# 7.0 AREA 1 INTERIM REMEDIAL ACTION

Area 1 comprises 41.9 acres at the north end of the Facility that is owned by Prologis. As part of the property transfer process, an expedited RI and IRA were completed. A brief history of Area 1 activities is provided in this section. The Area 1 RI was presented separately (LAI 2004a, f) and is summarized in Appendix A. Other Area 1 activities included an environmental review (EPI 2005), and indoor air evaluations. Indoor air evaluations conducted at Area 1 are summarized in Sections 10.1.2 and 10.1.3. This section focuses on the results of the IRA.

Area 1 included former Boeing Buildings 17-02, 17-03, 17-05, 17-14, 17-72, 17-85, and 17-22. Boeing sold the Area 1 property to AMB in December 2005. Former Boeing buildings were torn down in 2006 and replaced with a new distribution warehouse. A 2011 merger between AMB and Prologis transferred the ownership of the building to Prologis. Although no longer owned by Boeing, Area 1 remains part of the Facility and the owner, Prologis, remains a party to the Facility permit and Agreed Order for the purposes of corrective action. The location of Area 1, the former buildings, and the new warehouse building are shown on Figure 7-1.

Area 1 includes a number of Column IB SWMUs and AOCs; these include four SWMUs (S-12a, S-12b, S-12c, and S-19) and two AOCs (A-02a and A-08). These SWMUs and AOCs were investigated as part of an expedited Area 1 RI and are discussed in Appendix A. The locations of SWMUs and AOCs and expedited RI borings and wells are shown on Figure 7-2.

Based on work completed to date in 2004, Ecology issued a letter of determination indicating no further action was necessary for all Area 1 SWMUs and AOCs except SWMU S-12b and AOC A-08 (Ecology 2004a). In order to address SWMU S-12b and AOC A-08, Boeing conducted an IRA to reduce VOC concentrations in groundwater. Documentation of the IRA work plan and summaries of the IRA and results were presented in a series of IRA reports (LAI 2004b, c, 2005f, g, 2008a); a summary of the IRA that includes the most recent groundwater monitoring data is provided in Sections 7.1 through 7.3.

## 7.1 S-12b and A-08 Interim Remedial Action

SWMU S-12b (S-12b) was a former TCE degreaser and AOC A-08 (A-08) was a former tank line adjacent to the degreaser. Concentrations of TCE historically detected in groundwater at these locations indicated that S-12b and A-08 were contributing sources to a larger TCE groundwater plume extending beyond Area 1[84], referred to as the Area 1 plume.

At S-12b and A-08, a historical release from the former TCE degreaser resulted in locally elevated groundwater concentrations that constitute the identified source of the Area 1 plume. The highest concentrations occurred in the immediate vicinity of S-12b and extended downgradient to the north

[84] The area including and immediately surrounding S-12b and A-08 is referred to as the Area 1 source area in this report.

and northwest. Monitoring wells for the Area 1 plume are shown on Figure 7-3. Maximum TCE concentrations are shown on Figure 7-4. Vertical water quality profile data at the source area defined a declining trend in VOC concentrations from relatively high concentrations near the water table to less than screening levels at 50 ft bgs. VOC groundwater concentrations are discussed further in Section 7.3.1. Natural attenuation of the plume was documented including limited biodegradation occurring in the immediate vicinity of the former vapor degreaser. The IRA focused on enhancing biodegradation of TCE in the source zone.

The IRA consisted of injecting electron donor amendments (sodium lactate and emulsified vegetable oil) into the subsurface to enhance reductive dechlorination of TCE. The Injection was completed at the Area 1 source area near current wells AGW002R and AGW106R. Nested injection wells were used to deliver donor to the shallow zone and the upper portion of the intermediate zone. Three donor injections were completed utilizing 32 injection wells and an additional monitoring well in July 2004, January 2005, and October 2005. Former injection wells, monitoring wells, and the replacement wells are shown on Figure 7-3.

## 7.2 Groundwater Monitoring

Groundwater monitoring in Area 1 has been ongoing since 1994 as part of Site-wide environmental investigations. As part of the Area 1 IRA, a more comprehensive groundwater monitoring program was completed to document the effectiveness of the remedy.

The Area 1 IRA groundwater monitoring plan had separate phases that corresponded to various periods of Area 1 demolition, construction of the new AMB warehouse, well decommissioning, and well replacement. Phase I consisted of monitoring wells for the progress of the IRA (prior to construction). Monitoring was conducted monthly and quarterly. Phase II consisted of monitoring during construction at Area 1 (only wells that were not decommissioned prior to the start of construction). Phase III of Area 1 groundwater monitoring started in October 2006 after completion of the AMB warehouse building (now Prologis) and re-installation of select Area 1 shallow monitoring wells[85]; wells selected for re-installation had the highest baseline (pre-IRA) VOC concentrations and provided good spatial distribution within the source area. Intermediate wells were not replaced due to groundwater results below screening levels. The Phase III quarterly program continued until 2009 and included sampling of nine wells[86] in the injection (i.e., source) area and immediately downgradient for VOCs and natural attenuation parameters. After 2009, sampling transitioned to semi-annual monitoring and was reduced to five shallow wells for VOCs and natural attenuation

[85] A number of wells in the Phase III program were decommission during Site demolition and then re-installed after the new warehouse building was complete. The original well has a standard Facility designation (AGW055). The replacement well has the same designation with an "R" at the end (AGW055R). When referring to the data from a well that was decommissioned and replaced, the original standard designation (i.e., AGW055) is used to refer to the complete set of data including data from the original and replacement wells.

[86] AGW002R, AGW053R, AGW066, AGW067, AGW106R, AGW110R, AGW112R, AGW125, and AGW126.

parameters consisting of three source area wells (AGW002R, AGW106R, and AGW110R) and two downgradient wells (AGW125 and AGW126).

## 7.3 Effectiveness of Interim Remedial Action

The evaluation of the IRA is based on the monitoring described in Section 7.2. Existing and former Area 1 monitoring well locations are shown on Figure 7-3.

The effectiveness of the IRA and the extent and longevity of treatment has been evaluated based on various parameters. Effectiveness of treatment is primarily evaluated based on the reduction of VOC concentrations in groundwater. Evaluation of the extent and longevity of induced treatment is also based on TOC and aquifer redox conditions, in comparison to baseline conditions.

Although electron donor was injected into both the shallow zone and the upper portion of the intermediate zone, most of the IRA monitoring network was in the shallow zone where the highest concentrations of VOCs occurred. Treatment effects in the intermediate zone were evaluated primarily with wells AGW003 and AGW056 located within and downgradient of the source zone, respectively. VOCs at these wells were below screening levels prior to decommissioning in 2005 and intermediate wells were not re-installed. The IRA effectiveness discussion in this section focuses on the more extensive data set for shallow zone monitoring wells. Table 7-1 summarizes data for three source zone wells and nine nearby downgradient or crossgradient wells; sampling continued through 2015 at most of these wells. Data plots of VOC concentrations versus time through 2009 for all Area 1 wells, including those in the intermediate and deep zones are presented for reference in Appendix O.

### 7.3.1 Volatile Organic Compounds

Decreased concentrations of TCE and the breakdown products cDCE and VC were the primary indicators of IRA effectiveness. Bioremediation resulted in sequential reductive dechlorination of TCE to less chlorinated breakdown products cDCE and VC. As TCE concentrations decreased due to biodegradation, the concentrations of cDCE and VC peaked sequentially then decreased as dechlorination continued. This sequential degradation is discussed further in Section 4.4.3 and is apparent in the VOC time series plots for the source area wells (Figures 7-5 through 7-7). These figures present VOC concentrations with time for the three source area wells (AGW002, AGW106, and AGW110), where the highest concentrations of TCE and breakdown products occurred; monitoring at these wells is ongoing.

#### 7.3.1.1 Trichloroethene

The highest baseline (i.e., pre-injection) TCE concentrations were in the source area and decreased downgradient to the north and northwest. The highest historical concentration of TCE detected in groundwater (5,460 µg/L) was from a borehole sample (17-05-GW-4) (Kennedy/Jenks 1995). A

monitoring well, AGW002, was subsequently installed at this location[87].The highest historical TCE concentration at a monitoring well was 1,433 µg/L at well AGW002 in 1994. Samples from the monitoring well are considered more representative of actual groundwater conditions[88] and, thus, the borehole sample is not represented on figures or in tables. TCE concentrations at AGW002 went from a maximum of 1,433 µg/L in 1994 to 4.6 µg/L in 1996. The large reduction in concentrations over a period of 2 years demonstrates evidence of rapid aquifer flushing, which is consistent with the hydrogeologic conceptual model presented in Section 4. Concentrations greater than 100 µg/L were also detected at nearby monitoring locations AGW106, IW5(S), and ASB0134 (Figure 7-4). Maximum TCE concentrations occurred prior to the initial donor injection in July 2004. Application of donor caused a dramatic decrease in source area TCE concentrations to 1 µg/L or less directly after the first injection in October 2004. In the source area wells which are still monitored (AGW002, AGW106, and AGW110), TCE remains non-detect (at a reporting limit of 0.2 µg/L) more than 10 years after the final injection was completed (October 2005).

#### 7.3.1.2 Cis-1,2-Dichloroethene

The maximum concentration of cDCE follows a similar spatial trend to TCE; concentrations are highest in the source area and decline downgradient. The highest cDCE concentration prior to injection was 320 µg/L at IW5(S). Following injection maximum cDCE concentrations in and directly downgradient of the source area occurred just after the first donor injection in July 2004. CDCE concentrations subsequently declined after the third injection and are currently non-detect or close to the reporting limit at the three source area wells that are still monitored. The timing of maximum cDCE production and subsequent decline is consistent with sequential reductive dechlorination from TCE to VC.

