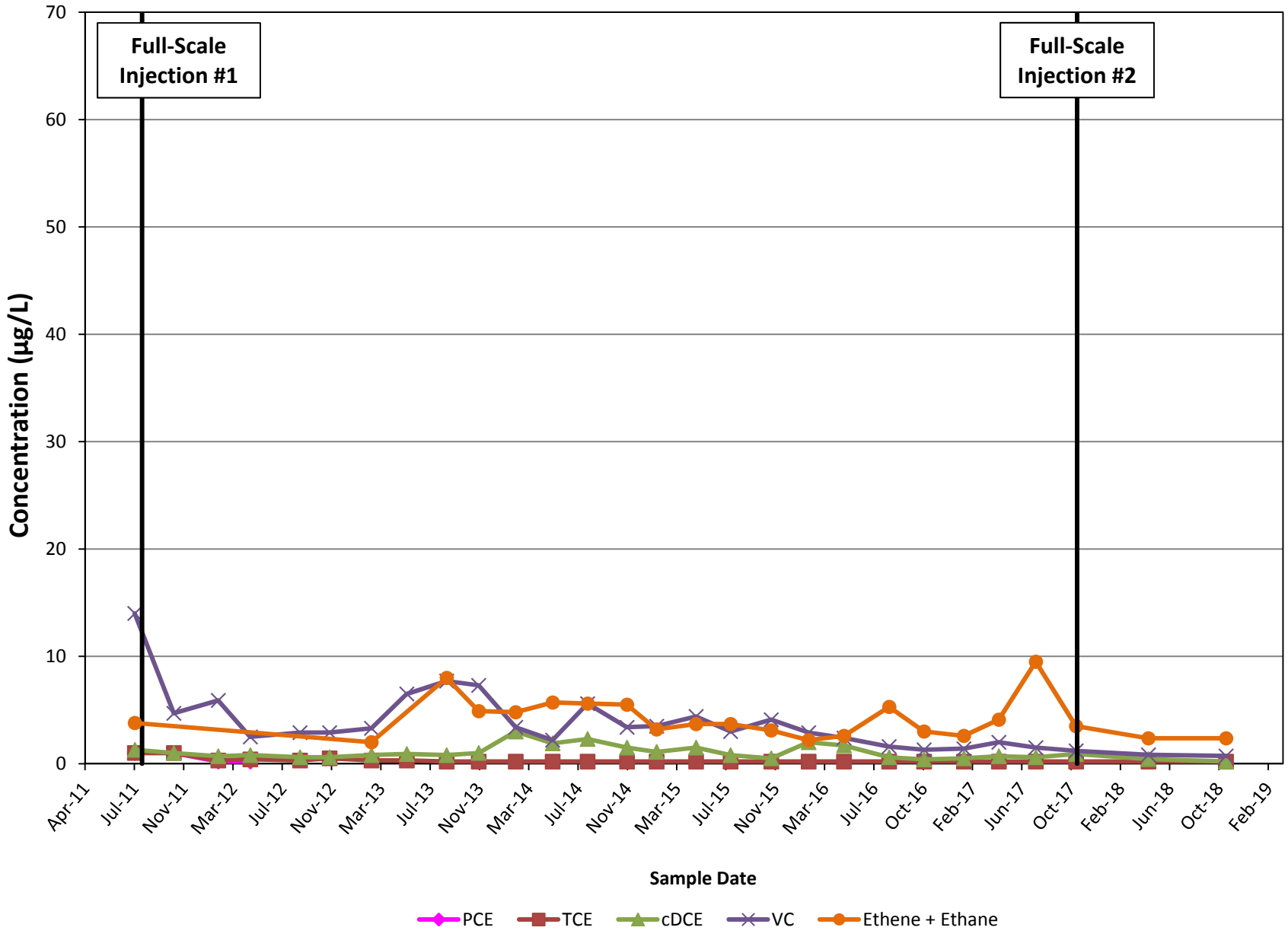
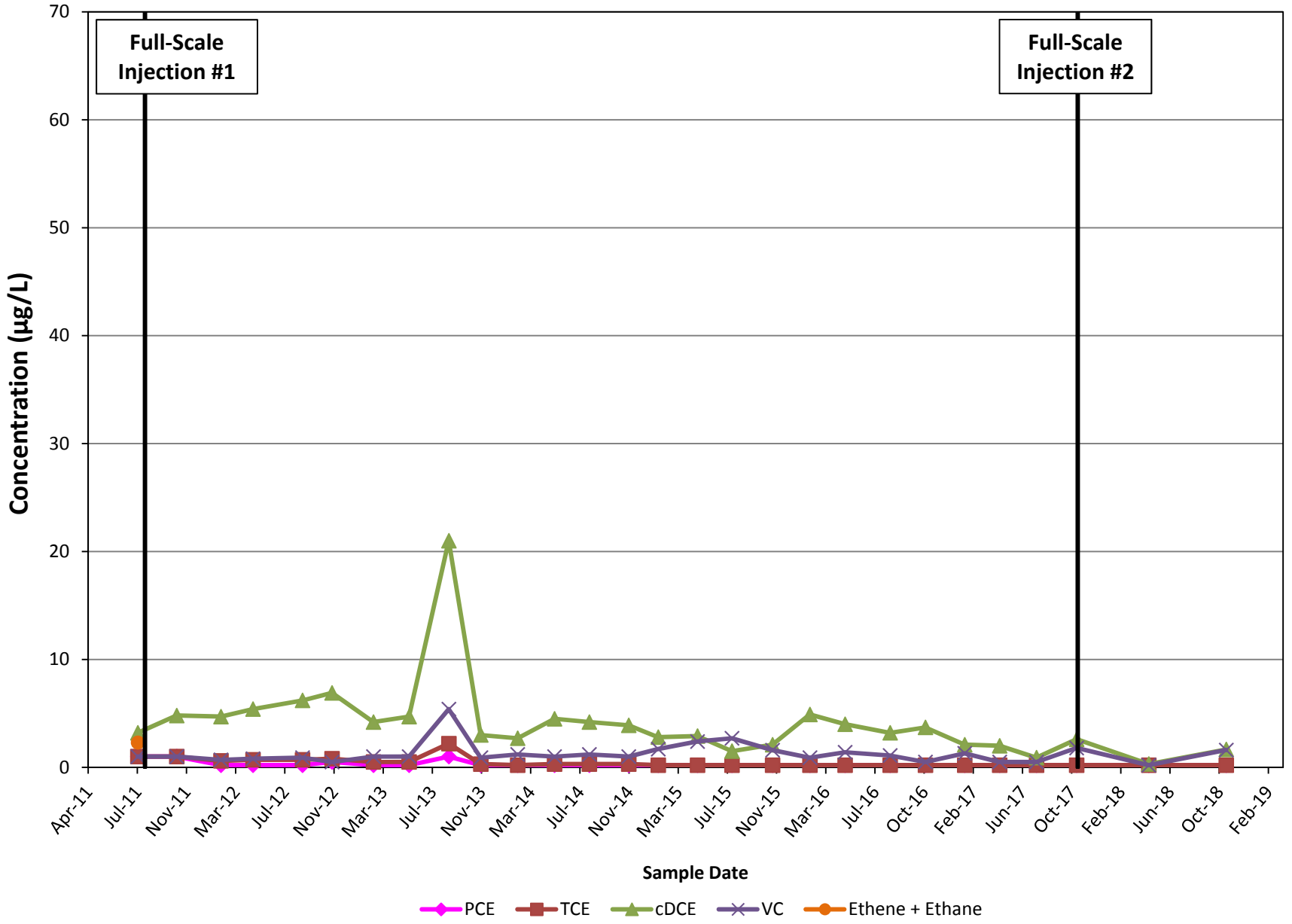



| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-17 – VOCs at Monitoring Well BDC-05-21** | Figure<br>C-8 |

LANDAU ASSOCIATES

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Tukwila, Washington

**SWMU-17 – VOCs at Monitoring Well BDC-05-23**

Figure
C-9

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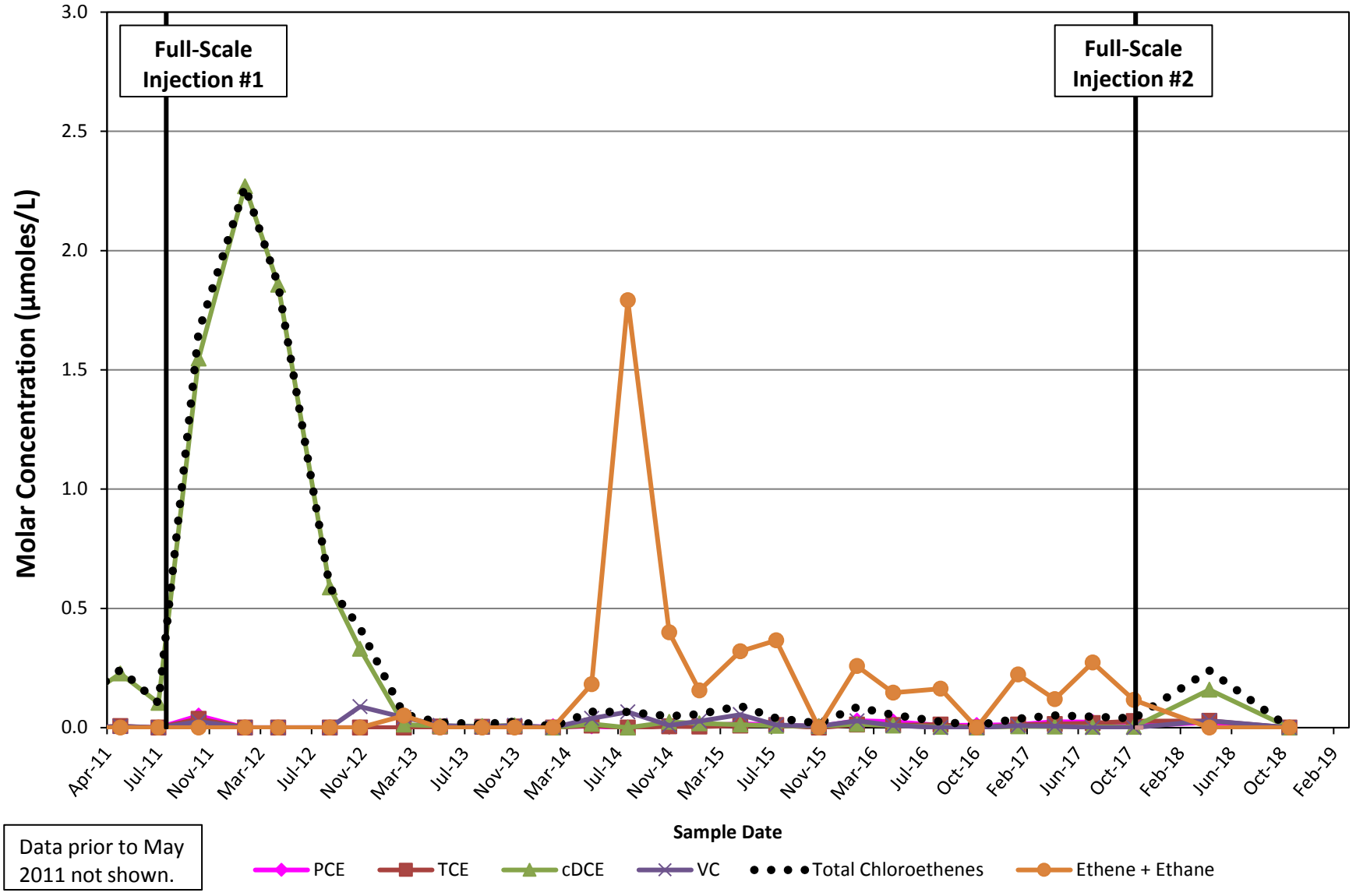
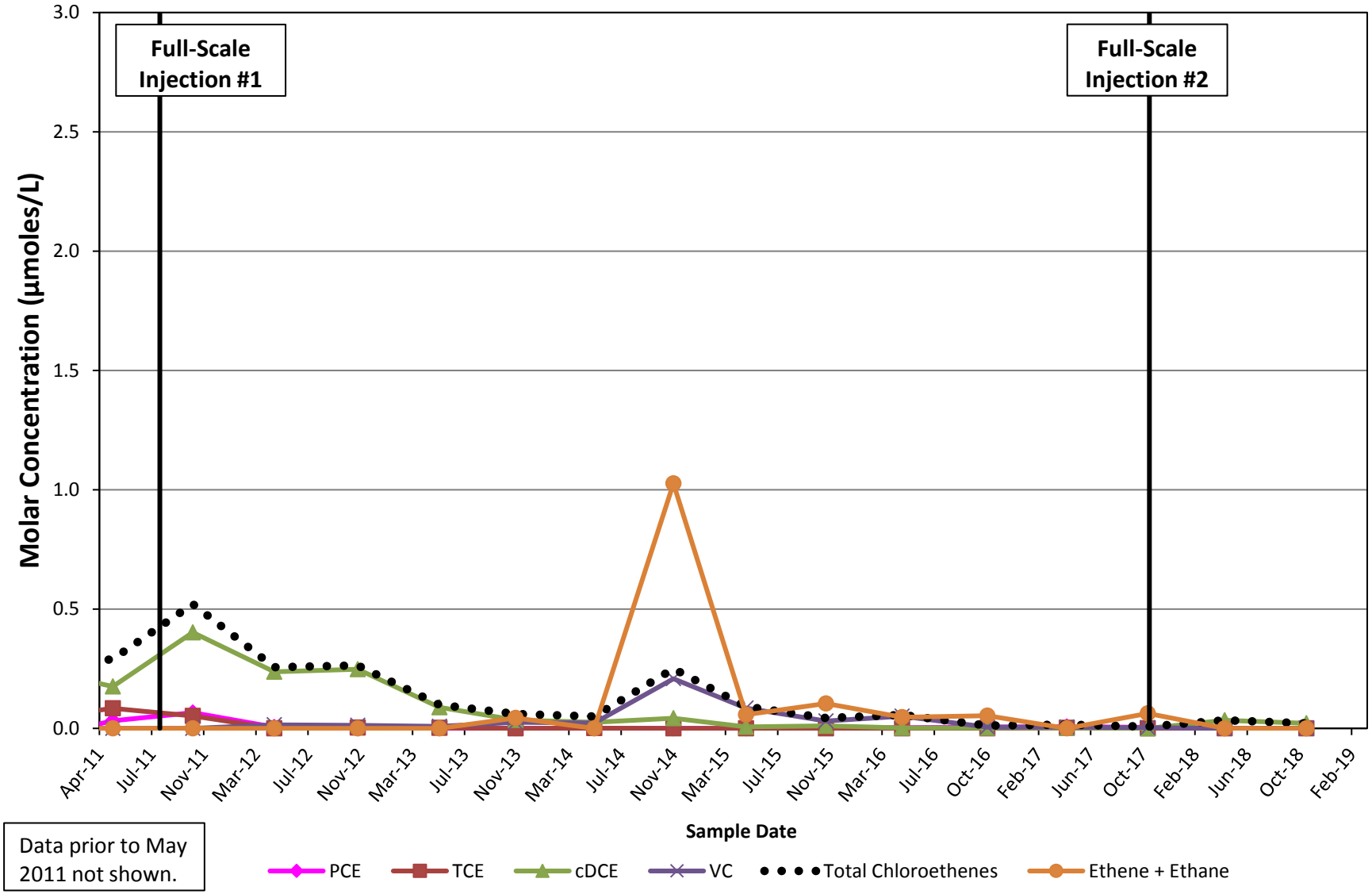
APPENDIX D