#### 7.3.1.3 Vinyl Chloride

The maximum concentration of VC follows a similar spatial trend to TCE and cDCE; concentrations were highest in the source area and declined downgradient. The highest VC concentration was 49 µg/L at AGW110. A peak in VC concentrations occurred following the second injection and after observed peaks of TCE and cDCE concentrations. This sequential degradation was also apparent at other wells no longer sampled (see AGW107 and AGW108 VOC plots in Appendix O). In source area wells, VC concentrations quickly dissipated as VC further degraded[89]. VC concentrations remain around or less than 0.1 µg/L at the three source area wells still monitored.

Ethane and ethene represent non-toxic end-products resulting from reductive dechlorination of VC. Although significant VC was produced following injection, detections of ethene and ethane were infrequent and were not widespread. It is most likely that VC was further degraded through aerobic or

[87] AGW002 was initially identified as 17-05-EW-01 (Kennedy Jenks 1996c)

[88] The initial borehole sample was collected from a temporary well installed in a hollow-stem auger boring without sand pack, resulting in considerable disturbance of the formation surrounding the temporary well screen.

[89] VC can be further degraded to ethene and ethane under reducing conditions, converted to acetate through anaerobic oxidation, or degraded through aerobic oxidation at the fringes of the treatment zone where naturally aerobic aquifer conditions are present.

anaerobic oxidation, pathways that do not result in formation of ethene or ethane. Aerobic oxidation directly mineralizes VC to carbon dioxide; whereas, anaerobic oxidation converts VC first to acetate, which is further converted to methane and/or carbon dioxide (Bradley and Chapelle 1999a, b, 2000).

#### 7.3.1.4 Total Chlorinated Ethenes

VOC concentrations continued to decrease substantially in the years following the third injection. Figure 7-8 presents time series plots for total chlorinated ethenes averaged from the three highest concentration wells described above (AGW002, AGW106, and AGW110)[90]. On Figure 7-8, the average total chlorinated ethenes concentration decreased by approximately an order of magnitude from pre-injection baseline to just prior to the third injection (16 months). Following the third injection of electron donor, chlorinated ethenes decreased by an additional order of magnitude by about 72 months (4.5 years after the third injection). Average total chlorinated ethenes continued to decrease through the December 2015 sampling event at 136 months since the baseline sampling event (10 years after the third injection). This continued reduction, 10 years from the last injection, is consistent with sustained treatment due to endogenous decay of aquifer bacteria whose population growth was stimulated by the initial period of donor injection. This substantial and long-lived enhancement of natural attenuation following active treatment is a recognized benefit of anaerobic bioremediation (Adamson et al. 2011, Jacob et al. 2010, Sleep et al. 2005). Additional evidence of sustained treatment is described in the following sections.

### 7.3.2 Total Organic Carbon

Dissolved TOC concentrations are an indication of the presence of donor amendment in the aquifer. Electron donor is used by aquifer bacteria as food and facilitates respiration of electron acceptors, including natural acceptors (e.g., TCE and breakdown products cDCE and VC). Prior to donor injection, baseline TOC concentrations were typically less than 2 mg/L. After each donor injection, TOC concentrations spiked in the range of 200 to 1,000 mg/L at source area wells and then declined.

Currently, over 10 years after the third donor injection was completed, TOC still remains above baseline at source area wells AGW002 and AGW110, while TOC has decreased below baseline at well AGW106. This observed long-term persistence of TOC at two of the three source area wells still monitored is consistent with endogenous decay, as discussed above. Persistent TOC at these two wells coincide with continued reduced aquifer conditions, as discussed below. TOC concentration time series plots at the three source area wells are presented on Figures 7-9, 7-10, and 7-11.

[90] A value for total chlorinated ethenes was calculated for each event at each well by dividing the groundwater concentrations of TCE, cDCE, and VC (in µg/L) by their molecular weight. The resulting molar concentration for each compound (in micromoles per liter) was added for a total chlorinated ethenes value at each well for each event. The total chlorinated ethene value for the three wells were averaged for each monitoring event to create the plot in Figure 7-8.

### 7.3.3 Aquifer Oxidation Reduction Conditions

For reductive dechlorination to be effective, aquifer conditions must be anaerobic and reducing. Measures of aquifer redox conditions include DO, ORP, iron (II), sulfate, and methane. When oxygen is depleted in an aquifer, bacteria use the less oxidized electron acceptors in sequential order: nitrate, manganese (IV), iron (III), sulfate, and carbon dioxide. Resulting increases in iron (II), decreases in sulfate, and/or increases in methane are generally considered the most reliable indicators of reduced aquifer redox conditions. TCE and breakdown products present in the aquifer also constitute electron acceptors and degrade under different redox conditions. Because it is relatively oxidized, TCE is reduced to cDCE under mildly reducing (iron-reducing) conditions (Chapelle 1996). However, complete reductive dechlorination of TCE through breakdown products cDCE and VC requires more highly reduced aquifer conditions. CDCE is reduced under sulfate-reducing to methanogenic (i.e., carbon dioxide–reducing, methane producing) conditions (Chapelle 1996, Vogel et al. 1987) and VC is reduced under methanogenic conditions (Ballapragada et al. 1997, Vogel and McCarty 1985).

Prior to the first donor injection (i.e., baseline), the source area aquifer was predominantly aerobic to nitrate reducing, resulting in some cDCE, but not further degradation to VC. Baseline VC was detected at AGW002, but not at other wells. With the exception of AGW002, iron (II) was not detected, indicating that reduction of iron (III) to iron (II) was not occurring. Sulfate concentrations ranged between about 20 mg/L and 50 mg/L, indicating a lack of sulfate reduction. Methane concentrations measured at a limited number of wells were low to non-detect, indicating the absence of substantial methanogenesis.

After the first donor injection in July 2004, the affected portion of the aquifer transitioned to a highly reduced redox condition as indicated by monitoring data at source area wells (e.g., AGW002, AGW106, and AGW110). Iron (II) concentrations increased to a range of 3 to 10 mg/L. Sulfate concentrations decreased to less than 1 mg/L. Methane concentrations increased into the thousands of parts per billion, with a maximum detection of 15,200 µg/L. Sulfate and methane concentrations over time at the three source area wells are presented in Figures 7-9, 7-10, and 7-11.

In the more than 10 years following the third donor injection, aquifer conditions have remained highly reduced at wells AGW002 and AGW110, where TOC remains above background, while conditions have become slightly less reducing at well AGW106 where TOC has been depleted. Although TCE and breakdown products have been fully treated, redox conditions at AGW002 and AGW110 remain highly reducing and conducive to reductive dechlorination. This is evidenced by persisting methane concentrations above background and low sulfate. At AGW106, sulfate has rebounded but is still below baseline and methane has decreased steadily beginning at about 3.5 years after the third injection. Although methane has continued to decrease over time, methane concentrations at AGW106 are still two orders of magnitude above baseline, indicating some methanogenesis is likely still occurring.

## 7.4 Summary and Conclusions of Interim Remedial Action

IRA donor injections were administered three times between July 2004 and October 2005 in the Area 1 source area at S-12b and A-08. Injections occurred to the shallow groundwater zone and upper portion of the intermediate aquifer. The donor injections created sulfate reducing to methanogenic conditions that have persisted more than 10 years post-injection at some locations.

The IRA was highly effective in reducing source area concentrations of TCE and breakdown products. The combination of injected electron donor and the highly reduced aquifer conditions facilitated reductive dechlorination of TCE through cDCE and VC and then ultimately, to carbon dioxide.

Slow declines in VOC concentrations in wells located downgradient (north to northwest) of the source area are expected as aquifer flushing occurs. Declining concentrations are observed at shallow and intermediate zone wells located 150 to 400 ft from the source area (e.g., AGW006, AGW053, AGW055, AGW066, AGW067, AGW072, AGW125, and AGW126).

17-07
17-06
17-04
17-35
17-71
17-70
17-11
17-72
17-234
Former Building 17-05
Prologis
Former Building 17-22
Former Building 17-72
Former Building 17-14
Former Building 17-03
Former Building 17-02
Former Building 17-01
YMCA
Junior Achievement
15th Street SW
UPRR R/W
Perimeter Road
Stormwater Pond
Stormwater Pond
Boeing Property
Area 1 Prologis Property
YMCA Junior Achievement Property

Area Shown
Boeing Auburn Plant Map

**Legend**

17-05 Current Building and Number

Boeing Property Boundary

Adjacent Property Boundary

Former Building

N

0 250 500

Scale in Feet

Base map source: Geomatrix 2003

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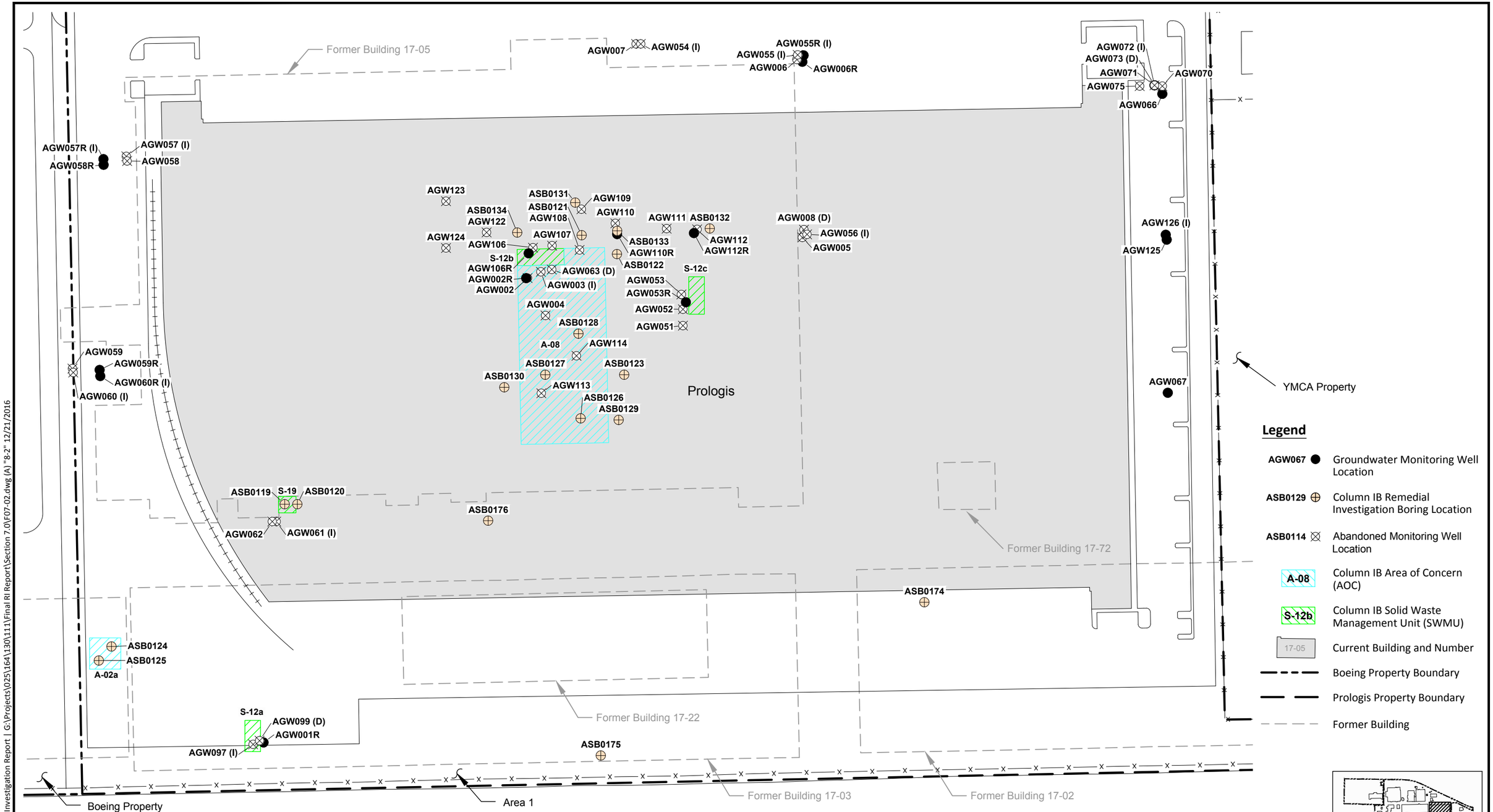
Remedial Investigation
Auburn, Washington

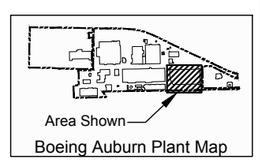
# Area 1 Site Plan

Figure 7-1




## Legend

- AGW067 ● Groundwater Monitoring Well Location
- ASB0129 ⊕ Column IB Remedial Investigation Boring Location
- ASB0114 ⊠ Abandoned Monitoring Well Location
- A-08 Column IB Area of Concern (AOC)
- S-12b Column IB Solid Waste Management Unit (SWMU)
- 17-05 Current Building and Number
- Boeing Property Boundary
- Prologis Property Boundary
- Former Building




## Note

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

N

0 120 240

Scale in Feet

Source: Geomatrix 2003

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| | | |
|---|---|---|
| Boeing Auburn<br>Remedial Investigation<br>Auburn, Washington | **Area 1**<br>**Remedial Investigation** | Figure<br>7-2 |

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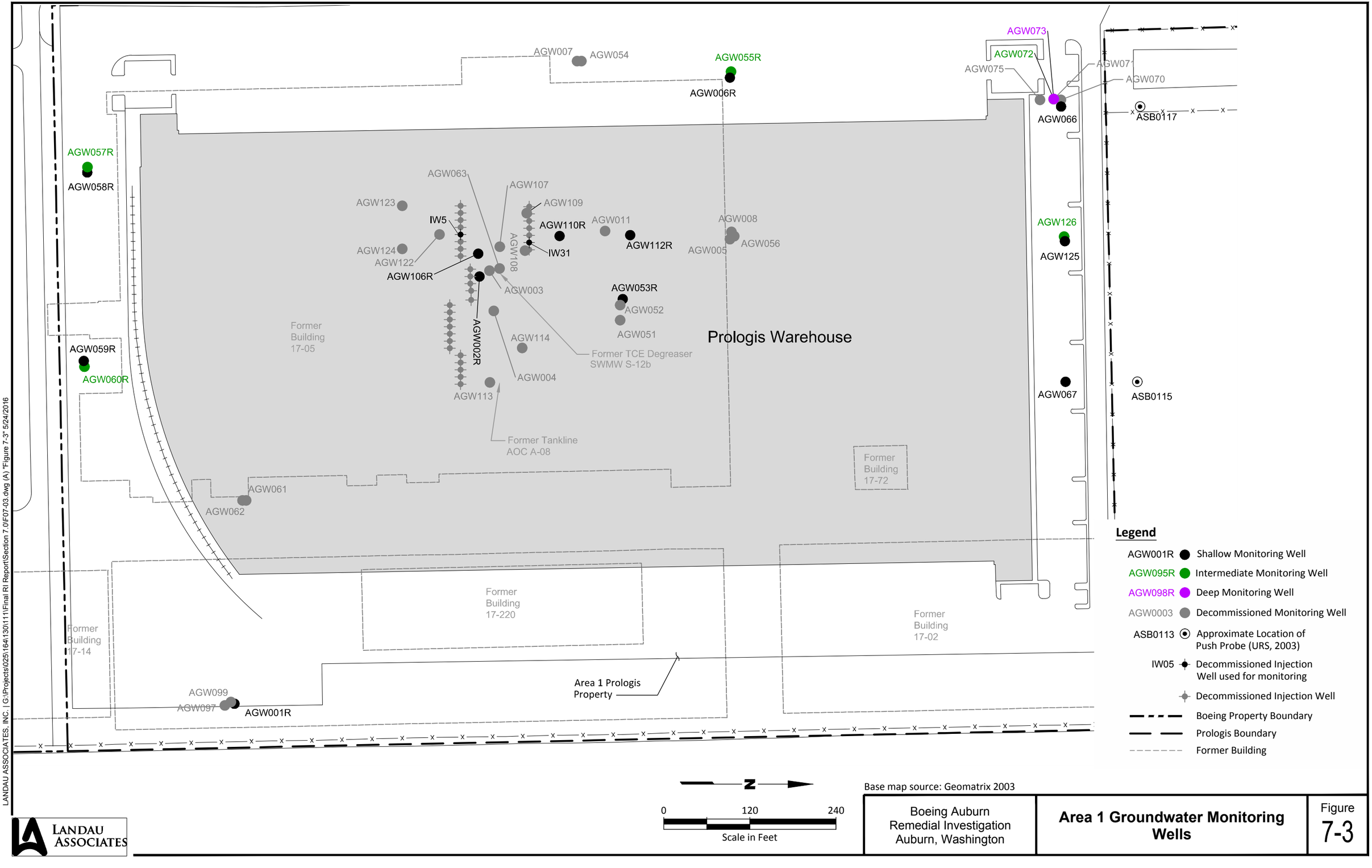


LANDAU ASSOCIATES, INC. | G:\Projects\0251\164\130\111\Final RI Report\Section 7.0\F07-03.dwg (A) "Figure 7-3" 5/24/2016

Base map source: Geomatrix 2003

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Remedial Investigation
Auburn, Washington

**Area 1 Groundwater Monitoring Wells**

Figure
7-3

## Legend

- AGW001R ● — Current Monitoring Well, Shallow Zone (10 to 30 ft BGS) unless otherwise indicated
- AGW005 ⊠ — Abandoned Monitoring Well, Shallow Zone (10 to 30 ft BGS) unless otherwise indicated
- IW5(S) ✦ — Injection Well
- ASB0120 ⊕ — RI Boring
- ASB0115 ⊙ — Approximate Push Probe Locations URS, 2003)
- 5.64 6/28/94 — Maximum Concentration in µg/L and date reported
- ND — Compound Not Detected
- 17-68 — Current Building and Number
- Prologis Property Boundary
- Former Building
- Concentrations greater than or equal to 100 µg/L
- Concentrations between 50 and 99 µg/L
- Concentration between 10 and 49 µg/L
- Concentrations between 5 and 9 µg/L

## Notes

1. Intermediate and deep wells are not shown.
2. Isoconcentration contours are approximate and are not intended to represent the actual groundwater concentration at a specific location.
3. ASB Well TCE Concentrations were collected at the time of drilling.