# SWMU-17: Time Plots – VOC Molar Concentrations of VOCs and Breakdown Products



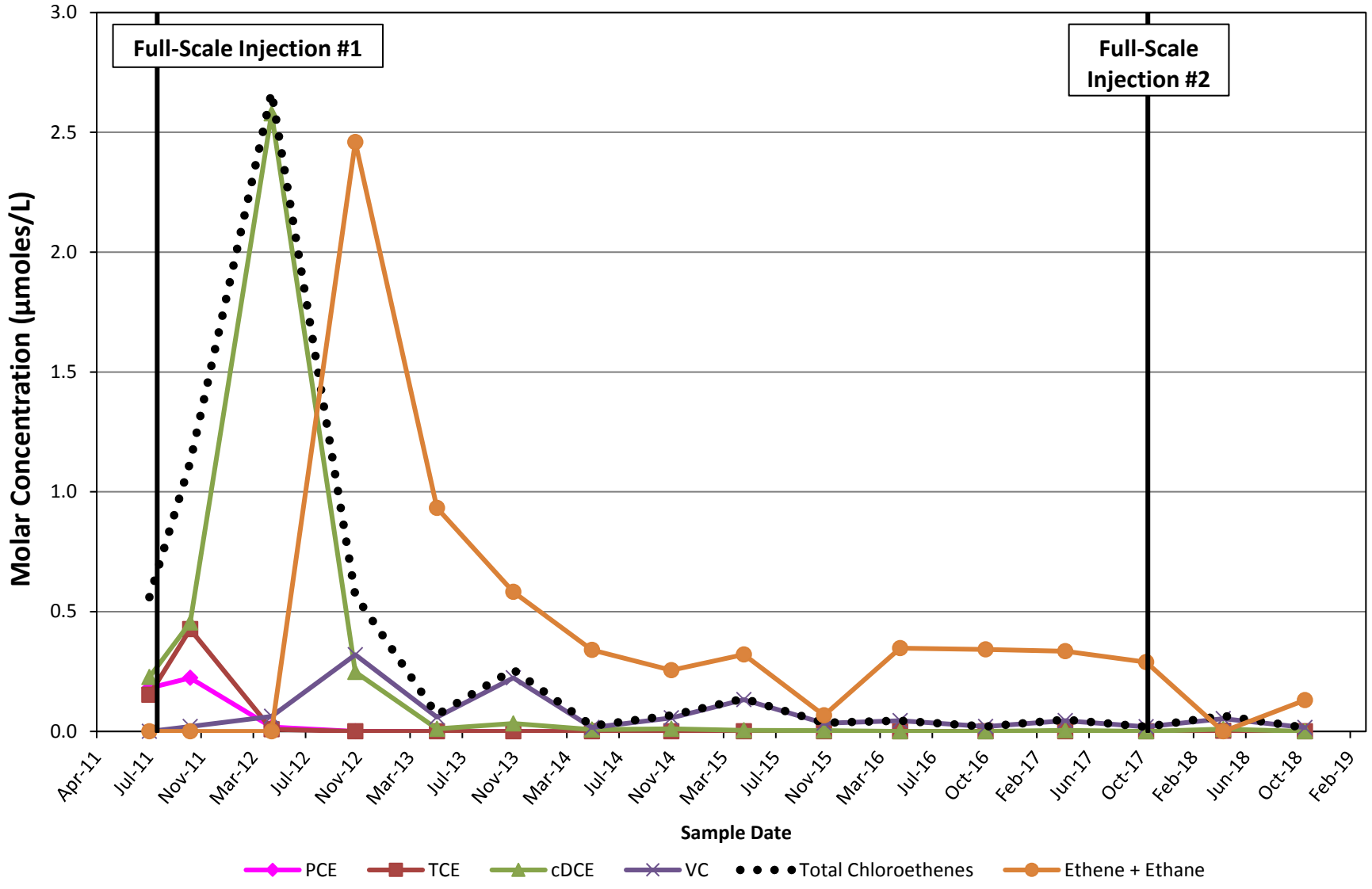

| | | |
|---|---|---|
| LANDAU ASSOCIATES | Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Source Zone Injection Well BDC-05-02**<br>**VOCs** |

Figure
D-1



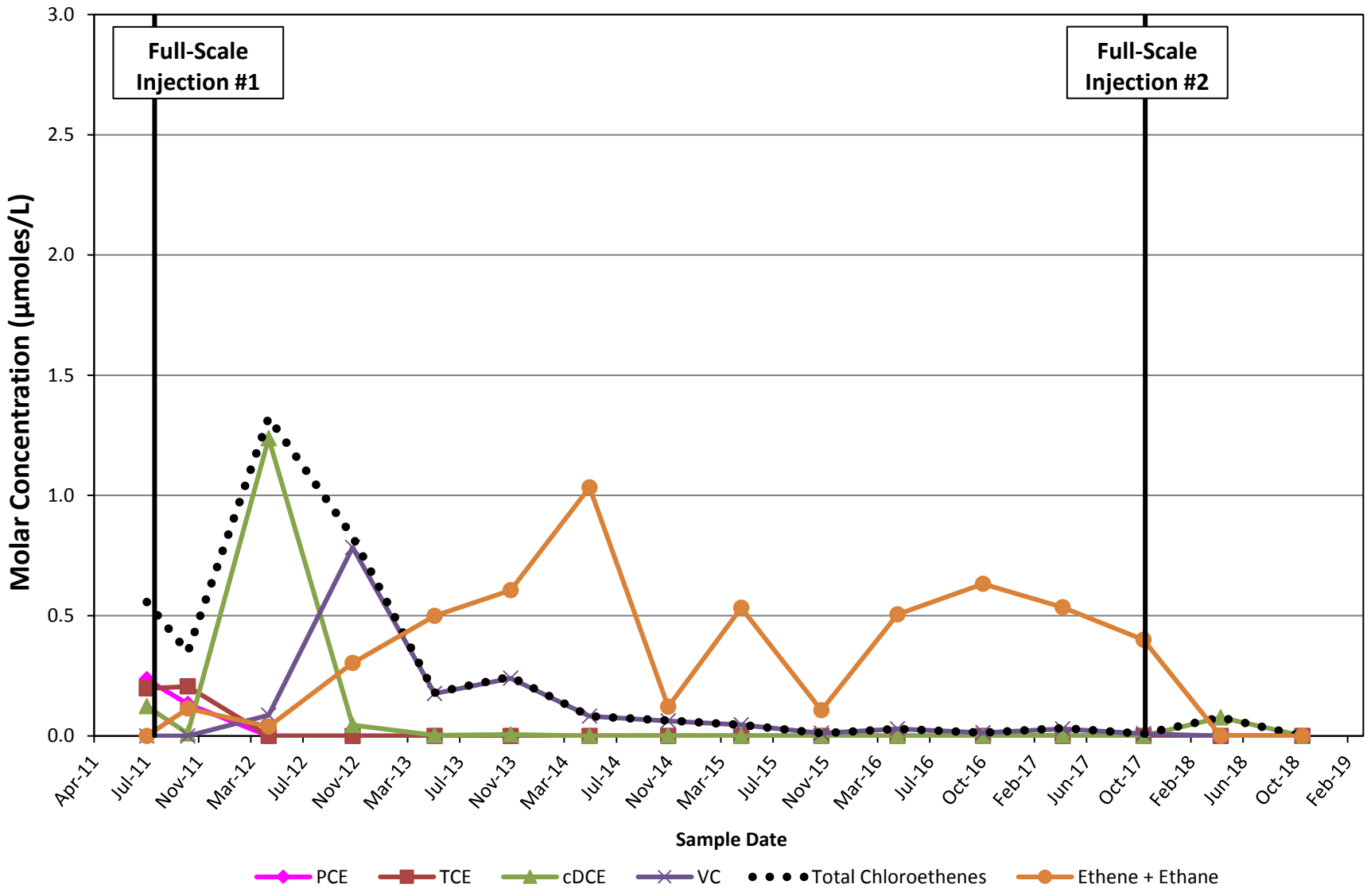

| | | |
|---|---|---|
| LANDAU ASSOCIATES | Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Source Zone Injection Well BDC-05-07**<br>**VOCs** |

Figure
D-2



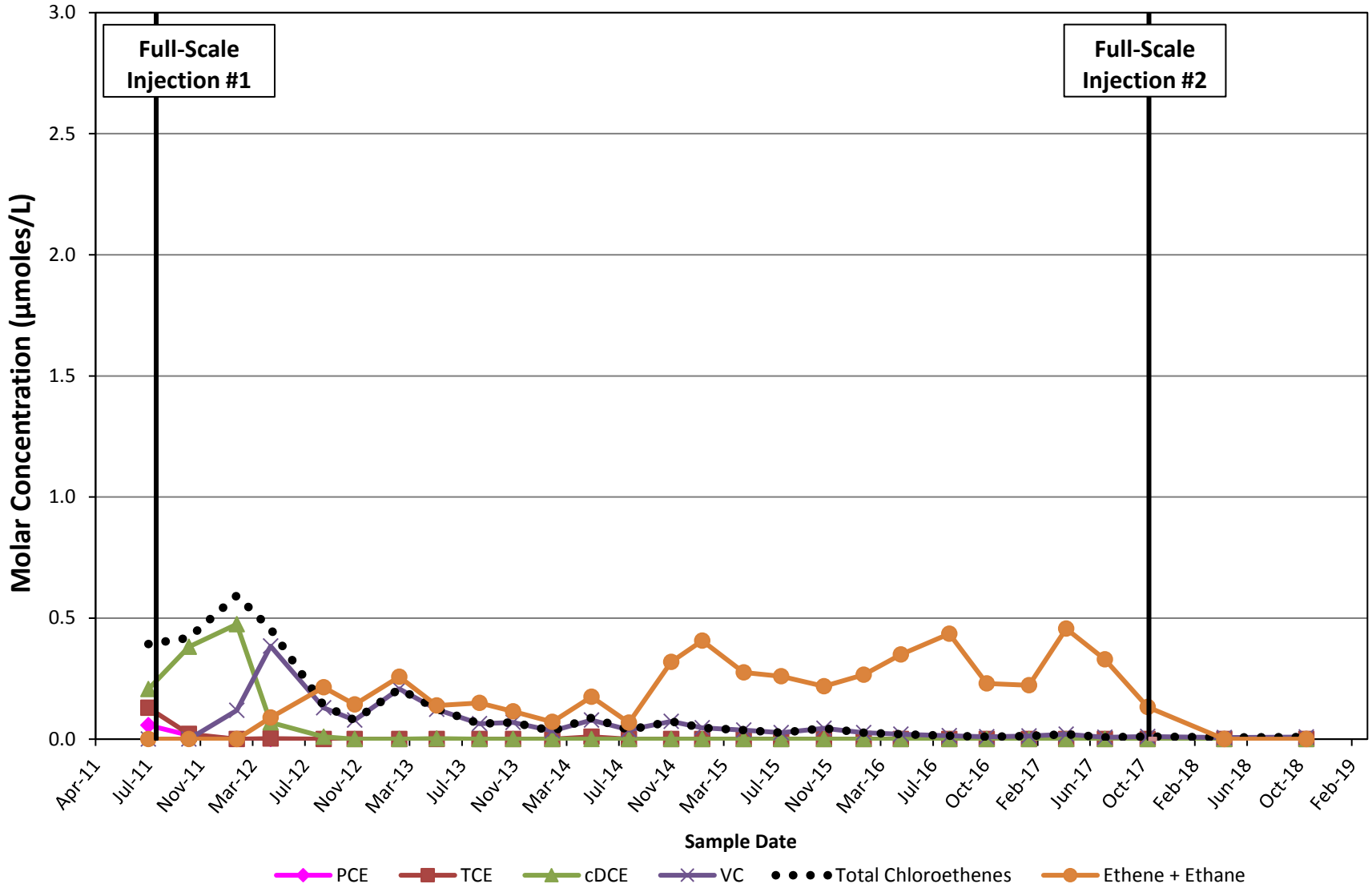

| | | |
|---|---|---|
| LANDAU ASSOCIATES | Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Plume Injection Well BDC-05-09 VOCs** |