AGW007 4.88 9/22/94
AGW006R 18.98 3/22/95
AGW066 23 9/1/98
ASB0117 7.7
Former TCE Degreaser SWMU S-12b
AGW109 72 6/16/04
ASB0131 35
ASB0121 90
AGW123 0.9 2/7/05
IW5(S) 150 6/18/04
AGW107 69 8/31/04
IW31(S) 25 6/21/04
ASB0133 22
AGW111 27 9/1/04
AGW122 6.4 2/7/05
ASB0134 230
AGW110R 94 6/17/04
ASB0132 11
AGW112R 5.2 10/6/04
AGW005 6 9/22/94
AGW124 0.7 2/8/05
AGW106R 120 6/17/04
AGW108 6.6 6/16/04
ASB0122 10
AGW125 16 3/13/08
AGW002R 1433 6/27/94
AGW053R 16 3/26/98
AGW052 7.1 12/19/96
AGW004 30.7 6/27/94
AGW051 3.5 2/20/04
ASB0128 19
AGW114 21 9/1/04
ASB0127 38
ASB0123 1.9
ASB0130 1.6
AGW113 1.4 10/6/04
ASB0126 1.6
ASB0129 1.6
AGW067 20 J 12/11/96
ASB0115 2.8
Former Building 17-05
Prologis Warehouse
YMCA
Former Building 17-72
Former Tankline
AOC A-08
ASB0119 2.0
ASB0120 1.6
AGW062 2.5 10/30/96
ASB0176 1.2
Area 1 Prologis Property
ASB0174 2.8
Former Building 17-220
Former Building 17-02
ASB0175 ND

N

0 100 200

Scale in Feet

Base map source: Geometrix 2003

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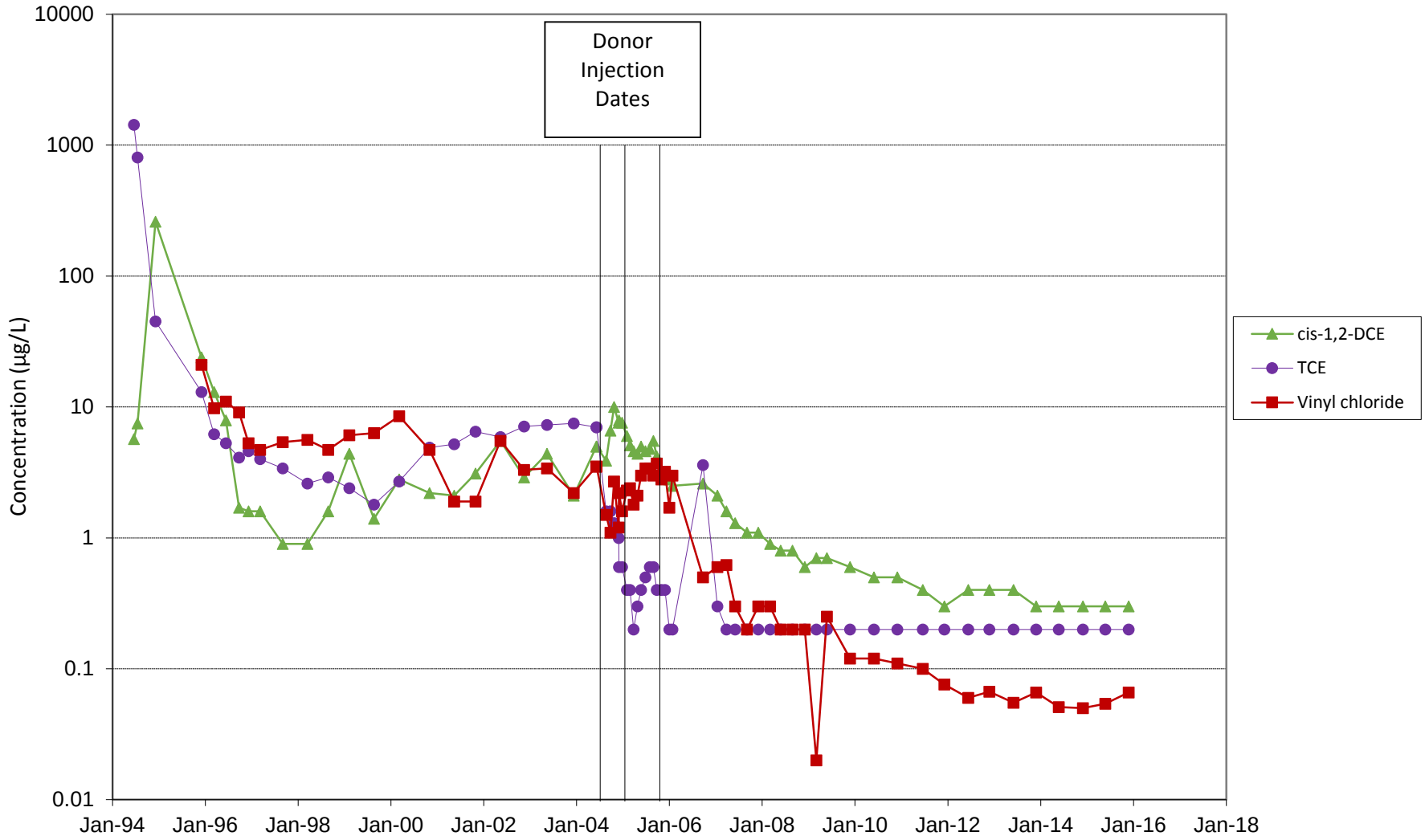
| | | |
|---|---|---|
| Boeing Auburn<br>Remedial Investigation<br>Auburn, Washington | **Area 1 - Source Area<br>Shallow Zone Maximum TCE<br>Groundwater Concentrations** | Figure<br>7-4 |

Boeing\Report | G:\Projects\025\164\130\111\Final RI Report\Section 7.0\F07-04.dwg (A) "Figure 8-7" 5/24/2016




**Notes**

1. Data presented includes both the original well (AGW002) and the replacement well (AGW002R).

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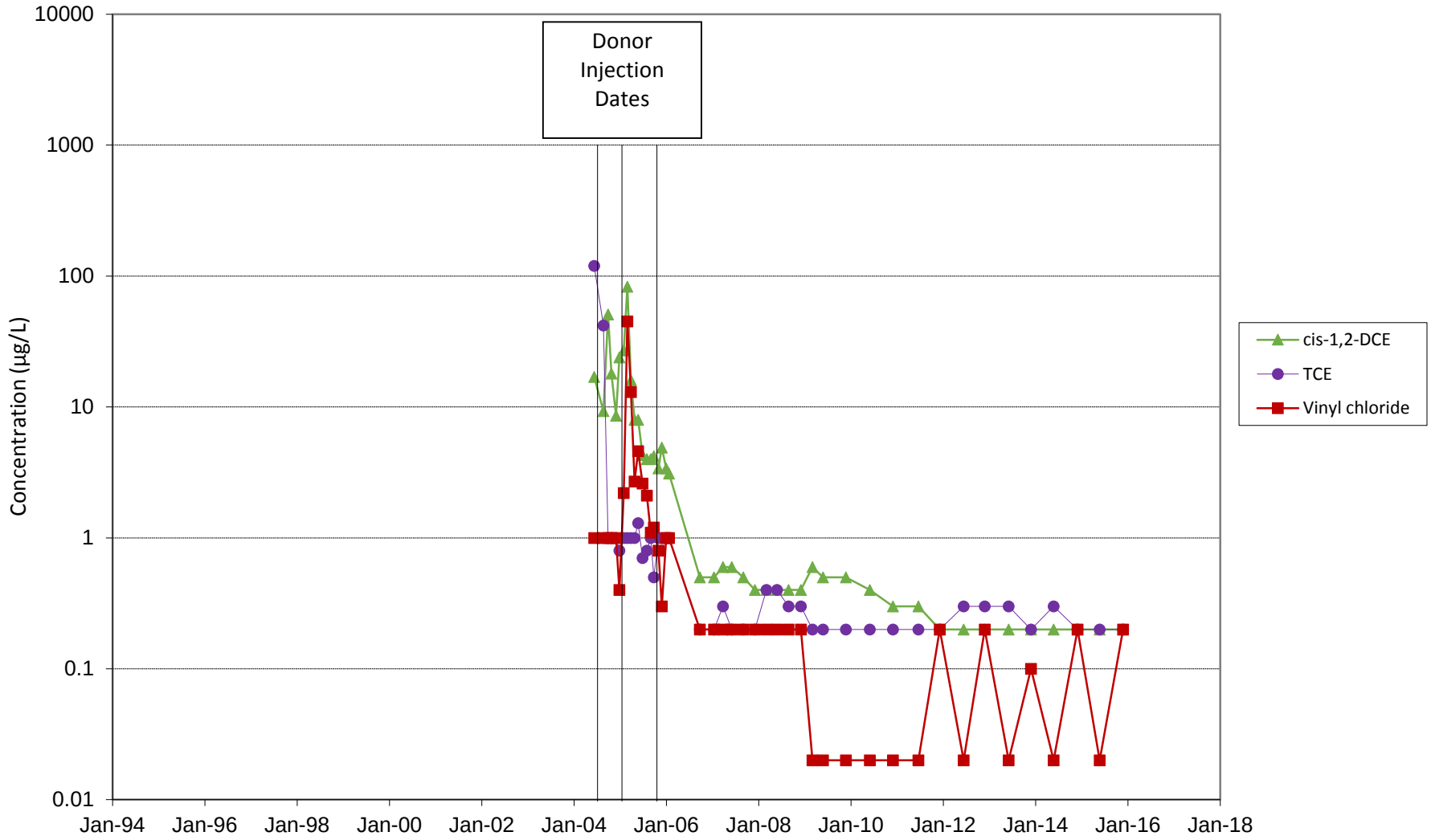
**Volatile Organic Compound Time Series Plot AGW002**

Figure
7-5




**Notes**

1. Data presented includes both the original well (AGW106) and the replacement well (AGW106R).

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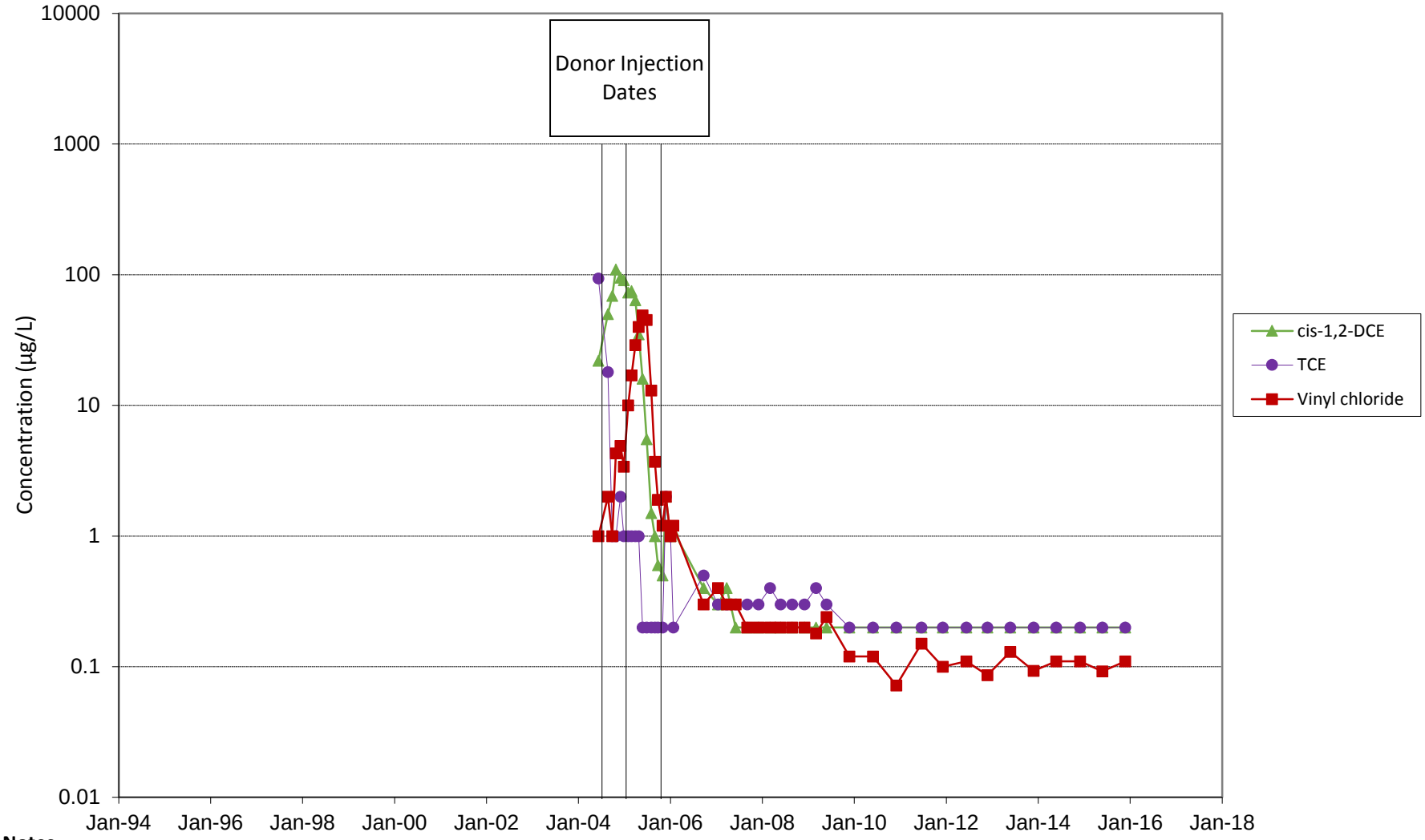
**Volatile Organic Compound Time Series Plot AGW106**

Figure
7-6




**Notes**

1. Data presented includes both the original well (AGW110) and the replacement well (AGW110R).

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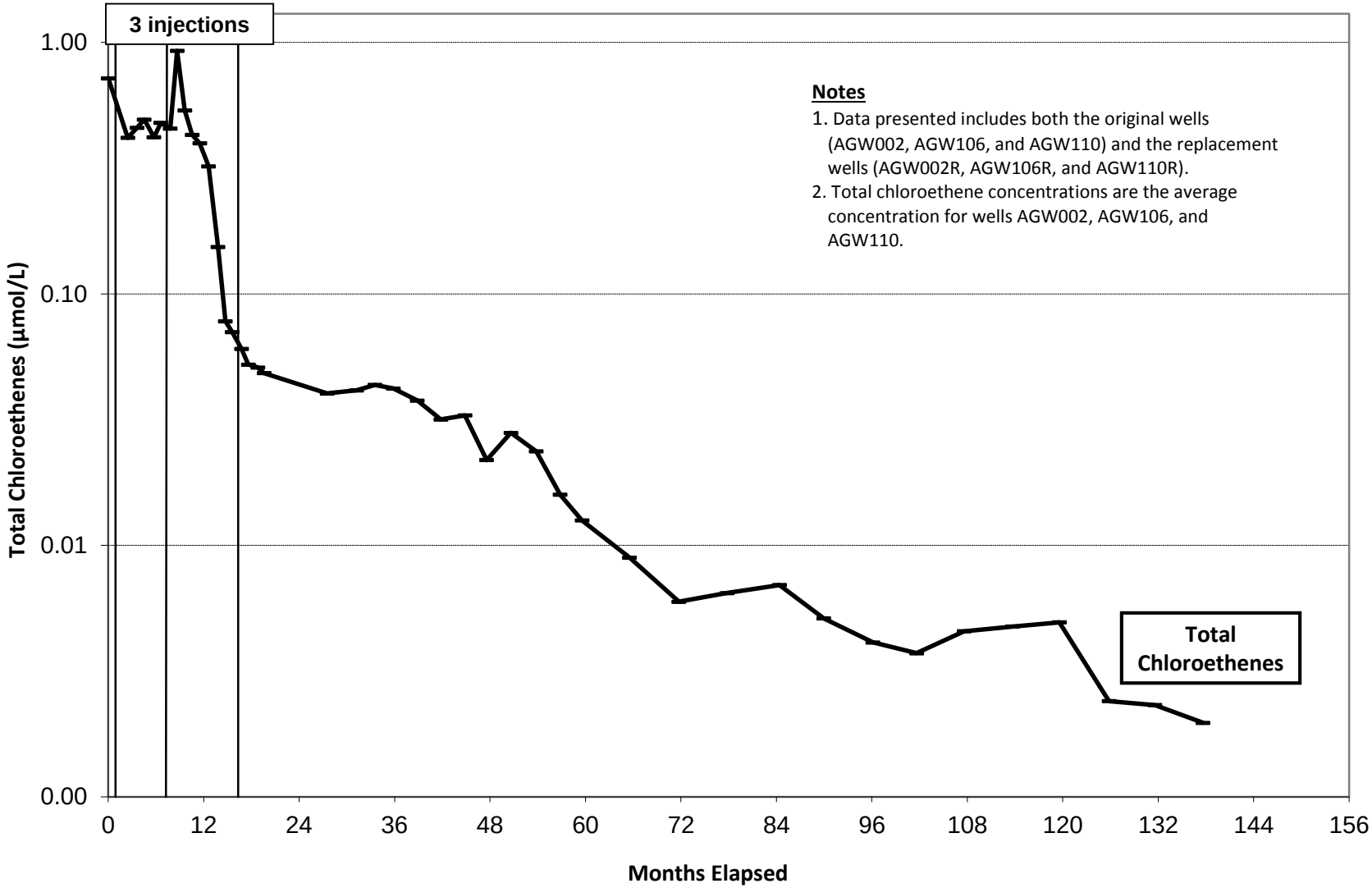
Auburn, Washington