Figure
D-3



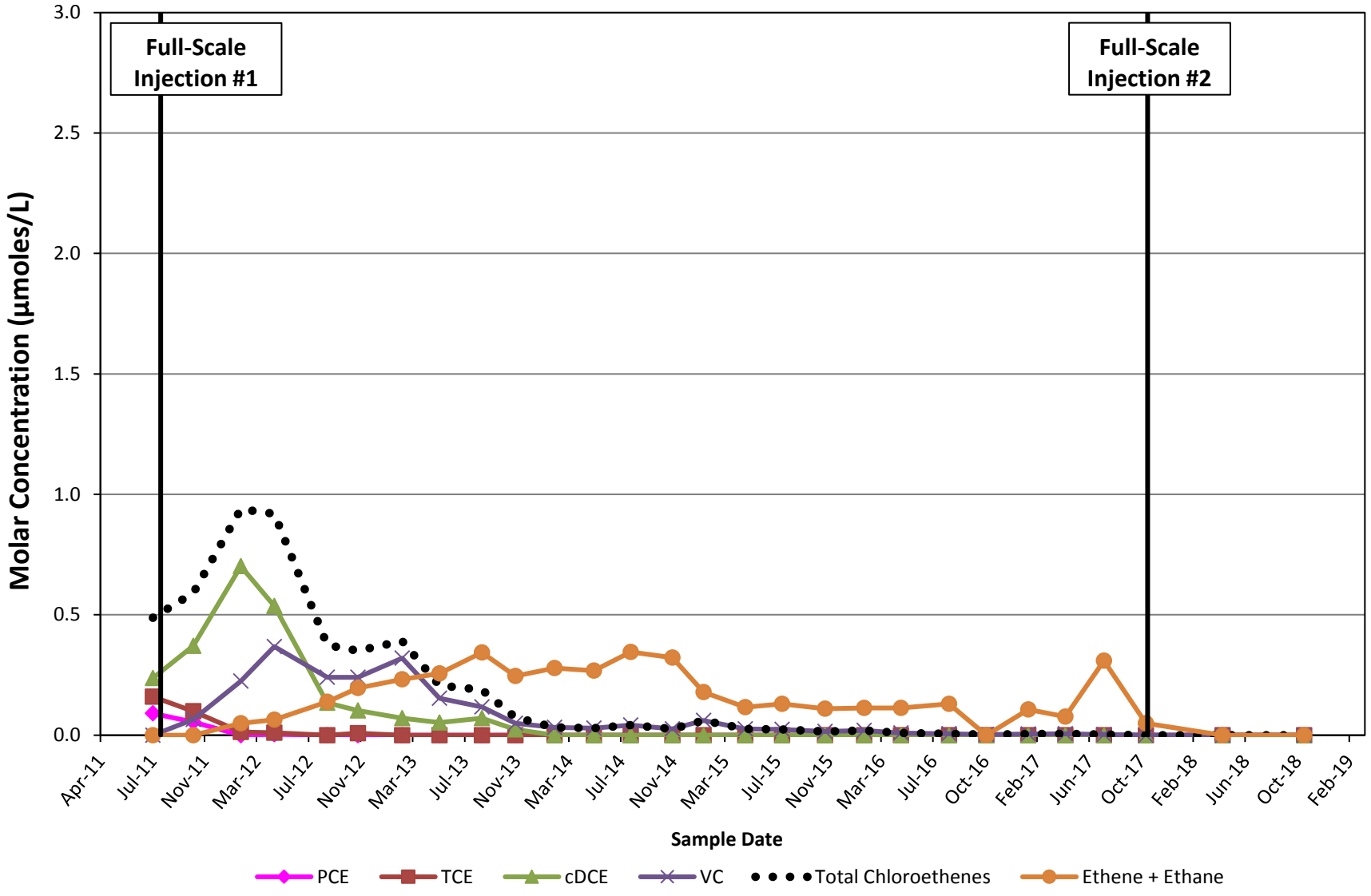

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Plume Injection Well BDC-05-10 VOCs** | Figure<br>D-4 |

LANDAU ASSOCIATES




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Plume Injection Well BDC-05-16 VOCs** | Figure<br>D-5 |

LANDAU ASSOCIATES

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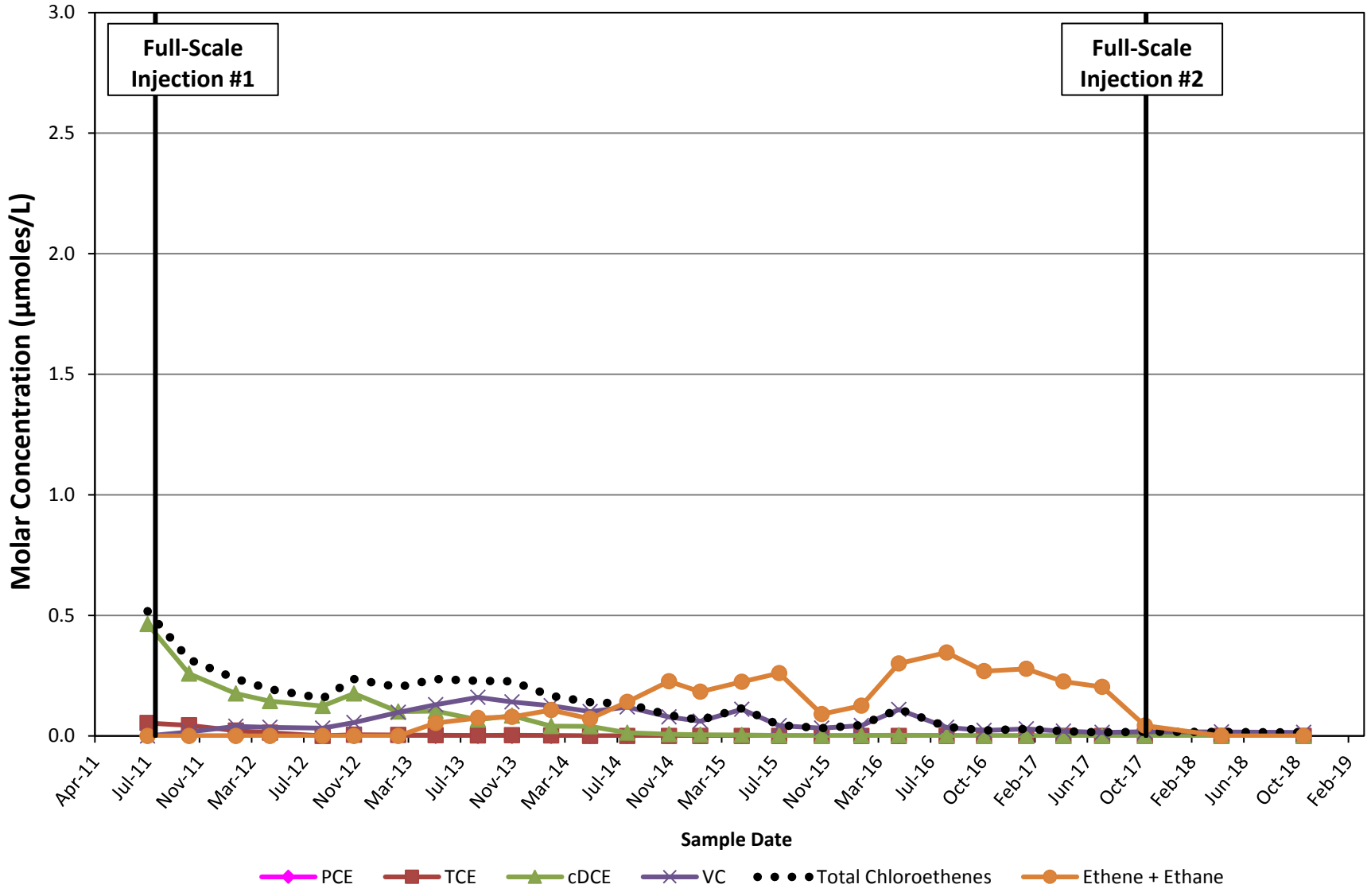
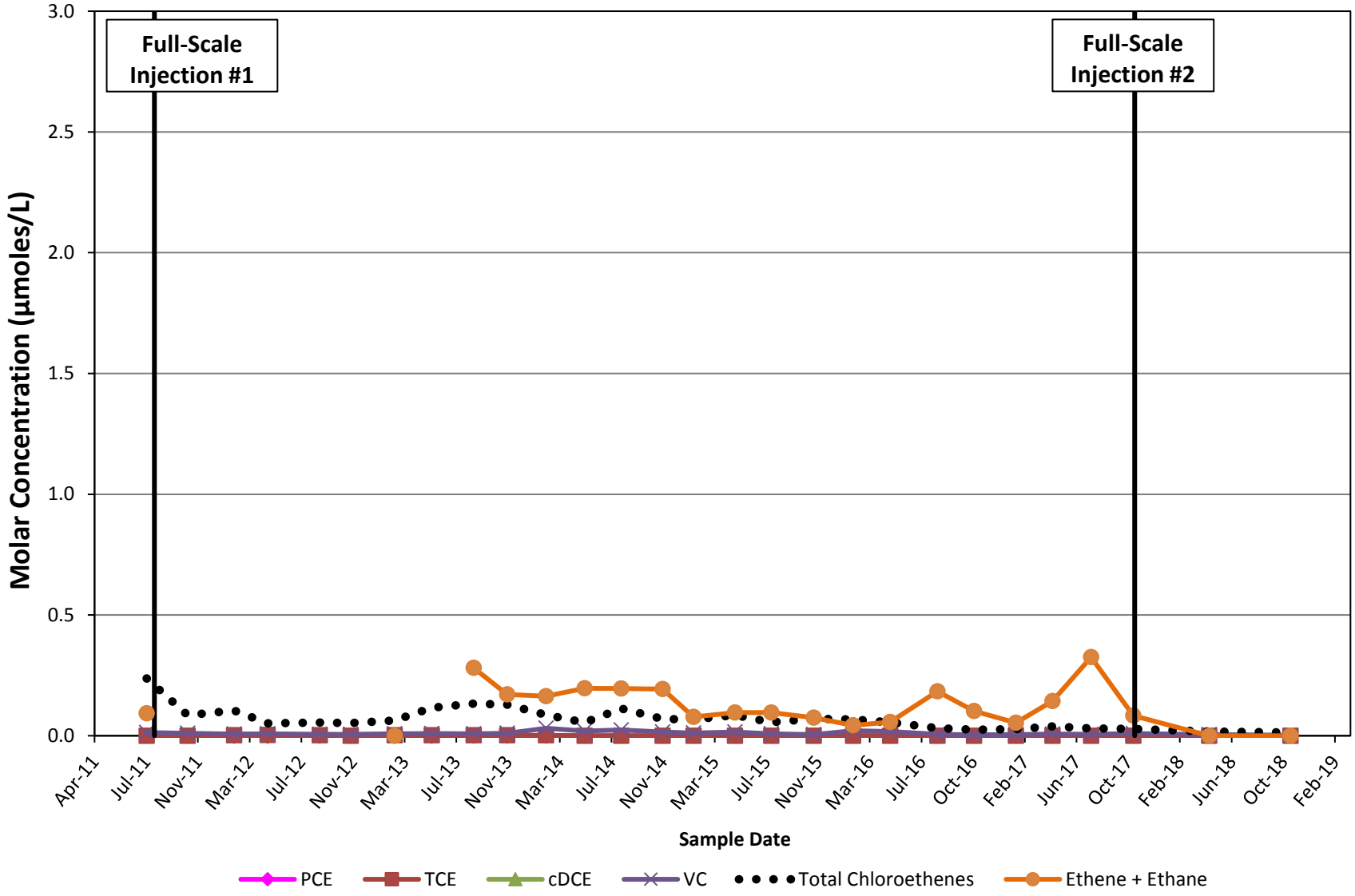
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Plume Injection Well BDC-05-19 VOCs** | Figure<br>D-6 |

LANDAU ASSOCIATES



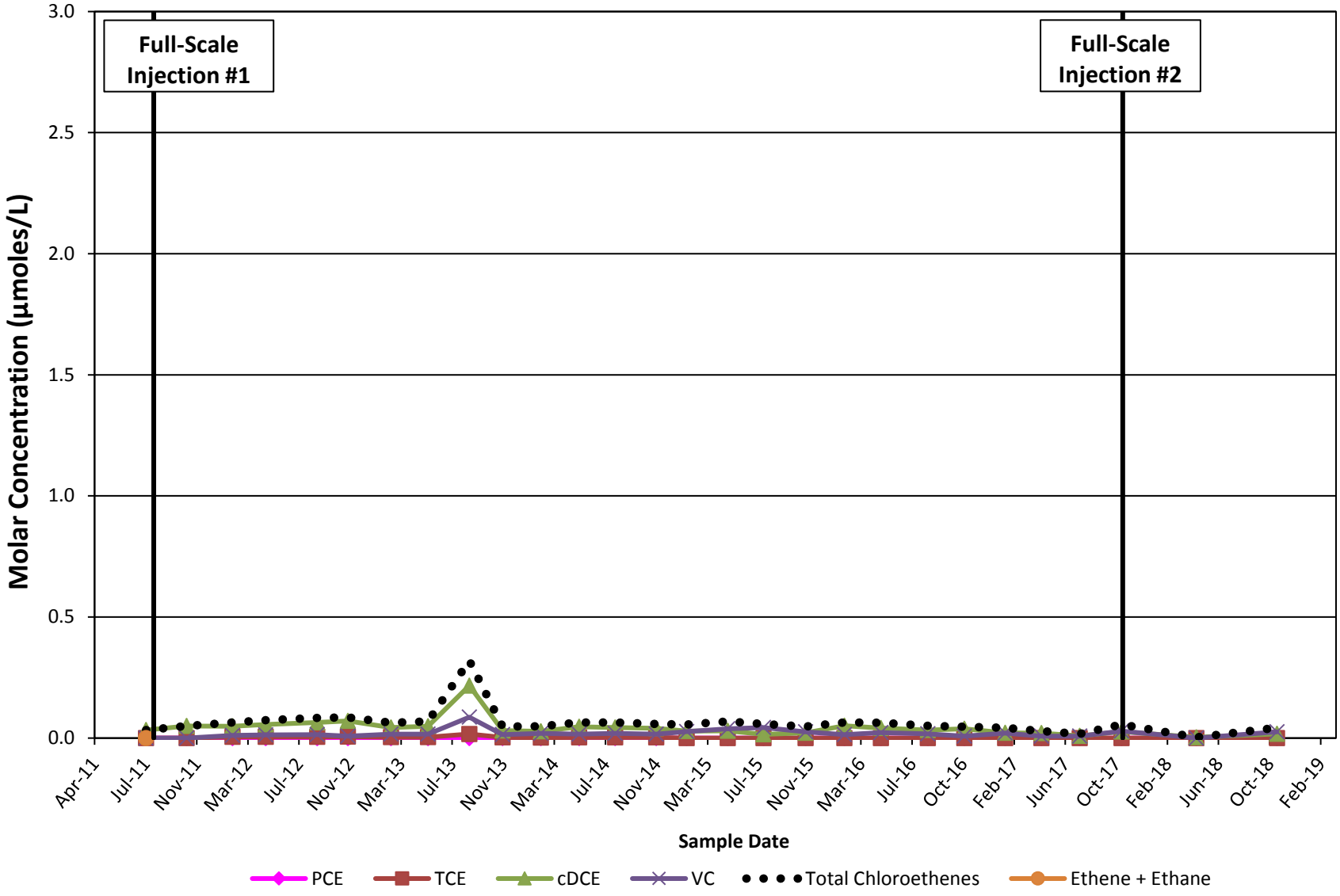

| | | |
|---|---|---|
| LANDAU ASSOCIATES | Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents**<br>**Monitoring Well BDC-05-20 VOCs** |