**Volatile Organic Compound Time Series Plot AGW110**

Figure
7-7

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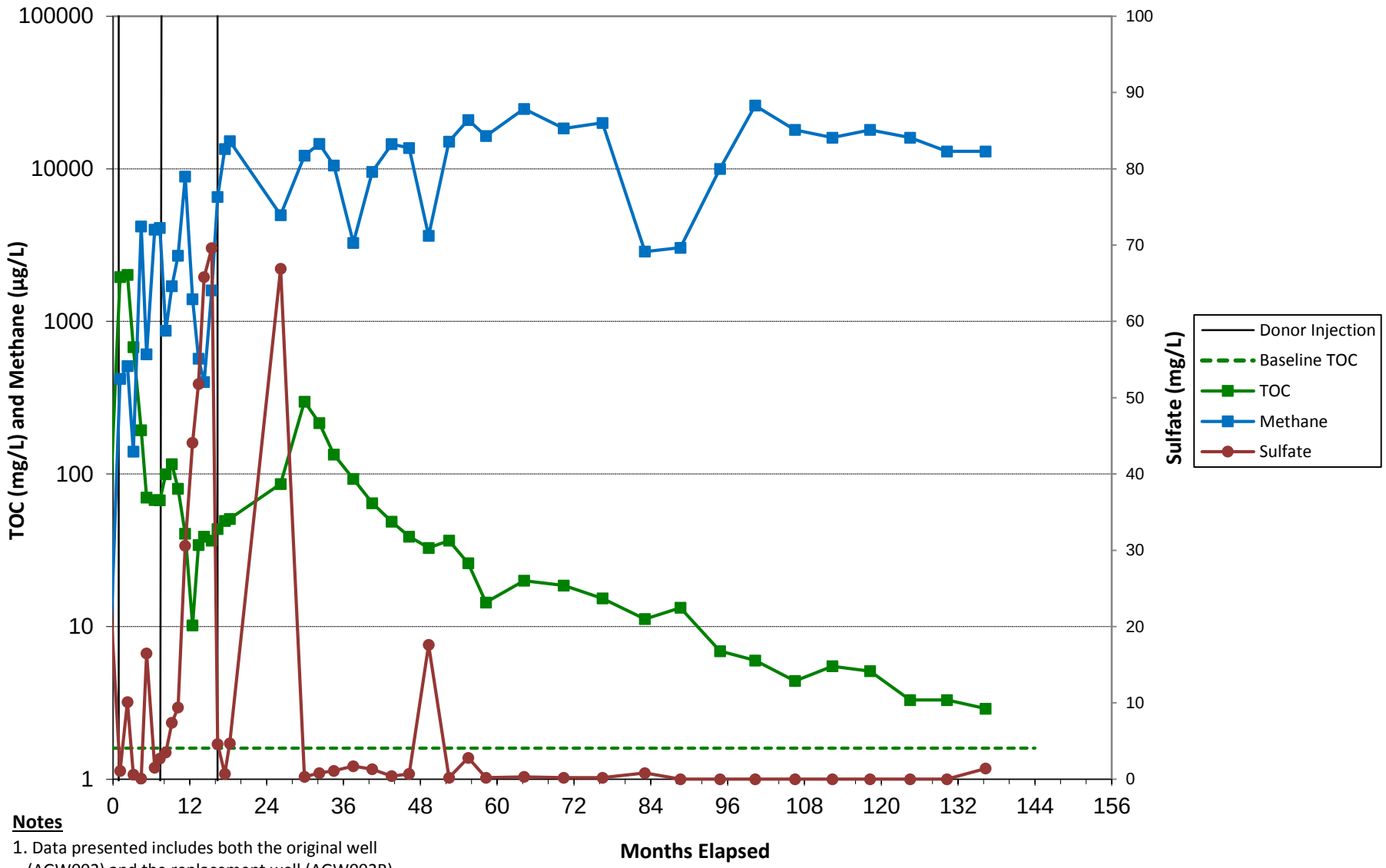
Auburn, Washington

**Total Chloroethene Time Series Plot for AGW002, AGW106, and AGW110**

Figure
7-8




**Notes**

1. Data presented includes both the original well (AGW002) and the replacement well (AGW002R).
2. Natural attenuation parameters presented include total organic carbon (TOC), methane, and sulfate.

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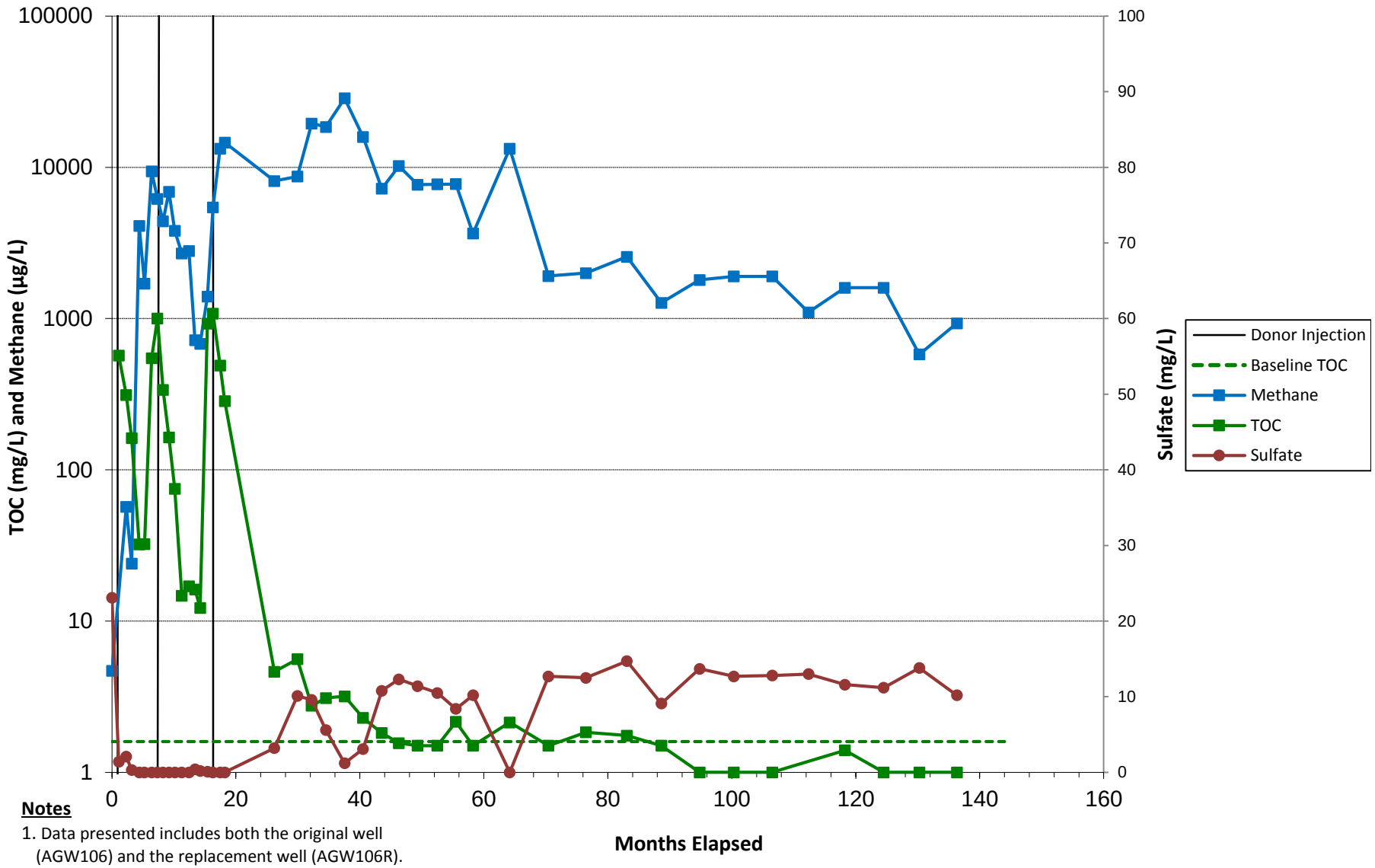
| | | |
|---|---|---|
| Boeing Auburn<br>Remedial Investigation<br>Auburn, Washington | **Natural Attenuation Time Series Plot<br>AGW002** | Figure<br>7-9 |




**Notes**

1. Data presented includes both the original well (AGW106) and the replacement well (AGW106R).
2. Natural attenuation parameters presented include total organic carbon (TOC), methane, and sulfate.

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Boeing Auburn
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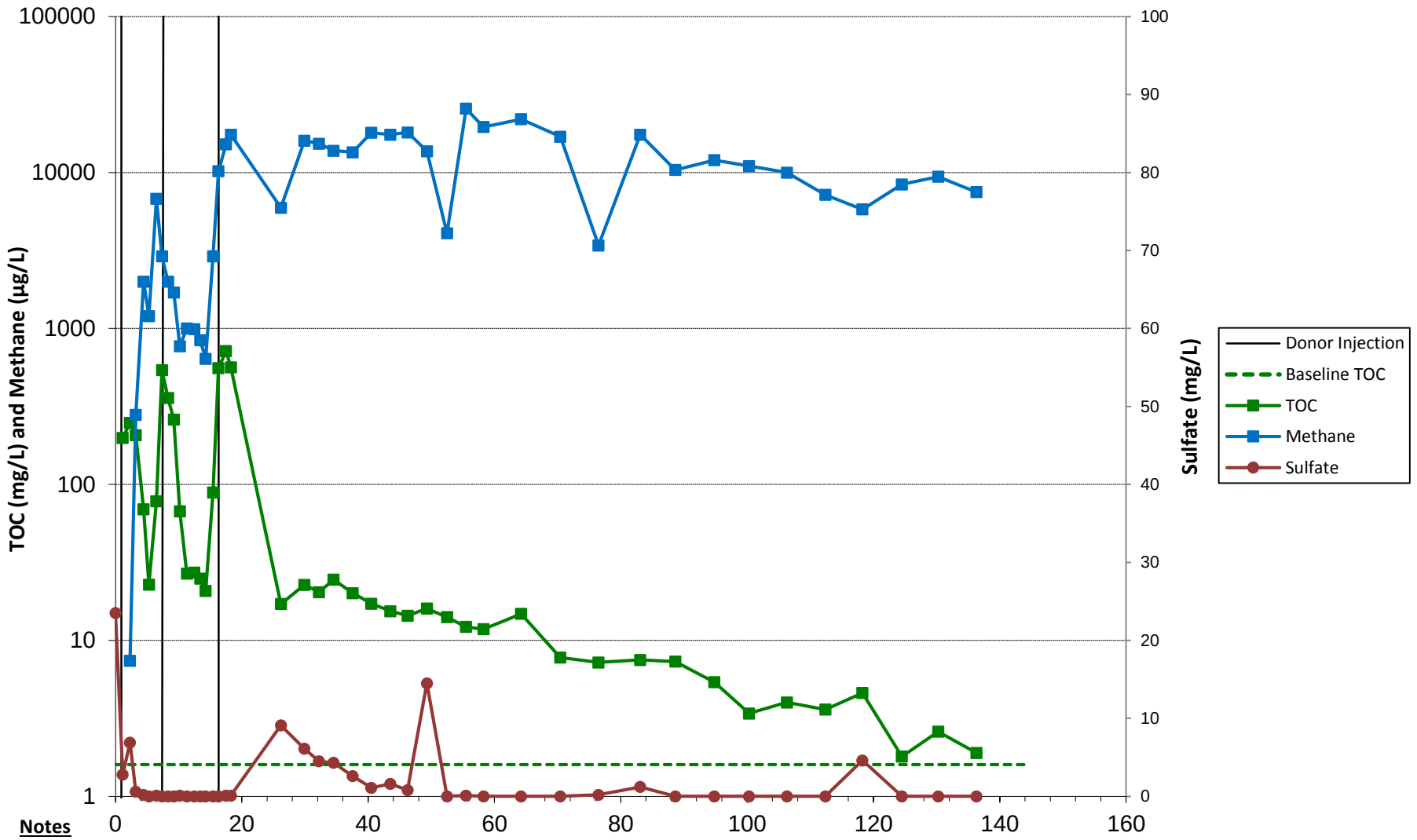
Auburn, Washington