Figure
D-7




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents<br>Monitoring Well BDC-05-21 VOCs** | Figure<br>D-8 |

LANDAU ASSOCIATES

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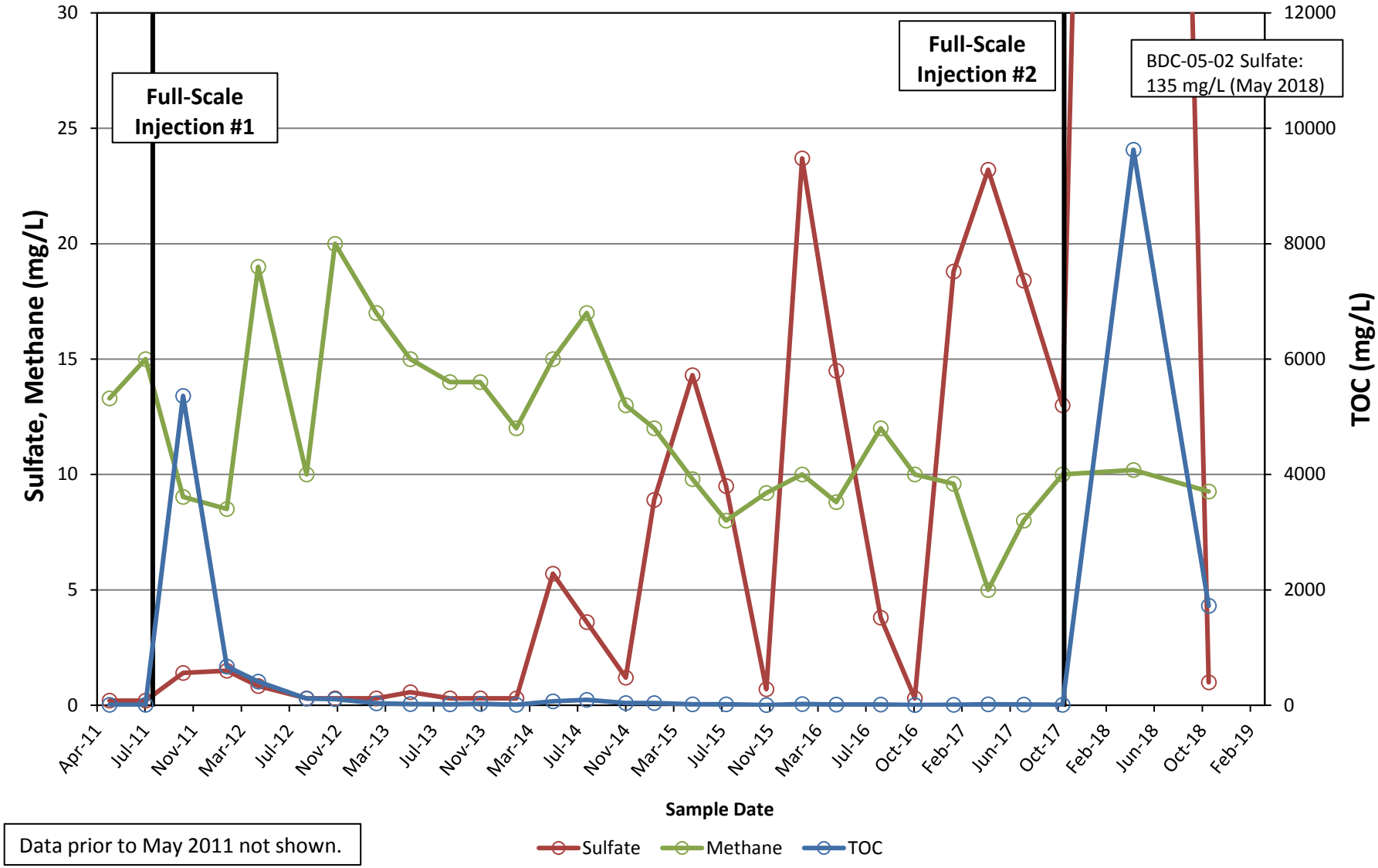
| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Molar Equivalents<br>Monitoring Well BDC-05-23 VOCs** | Figure<br>D-9 |

APPENDIX E

# SWMU-17: Time Plots – Redox Parameters and TOC




Data prior to May 2011 not shown.

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC**<br>**Source Zone Injection Well BDC-05-02** | Figure<br>E-1 |

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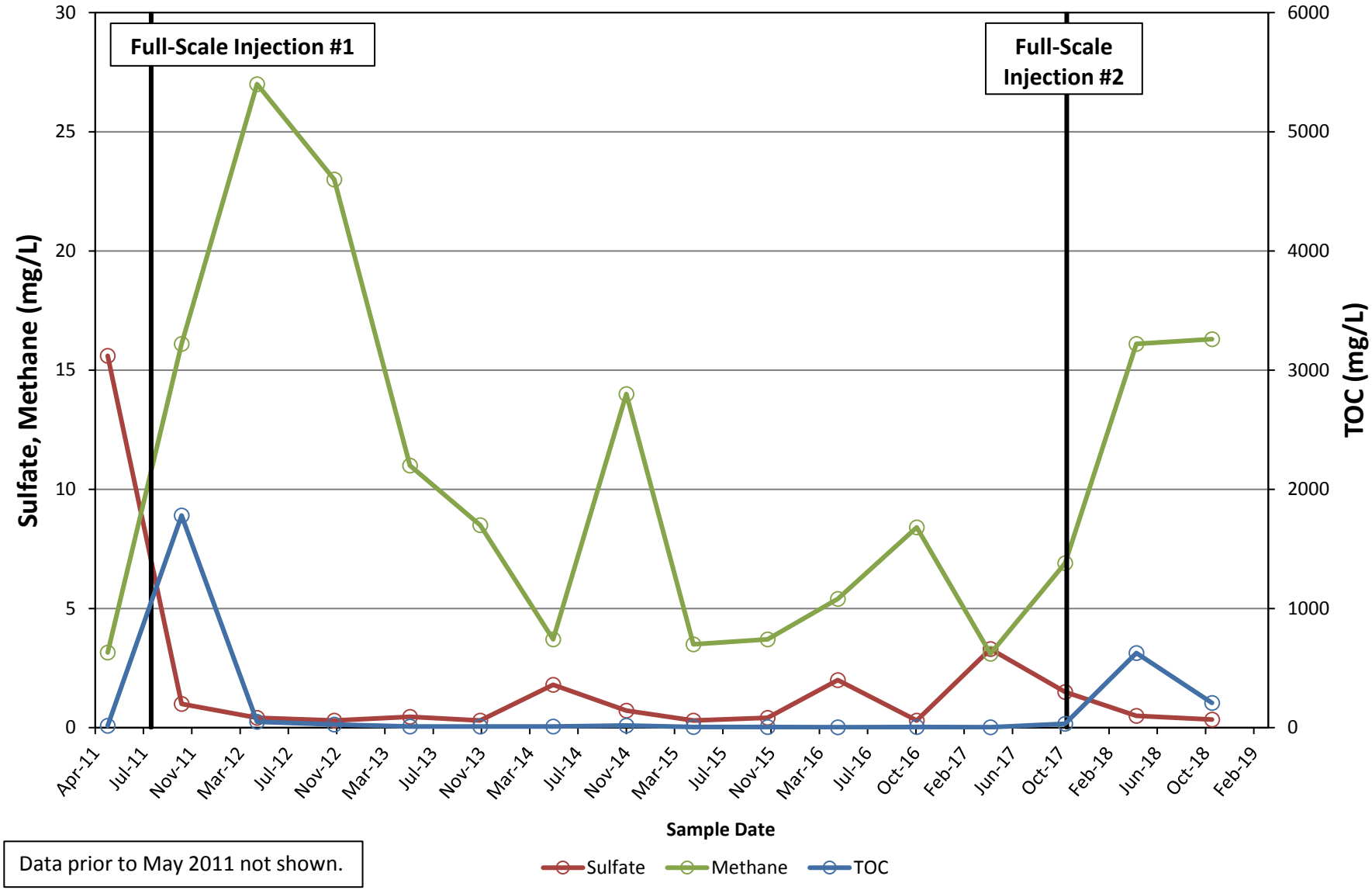


Data prior to May 2011 not shown.

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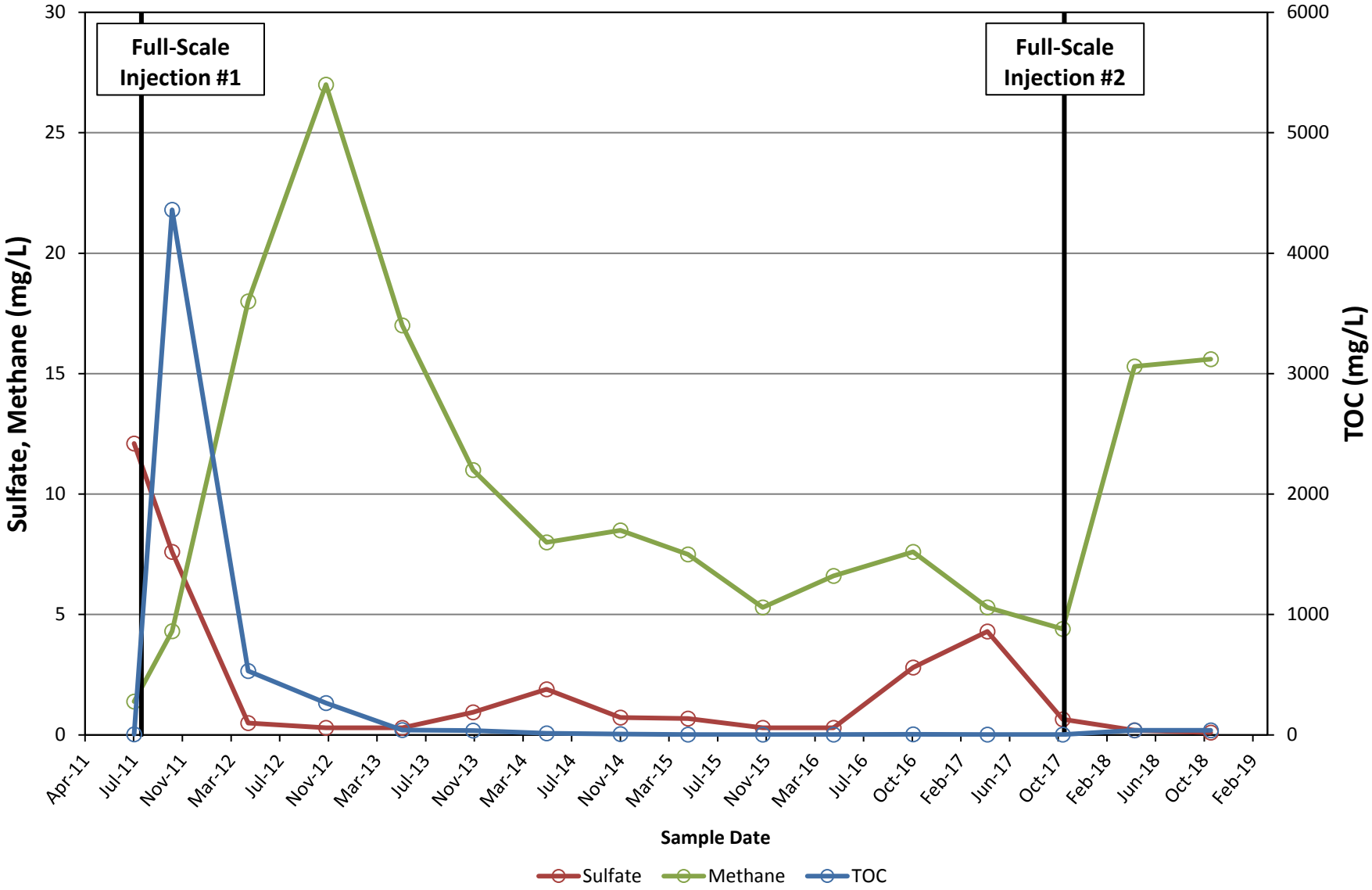
Boeing Developmental Center
Tukwila, Washington

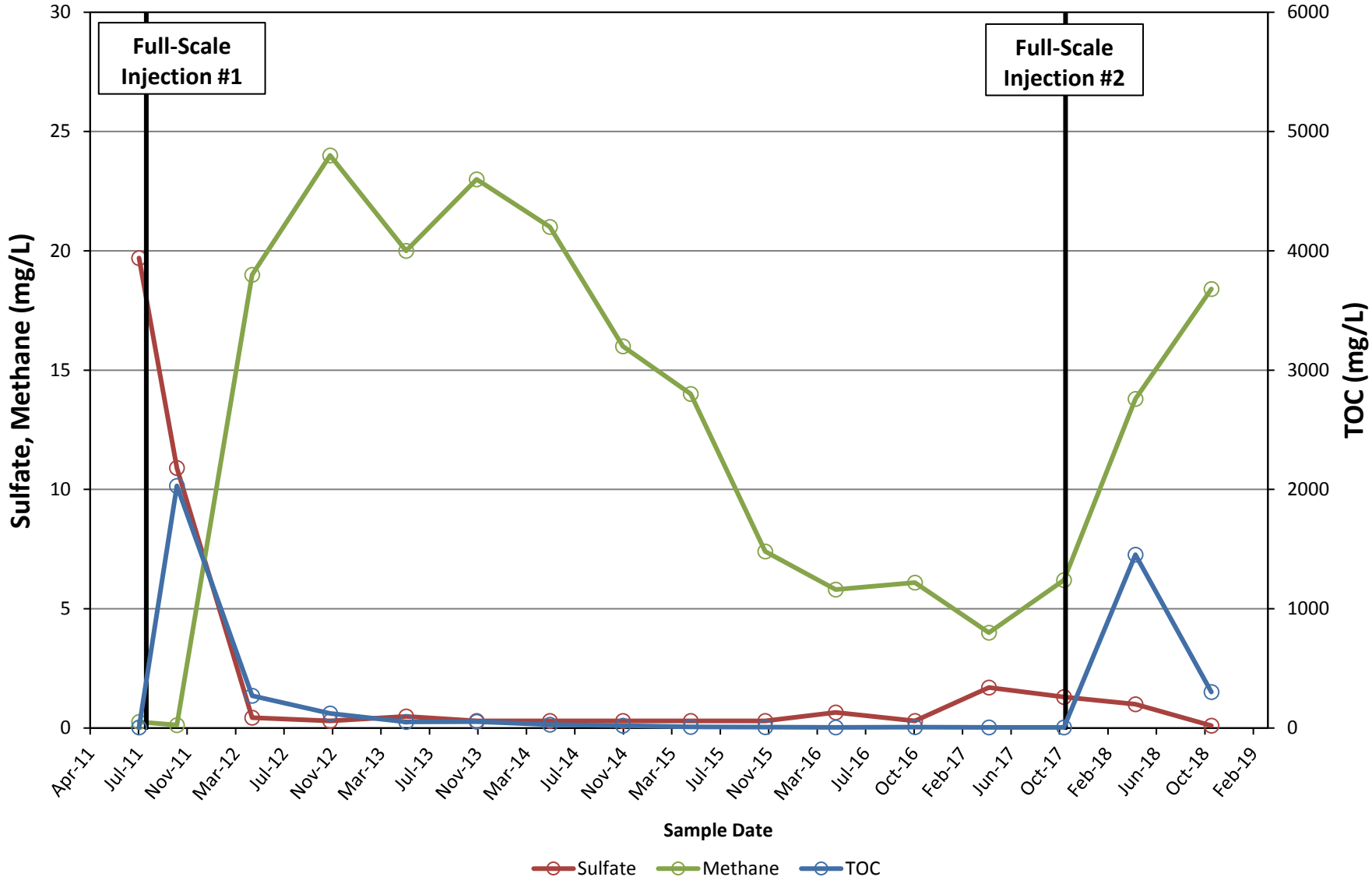
**Redox and TOC**
**Source Zone Injection Well BDC-05-07**