**Natural Attenuation Time Series Plot**
**AGW106**

Figure
7-10




**Notes**

1. Data presented includes both the original well (AGW110) and the replacement well (AGW110R).
2. Natural attenuation parameters presented include total organic carbon (TOC), methane, and sulfate.

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Auburn, Washington

**Natural Attenuation Time Series Plot**
**AGW110**

Figure
7-11

# Table 7-1
## Interim Remedial Action Groundwater Data Summary
## Boeing Auburn Remedial Investigation
## Auburn, Washington

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| **Source Area Wells** | | | | | | | | | | | | | | |
| AGW002 | 2/18/1999 | 0.4 | 2.4 | 4.4 | 6.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/31/1999 | <1 | 1.8 | 1.4 | 6.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/15/2000 | <1 | 2.7 | 2.8 | 8.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/9/2000 | 0.2 | 4.9 | 2.2 | 4.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/22/2001 | 0.3 | 5.2 | 2.1 | 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/6/2001 | 0.3 | 6.5 | 3.1 | 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/21/2002 | 0.2 | 5.9 | 5.5 | 5.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/23/2002 | <0.4 | 7.1 | 2.9 | 3.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/23/2003 | <0.6 | 7.3 | 4.4 | 3.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/19/2003 | 0.3 | 7.5 | 2.1 | 2.2 | -- | -- | -- | 349.0 | 1.0 | 49.0 | -- | 1.8 | -- |
| | 6/17/2004 | <0.6 | 7.0 | 5.0 | 3.5 | <0.5 | <0.5 | 0.00 | 13.0 | 3.8 | 36.8 | 0.6 | 10.1 | 6.4 |
| | 8/30/2004 | <0.6 | 1.6 | 3.9 | 1.5 | <0.5 | <0.5 | 0.35 | -105.0 | 4.2 | 1.1 | 420.0 | 1950.0 | 5.9 |
| | 10/4/2004 | <1.0 | 1.6 | 6.6 | 1.1 | <0.5 | <0.5 | 0.23 | 39.7 | 4.4 | 10.1 | 510.0 | 2020.0 | 6.3 |
| | 11/1/2004 | <1.0 | 1.3 | 10.0 | 2.7 | <0.5 | <0.5 | 1.48 | 36.5 | 5.2 | 0.6 | 140.0 | 678.0 | 6.5 |
| | 12/8/2004 | <1.0 | <1.0 | 7.6 | 1.2 | <0.5 | <0.5 | 5.37 | 21.1 | 3.4 | 0.1 | 4200.0 | 194.0 | 7.0 |
| | 1/3/2005 | <0.2 | 0.6 | 7.6 | 1.6 | <0.5 | <0.5 | 0.00 | 17.3 | 4.2 | 16.5 | 610.0 | 70.0 | 7.1 |
| | 2/10/2005 | <0.2 | 0.4 | 6.0 | 2.3 | <0.5 | <0.5 | 0.00 | 15.7 | 3.5 | 1.5 | 4000.0 | 67.6 | 7.1 |
| | 3/7/2005 | <0.2 | 0.4 | 5.1 | 2.4 | <0.5 | <0.5 | 0.00 | 17.1 | 4.4 | 2.7 | 4100.0 | 67.4 | 6.8 |
| | 4/4/2005 | <0.2 | 0.2 | 4.6 | 1.8 | <0.5 | <0.5 | 0.00 | 17.8 | 3.9 | 3.5 | 870.0 | 99.8 | 6.7 |
| | 5/3/2005 | <0.2 | 0.3 | 4.4 | 2.1 | <0.5 | <0.5 | 0.00 | 8.2 | 3.5 | 7.4 | 1700.0 | 116.0 | 7.2 |
| | 6/1/2005 | <0.2 | 0.4 | 5.0 | 3.0 | <0.5 | <0.5 | 0.00 | 15.0 | 7.0 | 9.4 | 2700.0 | 80.0 | 6.9 |
| | 7/5/2005 | <0.2 | 0.5 | 4.6 | 3.4 | <0.5 | <0.5 | 0.00 | 9.9 | 6.0 | 30.6 | 8900.0 | 40.6 | 6.9 |
| | 8/9/2005 | <0.2 | 0.6 | 4.8 | 3.4 | <0.5 | <0.5 | 0.00 | 17.5 | 4.8 | 44.1 | 1400.0 | 10.2 | 7.1 |
| | 9/7/2005 | <0.2 | 0.6 | 5.5 | 3.0 | <0.5 | <0.5 | 0.0 | 19.3 | 4.4 | 51.8 | 570.0 | 34.2 | 6.9 |
| | 10/3/2005 | <0.2 | 0.4 | 4.2 | 3.7 | <0.5 | <0.5 | 0.0 | -1.4 | 4.5 | 65.8 | 400.0 | 38.8 | 5.1 |
| | 11/8/2005 | <0.2 | 0.4 | 3.3 | 2.8 | <0.5 | <0.5 | 0.1 | 23.9 | 8.6 | 69.6 | 1600.0 | 36.6 | 6.6 |
| | 12/6/2005 | <0.2 | 0.4 | 3.0 | 3.2 | <11.4 | <12.3 | 0.9 | 145.9 | 6.0 | 4.6 | 6550.0 | 43.6 | 6.8 |
| | 1/10/2006 | <0.2 | <0.2 | 2.8 | 1.7 | <11.4 | <12.3 | 0.0 | 23.1 | 6.2 | 0.7 | 13500.0 | 49.2 | 7.2 |
| | 2/2/2006 | <0.2 | 0.2 | 2.5 | 3.0 | <11.4 | <12.3 | 0.0 | 28.5 | 6.6 | 4.7 | 15200.0 | 50.8 | 7.5 |
| AGW002R | 10/2/2006 | <0.2 | 3.6 | 2.6 | 0.5 | <1.1 | <1.2 | 4.8 | -- | 3.5 | 66.9 | 4980.0 | 86.0 | 6.9 |
| | 1/23/2007 | <0.2 | 0.3 | 2.1 | 0.6 | <1.1 | <1.2 | 0.4 | -43.2 | 7.0 | 0.3 | 12200.0 | 298.0 | 6.5 |
| | 4/3/2007 | <0.2 | <0.2 | 1.6 | 0.6 | <1.1 | <1.2 | 0.2 | -82.4 | 3.0 | 0.8 | 14600.0 | 216.0 | 6.7 |
| | 6/12/2007 | <0.2 | <0.2 | 1.3 | 0.3 | <1.1 | <1.2 | 0.1 | -155.3 | 4.0 | 1.1 | 10500.0 | 134.0 | 6.4 |
| | 9/12/2007 | <0.2 | <0.2 | 1.1 | <0.2 | <1.1 | <1.2 | 5.7 | -109.8 | 4.6 | 1.7 | 3270.0 | 92.8 | 6.7 |
| | 12/11/2007 | <0.2 | <0.2 | 1.1 | 0.3 | <1.1 | <1.2 | 0.0 | -157.0 | 5.0 | 1.3 | 9560.0 | 64.4 | 6.7 |
| | 3/12/2008 | <0.2 | <0.2 | 0.9 | 0.3 | <1.1 | <1.2 | 1.9 | -156.2 | 3.6 | 0.4 | 14500.0 | 48.7 | 6.5 |
| | 6/3/2008 | < 0.2 | < 0.2 | 0.8 | 0.2 | <1.1 | <1.2 | 1.3 | -454.3 | 3.2 | 0.7 | 13700.0 | 38.9 | 6.5 |
| | 9/4/2008 | <0.2 | <0.2 | 0.8 | <0.2 | <1.1 | <1.2 | 4.6 | -37.5 | 3.6 | 17.6 | 3640.0 | 32.8 | 6.5 |
| | 12/10/2008 | <0.2 | <0.2 | 0.6 | <0.2 | <1.1 | <1.2 | 1.2 | -144.8 | 3.4 | 0.2 | 15100.0 | 36.6 | 6.4 |
| | 3/11/2009 | <0.2 | <0.2 | 0.7 | <0.020 | <1.1 | <1.2 | 0.0 | -157.2 | 3.8 | 2.8 | 20900.0 | 26.0 | 6.6 |
| | 6/3/2009 | <0.2 | <0.2 | 0.7 | 0.3 | <1.1 | <1.2 | 0.2 | -142.2 | 5.8 | 0.2 | 16400.0 | 14.4 | 6.4 |
| | 12/1/2009 | <0.020 | <0.2 | 0.6 | 0.1 | <1.1 | <1.2 | 1.8 | -78.6 | 1.9 | 0.3 | 24700.0 | 20.0 | 7.6 |
| | 6/8/2010 | <0.02 | <0.2 | 0.5 | 0.12 | <1.1 | <1.2 | 0.7 | -95.9 | 4.0 | 0.2 | 18400.0 | 18.6 | 6.4 |
| | 12/9/2010 | <0.02 | <0.2 | 0.5 | 0.11 | <1.1 | <1.2 | 1.7 | 22.9 | 3.8 | 0.2 | 20000.0 | 15.3 | 6.9 |
| | 6/28/2011 | <0.02 | <0.2 | 0.4 | 0.1 | <1.1 | <1.2 | 0.29 | -105.8 | 2.8 | 0.8 | 2870.0 | 11.2 | 6.23 |
| | 12/14/2011 | <0.02 | <0.2 | 0.3 | 0.076 | <1.1 | <1.2 | 0.11 | -24.1 | 1.8 | <0.1 | 3040.0 | 13.3 | 6.55 |
| | 6/19/2012 | <0.027 | <0.2 | 0.4 | 0.06 | <5.0 | <5.0 | 0.27 | -52.2 | 6 | <1.0 | 10000.0 | 6.9 | 6.26 |
| | 12/3/2012 | <0.02 | <0.2 | 0.4 | 0.067 | <1.0 | <5.0 | 1.42 | -65 | 6.5 | <1.0 | 26000.0 | 6.0 | 5.93 |
| | 6/10/2013 | <0.02 | <0.2 | 0.4 | 0.055 | <1.0 | <2.0 | 0.46 | 72.3 | 5 | <1.0 | 18000.0 | 4.4 | 6.62 |
| | 12/5/2013 | <0.02 | <0.2 | 0.3 | 0.066 | <5 | <5 | 1.91 | 132.2 | 2.2 | <1 | 16000.0 | 5.5 | 6.68 |