Figure
E-2



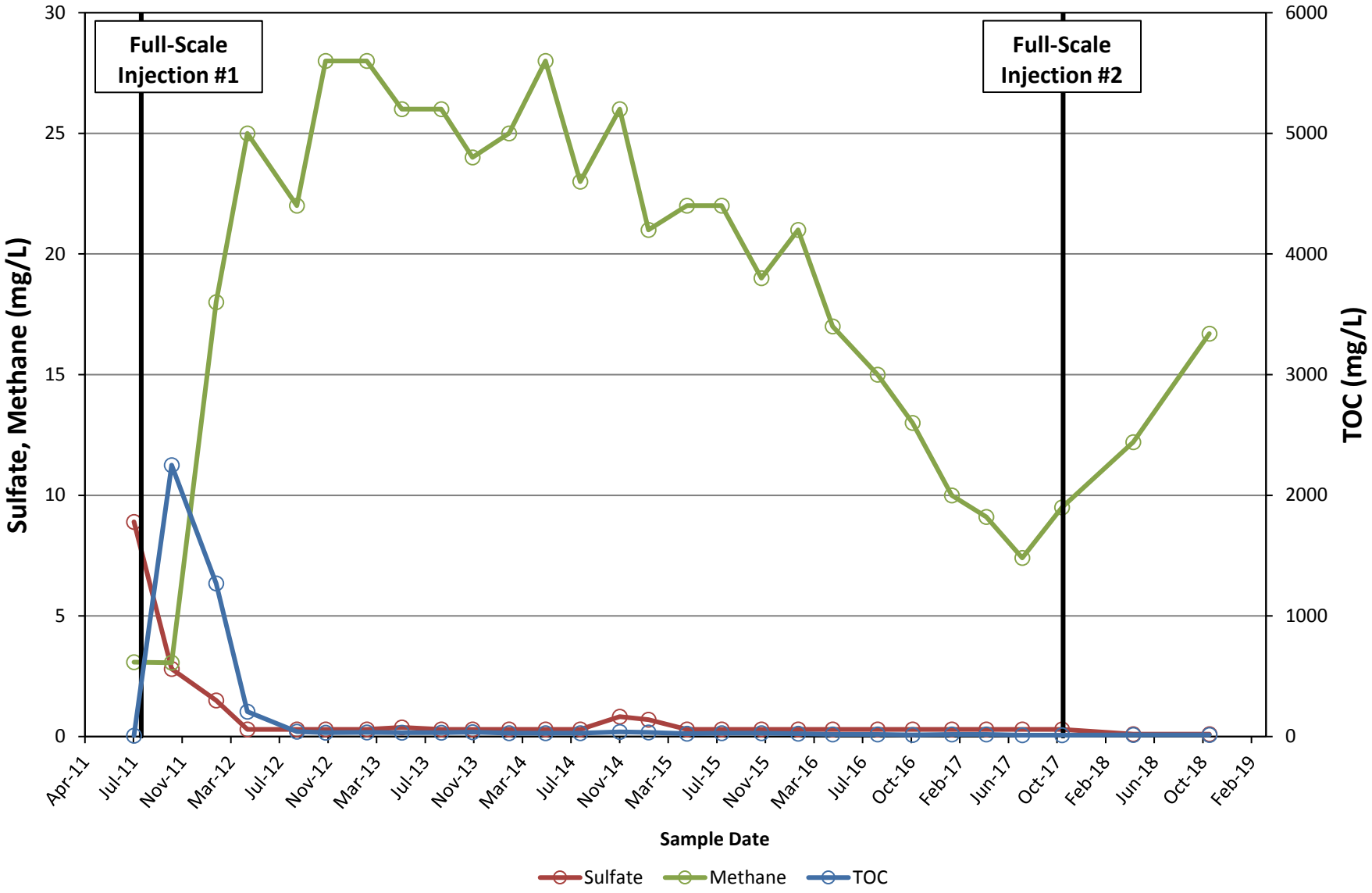

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC**<br>**Plume Injection Well BDC-05-09** | Figure<br>E-3 |

LANDAU ASSOCIATES



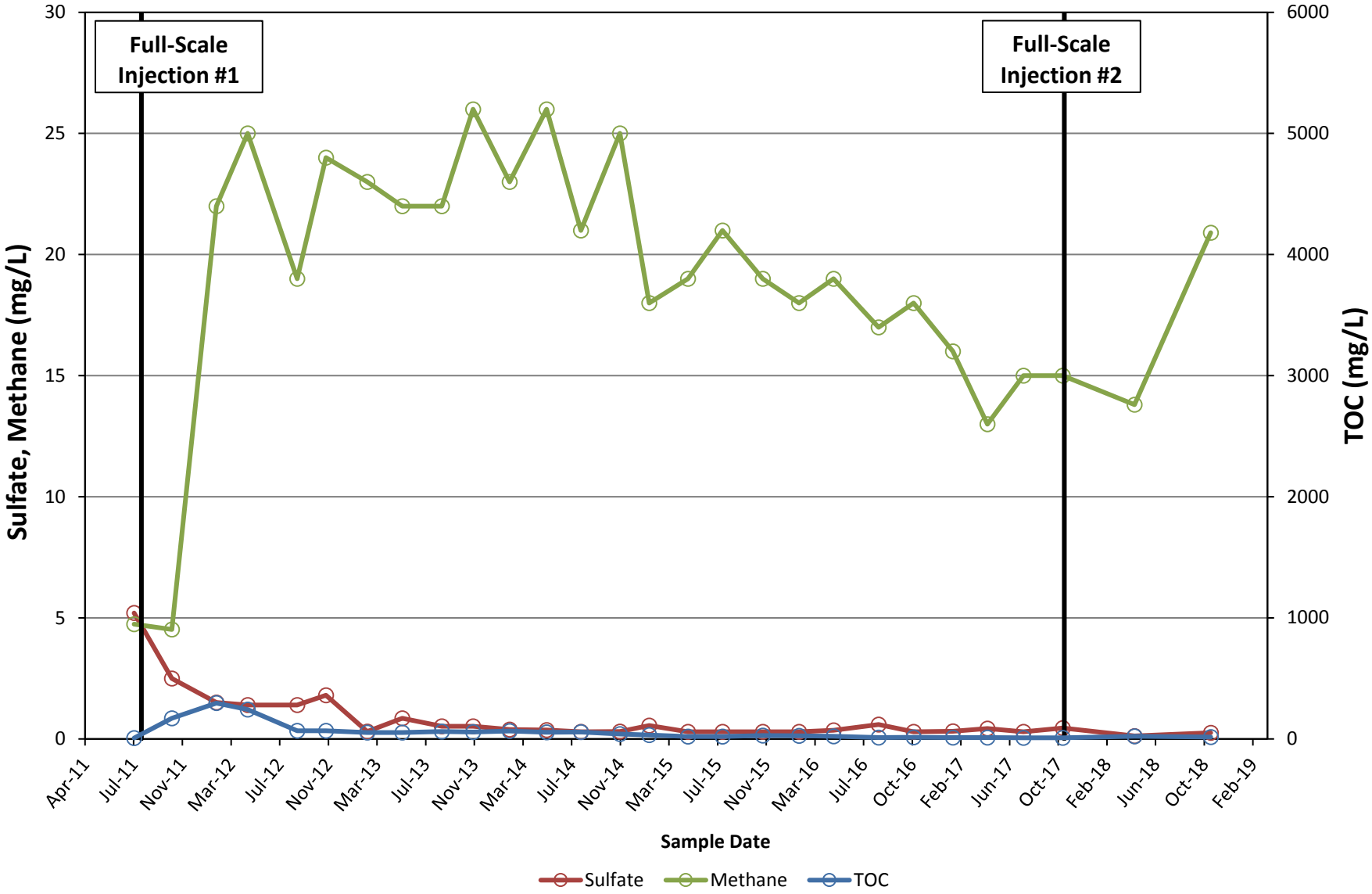

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC**<br>**Plume Injection Well BDC-05-10** | Figure<br>E-4 |

LANDAU ASSOCIATES




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC**<br>**Plume Injection Well BDC-05-16** | Figure<br>E-5 |

LANDAU ASSOCIATES

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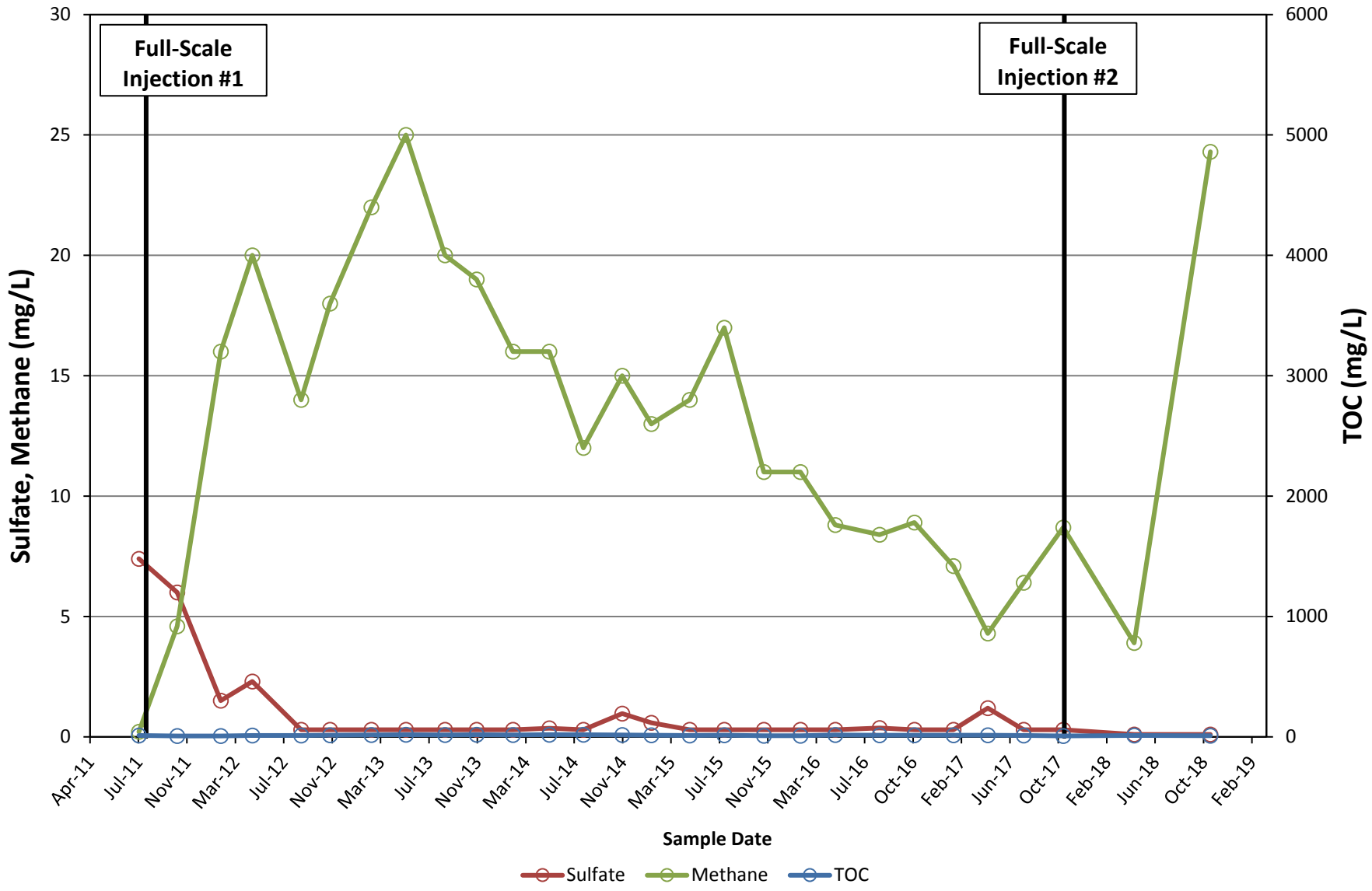
| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC<br>Monitoring Well BDC-05-19** | Figure<br>E-6 |

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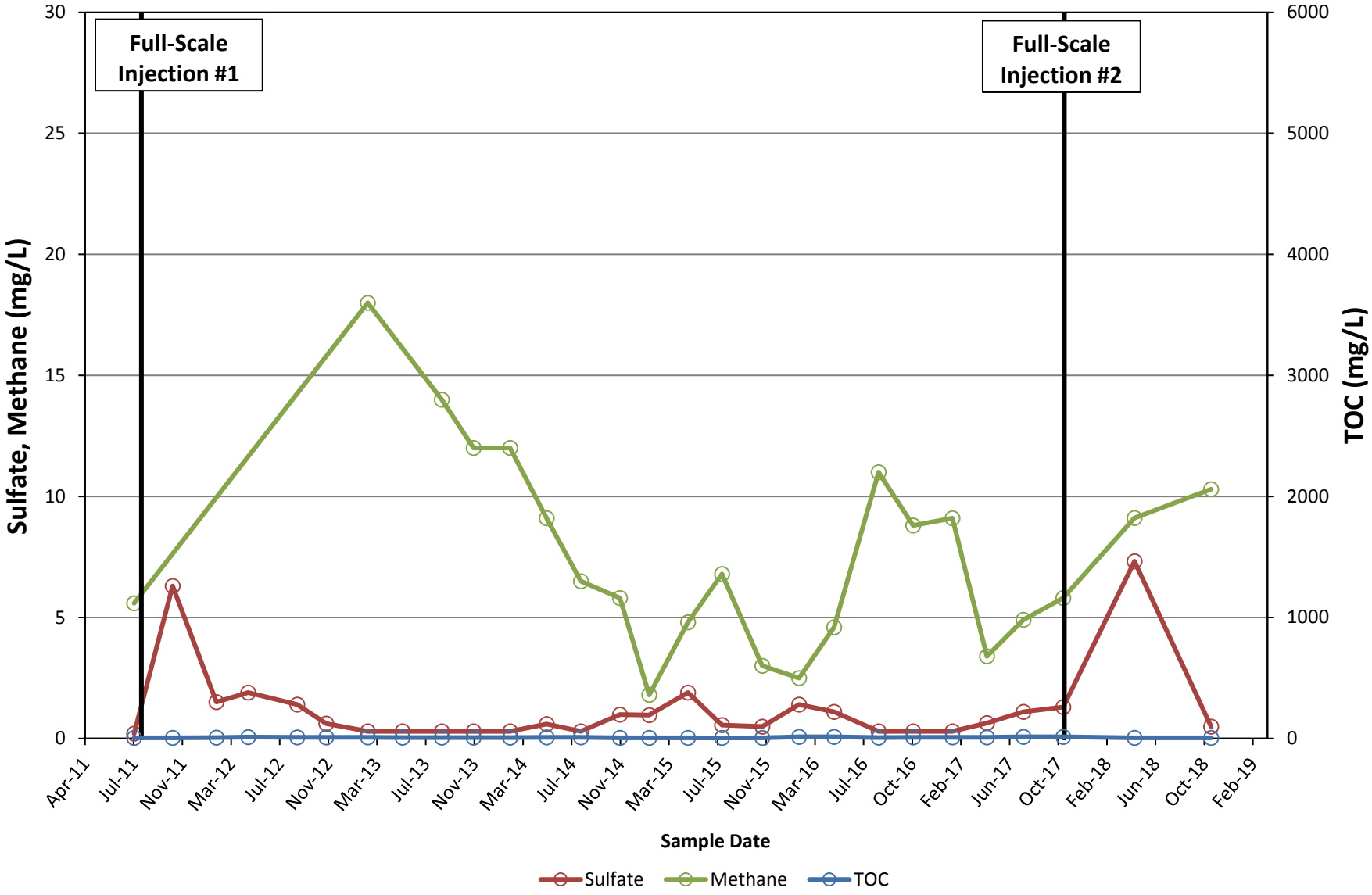
Tukwila, Washington

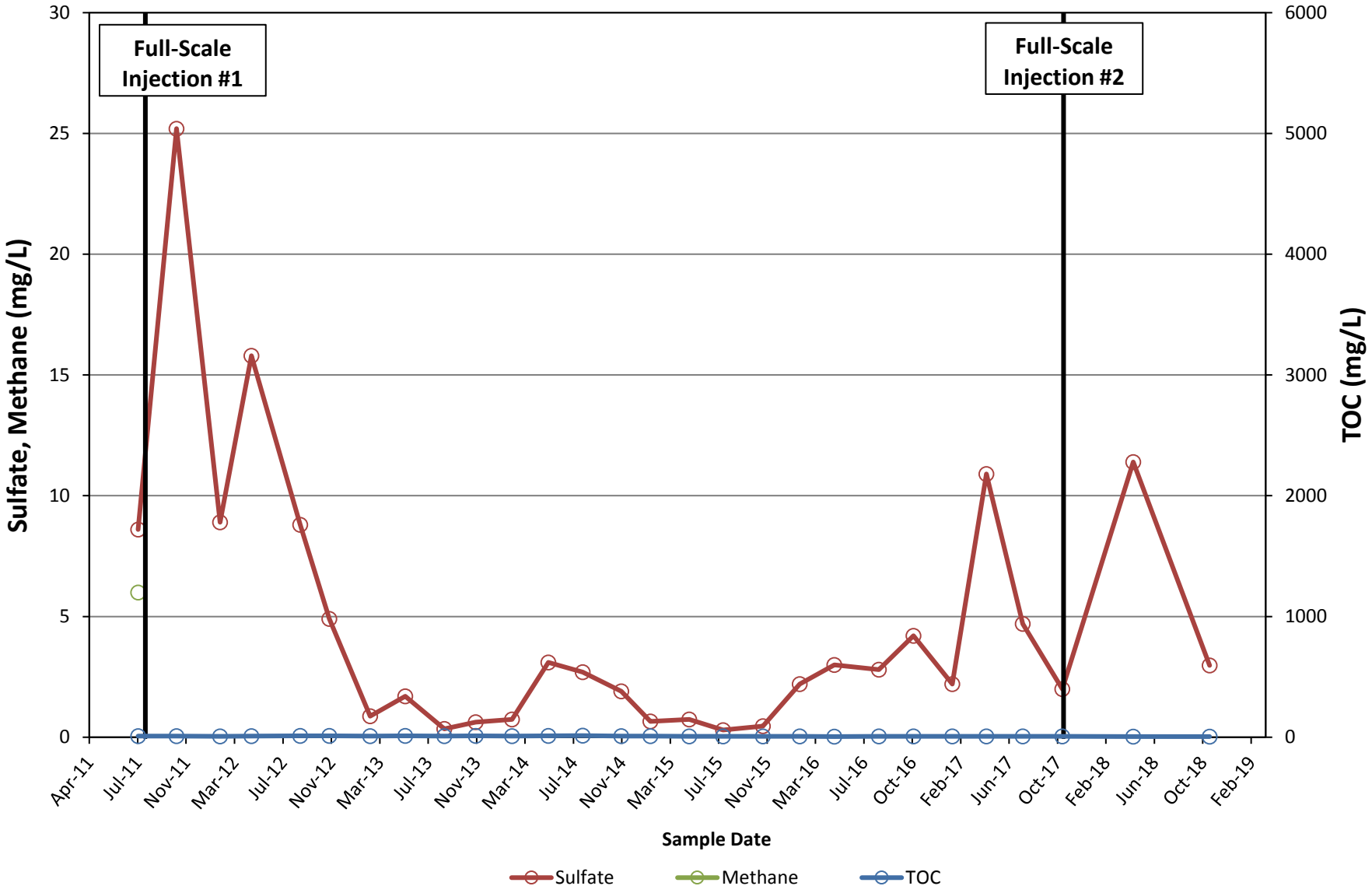
**Redox and TOC**
**Monitoring Well BDC-05-20**

Figure
E-7




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC<br>Monitoring Well BDC-05-21** | Figure<br>E-8 |

LANDAU ASSOCIATES




| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **Redox and TOC<br>Monitoring Well BDC-05-23** | Figure<br>E-9 |

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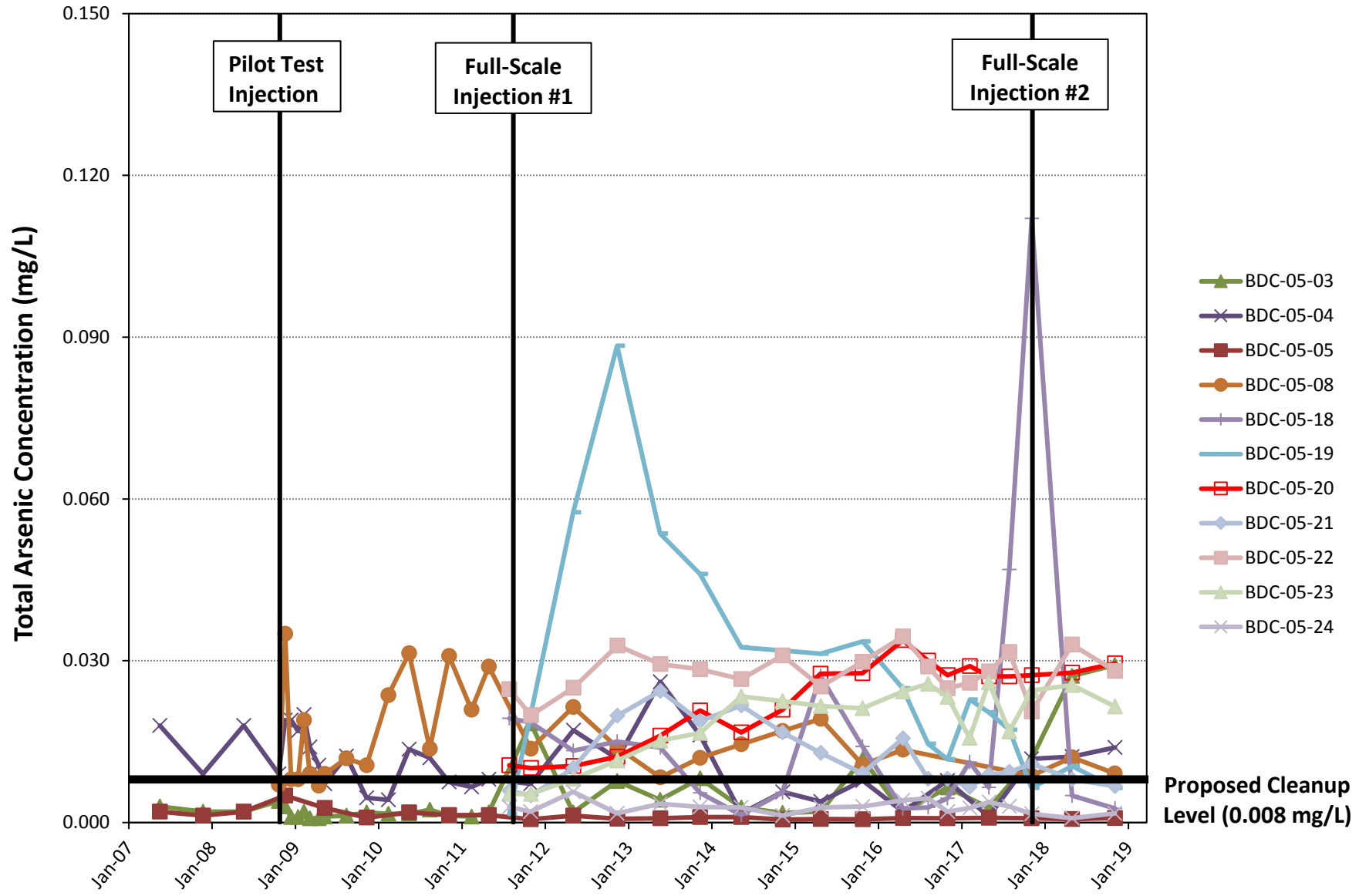
APPENDIX F

# SWMU-17: Time Plots – Copper and Arsenic

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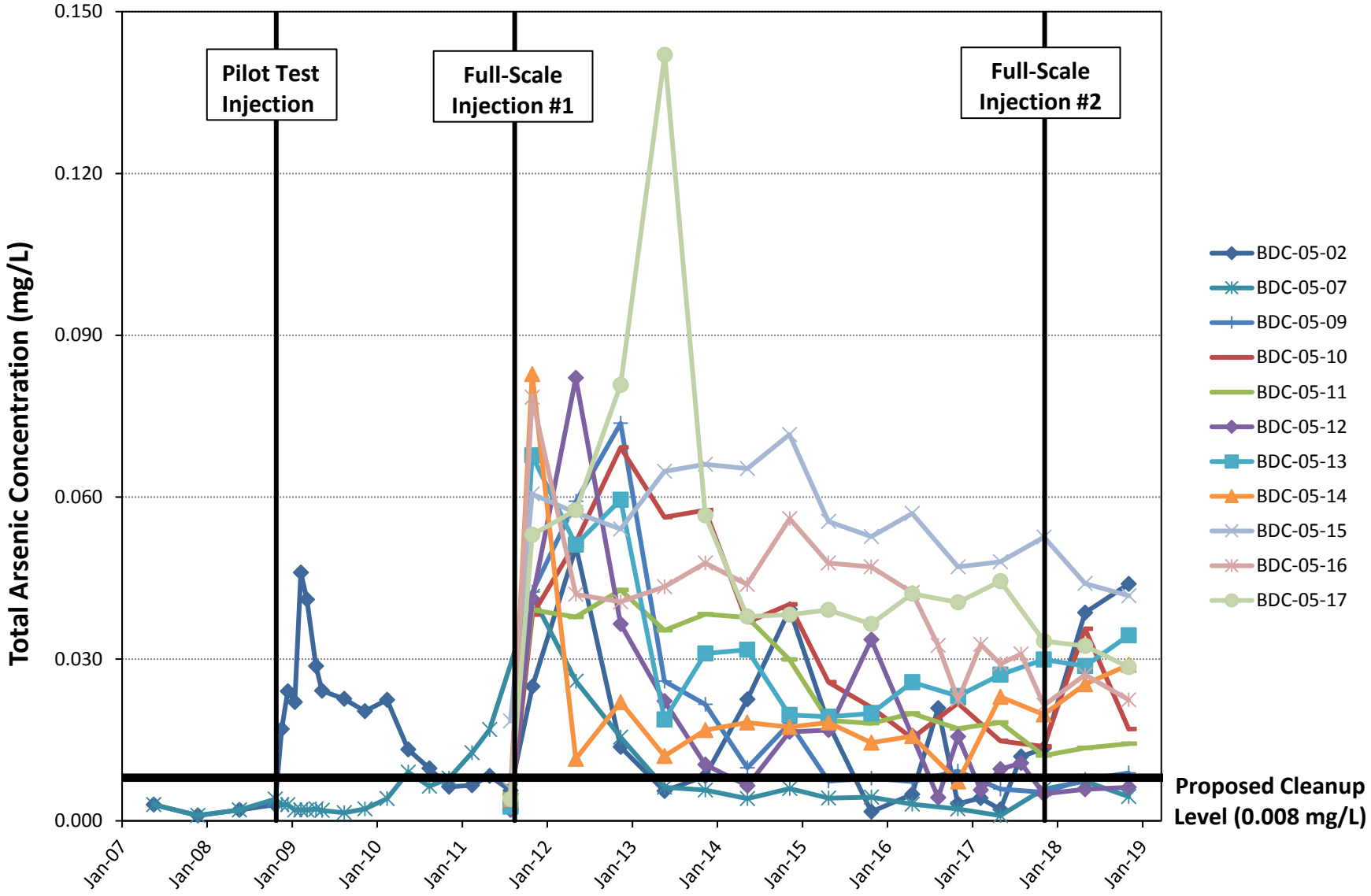
Boeing Developmental Center
Tukwila, Washington

**Total Arsenic – Monitoring Wells**

Figure
F-1

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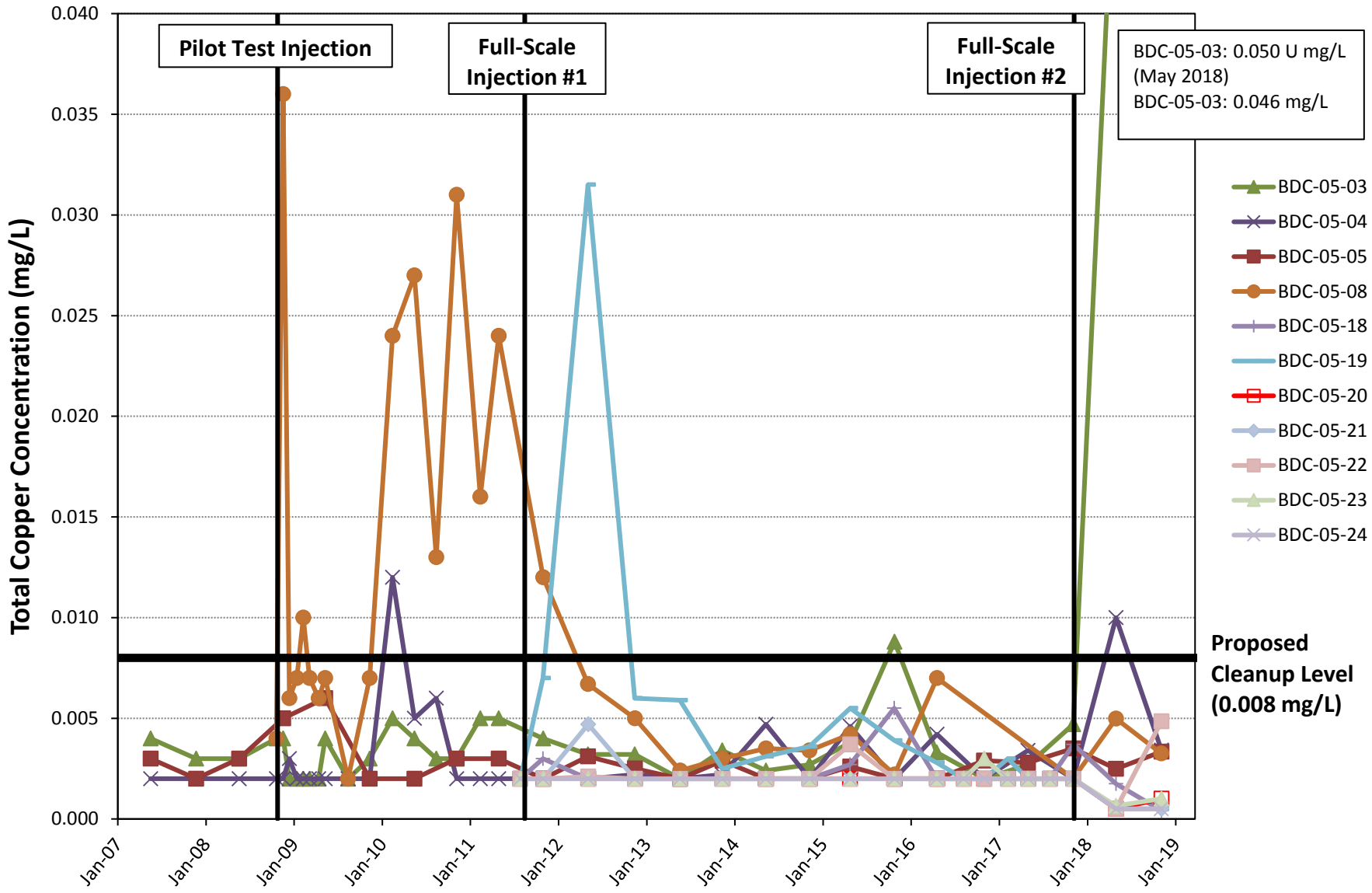
Tukwila, Washington

**Total Arsenic – Injection Wells**

Figure
F-2

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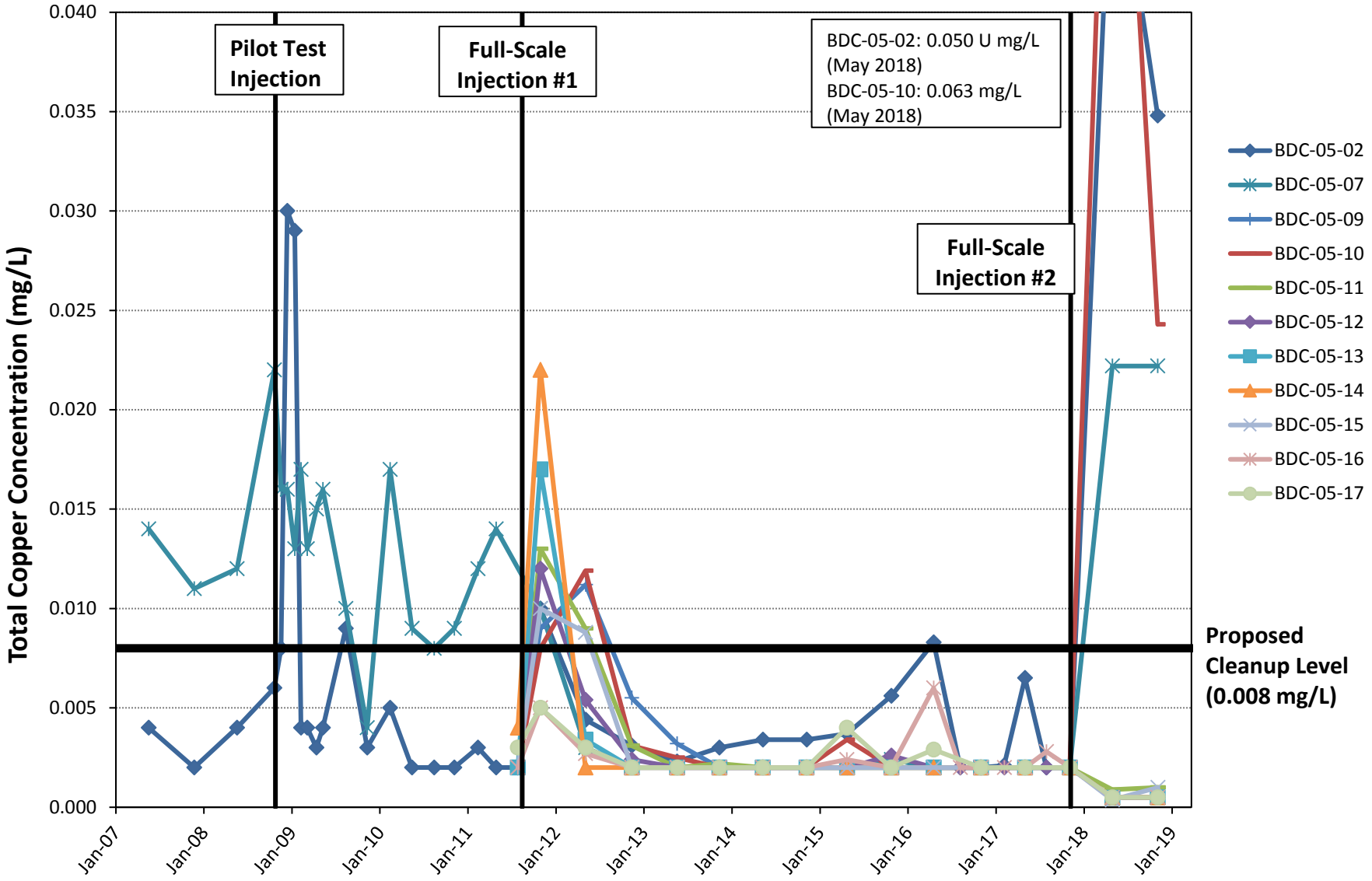
Boeing Developmental Center
Tukwila, Washington

**Total Copper – Monitoring Wells**

Figure
F-3

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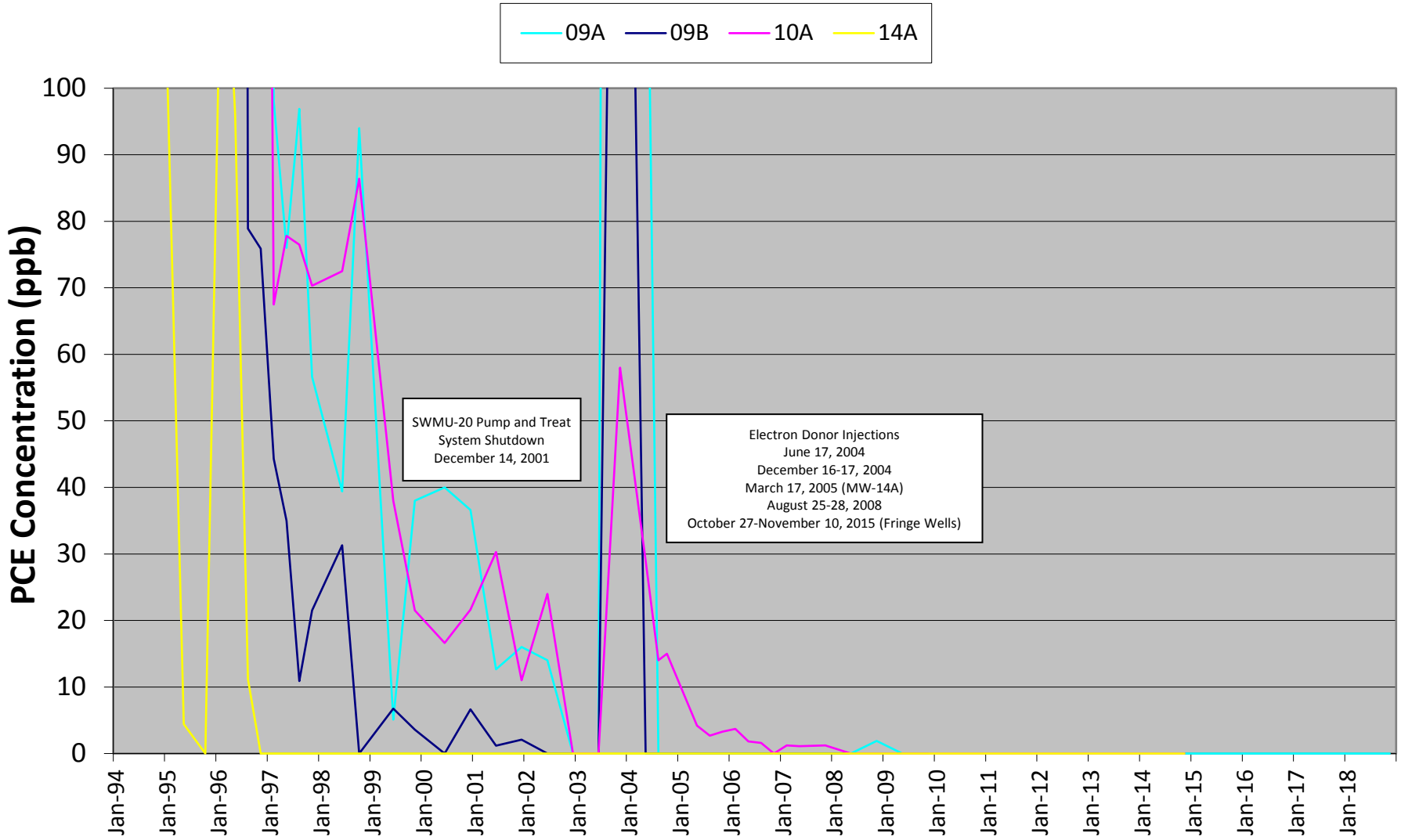
Boeing Developmental Center
Tukwila, Washington

**Total Copper – Injection Wells**

Figure
F-4

# SMWU-20: Concentration Trend Charts

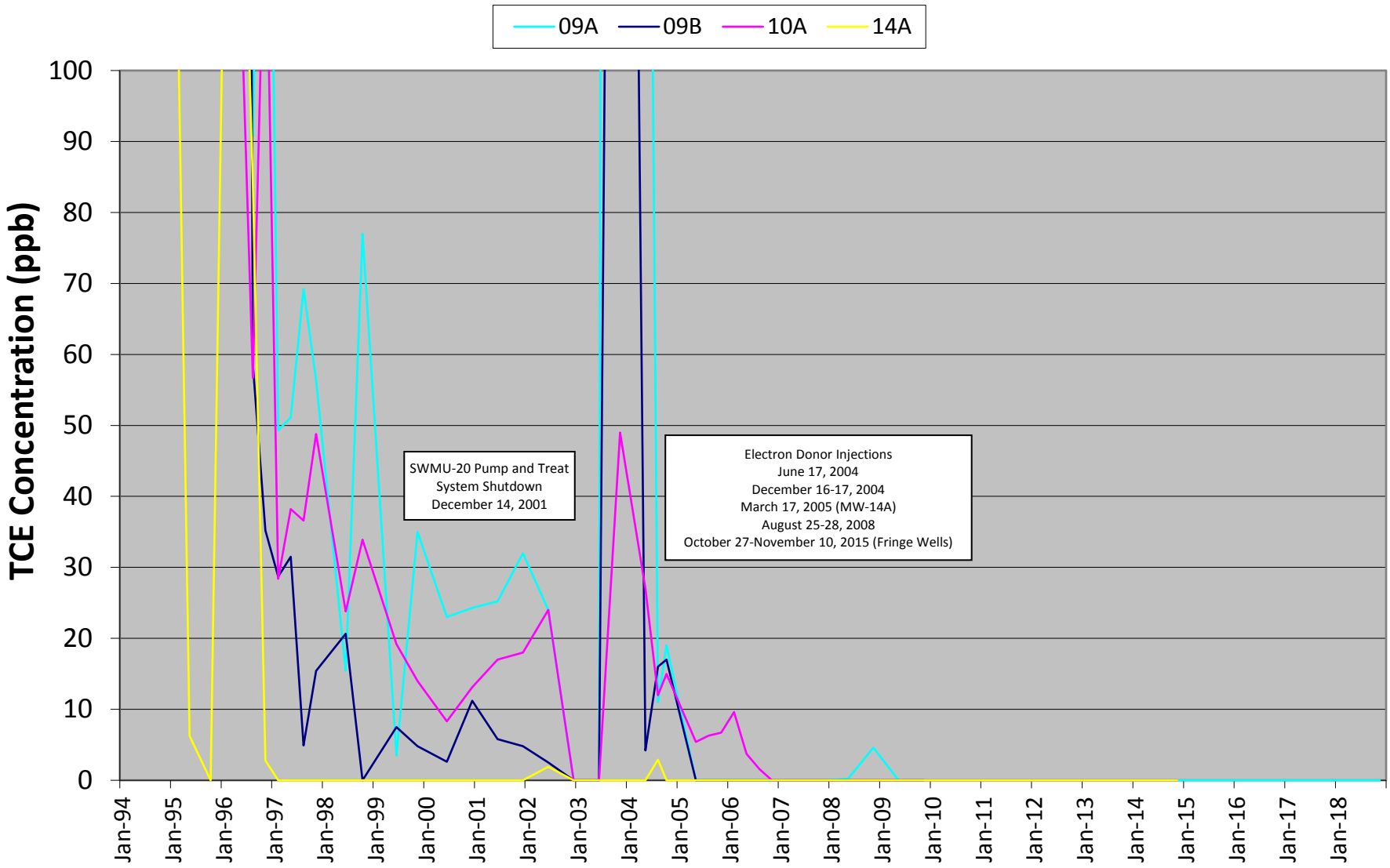



(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 PCE<br>Concentration Trend Chart** | Figure<br>G-1 |

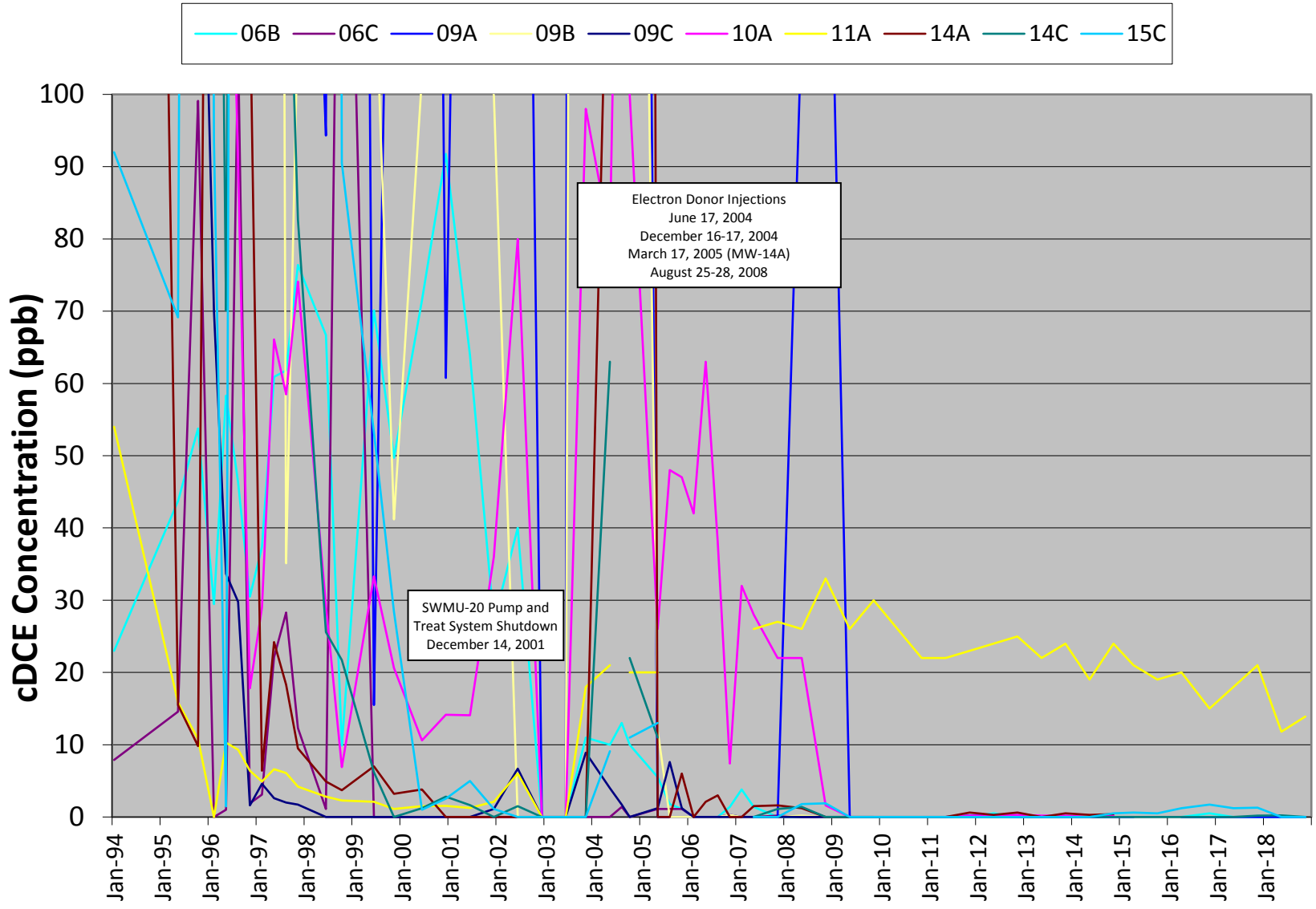



(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 TCE<br>Concentration Trend Chart** | Figure<br>G-2 |




(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 cDCE<br>Concentration Trend Chart** | Figure<br>G-3 |

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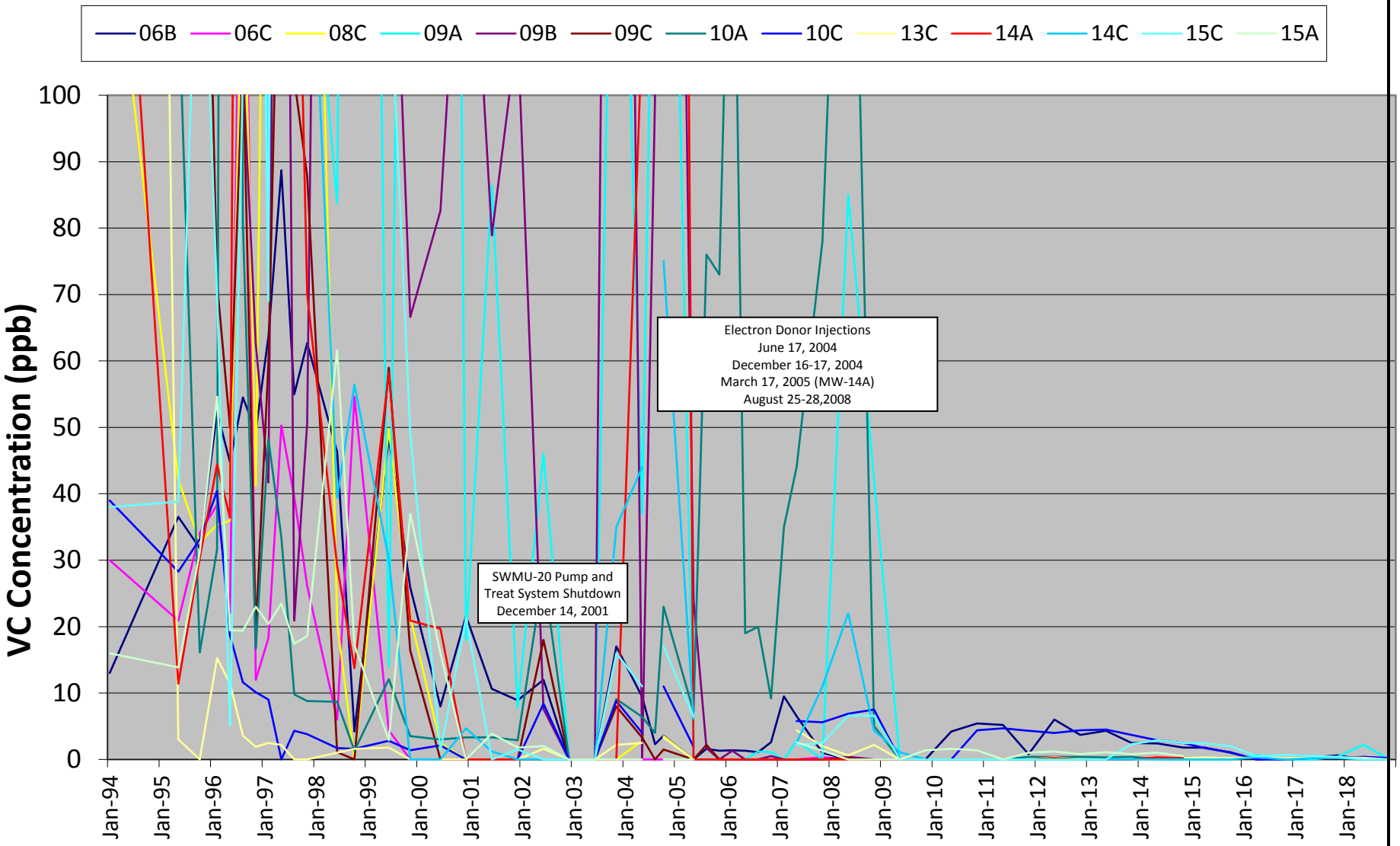


(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

| | | |
|---|---|---|
| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 VC<br>Concentration Trend Chart** | Figure<br>G-4 |

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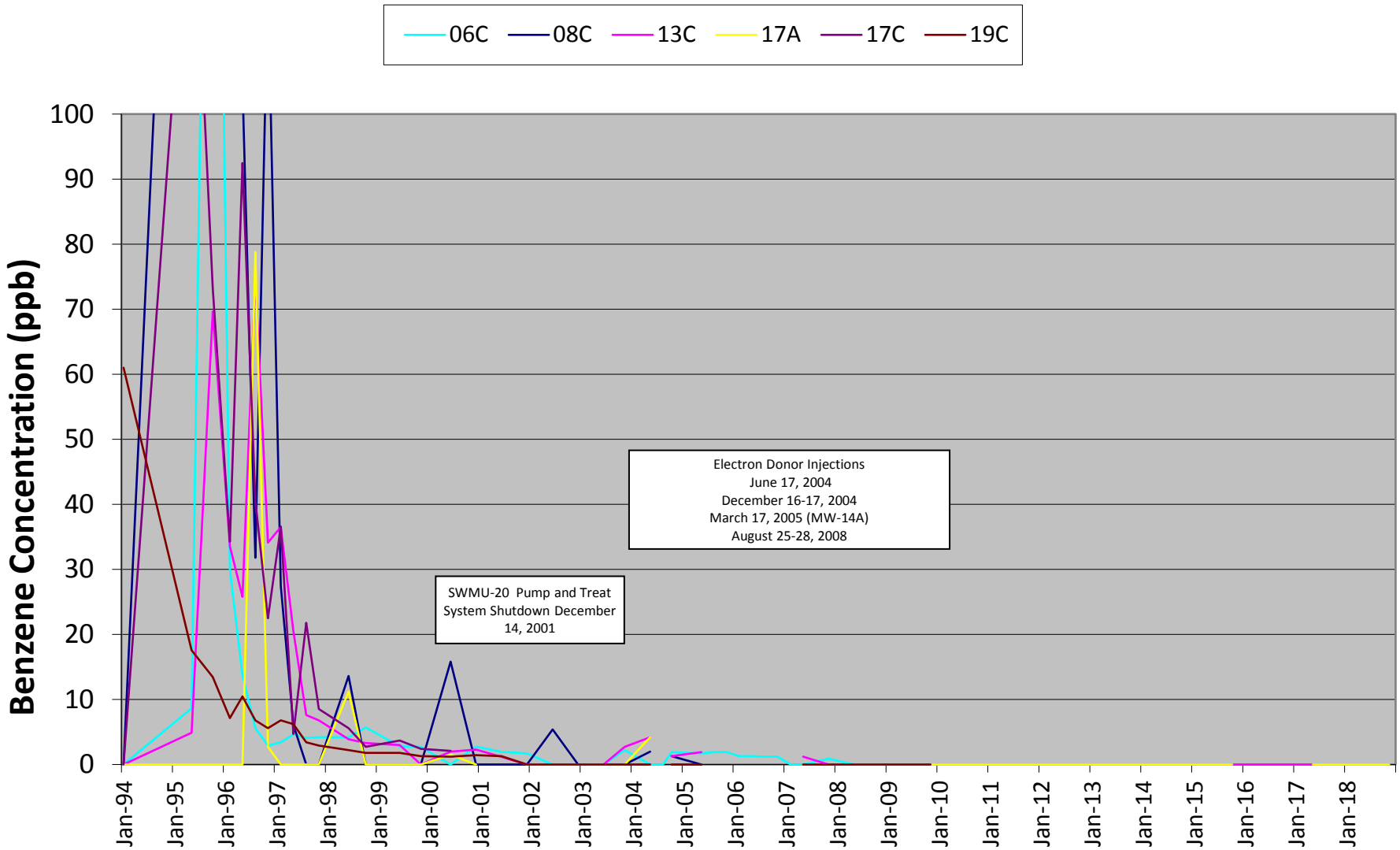


(Wells with PCE Historically Detected over 50 ppb)

January 1994 Through Present

LANDAU ASSOCIATES

| Boeing Developmental Center<br>Tukwila, Washington | **SWMU-20 Benzene Concentration Trend Chart** | Figure<br>G-5 |
|---|---|---|