**Table 7-1**
**Interim Remedial Action Groundwater Data Summary**
**Boeing Auburn Remedial Investigation**
**Auburn, Washington**

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 6/2/2014 | <0.2 | <0.2 | 0.3 | 0.051 | <1.0 | <1.0 | 1.17 | -56.38 | 5.2 | <1.0 | 18000.0 | 5.1 | 6.39 |
| | 12/9/2014 | <0.2 | <0.2 | 0.3 | 0.050 | <5.0 | <5.0 | 0.93 | -84.9 | 5 | <1.0 | 16000.0 | 3.3 | 6.44 |
| | 6/2/2015 | <0.2 | <0.2 | 0.3 | 0.054 | <5.0 | <5.0 | -- | -98.0 | 2.3 | <1.0 | 13000.0 | 3.3 | 6.06 |
| | 12/3/2015 | <0.2 | <0.2 | 0.3 | 0.066 | <1.0 | <1.0 | 0.41 | -95.4 | 2.0 | 1.4 | 13000.0 | 2.9 | 6.50 |
| AGW106 | 6/17/2004 | <1.0 | 120 | 17 | <1.0 | <0.5 | <0.5 | 0.64 | 28.3 | 0.0 | 23.1 | 4.7 | <1.50 | 6.10 |
| | 8/30/2004 | <1.0 | 42 | 9.3 | <1.0 | <0.5 | <0.5 | 0.60 | -71 | 4.4 | 1.4 | <0.5 | 570 | 6.28 |
| | 10/5/2004 | <1.0 | <1.0 | 51 | <1.0 | <0.5 | <0.5 | 0.00 | 29.4 | 5.4 | 2.1 | 57 | 312 | 6.53 |
| | 11/1/2004 | <1.0 | <1.0 | 18 | <1.0 | <0.5 | <0.5 | 0.00 | 22.3 | 5.0 | 0.3 | 24 | 162 | 6.70 |
| | 12/8/2004 | <1.0 | <1.0 | 8.6 | <1.0 | <0.5 | <0.5 | 1.91 | 19.9 | 3.6 | <0.1 | 4100 | 32.2 | 6.93 |
| | 1/3/2005 | <0.4 | 0.8 | 24 | <0.4 | <0.5 | <0.5 | 0.00 | 20.6 | 4.6 | <0.2 | 1700 | 32.3 | 6.84 |
| | 2/7/2005 | <1.0 | <1.0 | 27 | 2.2 | <0.5 | <0.5 | 0.00 | 37.5 | 4.2 | <0.5 | 9400 | 548 | 6.68 |
| | 3/7/2005 | <1.0 | <1.0 | 83 | 45 | <0.5 | <0.5 | 0.00 | 38.7 | 5.2 | <0.5 | 6200 | 1000 | 6.44 |
| | 4/4/2005 | <1.0 | <1.0 | 16 | 13 | <0.5 | <0.5 | 0.00 | 32.2 | 3.6 | <0.1 | 4400 | 338 | 6.50 |
| | 5/3/2005 | <1.0 | <1.0 | 8.0 | 2.7 | <0.5 | <0.5 | 0.00 | 33.8 | 4.9 | <0.1 | 6900 | 164 | 6.88 |
| | 6/1/2005 | <1.0 | 1.3 | 8.0 | 4.6 | <0.5 | <0.5 | 0.00 | 33.8 | 7.2 | <0.1 | 3800 | 74.8 | 6.52 |
| | 7/5/2005 | <0.2 | 0.7 | 4.3 | 2.6 | <0.5 | <0.5 | 0.00 | 30.4 | 5.6 | <0.1 | 2700 | 14.7 | 6.46 |
| | 8/9/2005 | <0.2 | 0.8 | 4.0 | 2.1 | <0.5 | <0.5 | 0.00 | 30.5 | 5.9 | <1.0 | 2800 | 17.0 | 7.73 |
| | 9/8/2005 | <0.2 | 1.0 | 4.0 | 1.1 | <0.5 | <0.5 | 0.00 | 47.8 | 6.8 | 0.4 | 720 | 16.2 | 5.80 |
| | 10/3/2005 | <0.2 | 0.5 | 4.2 | 1.2 | <0.5 | <0.5 | 0.29 | 20.2 | 4.0 | 0.2 | 680 | 12.2 | 4.86 |
| | 11/8/2005 | <0.2 | 1.0 | 3.4 | 0.8 | <0.5 | <0.5 | 0.29 | 46.4 | 3.4 | 0.1 | 1400 | 925 | 6.31 |
| | 12/5/2005 | <0.2 | 1.0 | 4.9 | 0.3 | <11.4 | <12.3 | -- | 300 | 4.0 | <0.1 | 5430 | 1080 | 6.23 |
| | 1/9/2006 | <0.2 | 0.5 | 5.0 | 0.6 | <11.4 | <12.3 | 0.29 | 41.3 | 10+ | <0.1 | 13300 | 490 | 6.69 |
| | 2/1/2006 | <1.0 | <1.0 | 3.1 | <1.0 | <11.4 | <12.3 | 0.00 | 50.0 | 10.0 | <0.5 | 14600 | 285 | 6.89 |
| AGW106R | 10/2/2006 | <0.2 | <0.2 | 0.5 | <0.2 | <1.1 | <1.2 | 6.17 | -- | 1.5 | 3.2 | 8120 | 4.63 | 6.12 |
| | 1/23/2007 | <0.2 | 0.2 | 0.5 | <0.2 | <1.1 | <1.2 | 0.77 | -8.7 | 7.3 | 10.1 | 8690 | 5.60 | 6.10 |
| | 4/3/2007 | <0.2 | 0.3 | 0.6 | 0.046 | <1.1 | <1.2 | 0.35 | -24.2 | 4.2 | 9.6 | 19500 | 2.76 | 6.23 |
| | 6/12/2007 | <0.2 | 0.2 | 0.6 | <0.2 | <1.1 | <1.2 | 0.48 | -401.6 | 6.1 | 5.6 | 18500 | 3.10 | 5.99 |
| | 9/12/2007 | <0.2 | <0.2 | 0.5 | <0.2 | <1.1 | <1.2 | 0.45 | -414.9 | 6.8 | 1.2 | 28600 | 3.18 | 5.96 |
| | 12/11/2007 | <0.2 | 0.2 | 0.4 | <0.2 | <1.1 | <1.2 | 3.16 | -164.8 | 3.8 | 3.1 | 15900 | 2.29 | 6.10 |
| | 3/12/2008 | <0.2 | 0.4 | 0.4 | <0.2 | <1.1 | <1.2 | 0.01 | -241.6 | -- | 10.8 | 7220 | 1.82 | 6.49 |
| | 6/4/2008 | < 0.2 | 0.4 | 0.4 | < 0.2 | <1.1 | <1.2 | -- | -290.6 | 2.4 | 12.3 | 10200 | 1.56 | 6.70 |
| | 9/4/2008 | <0.2 | 0.3 | 0.4 | <0.2 | <1.1 | <1.2 | 0.02 | -246.2 | 4.2 | 11.4 | 7680 | <1.5 | 6.33 |
| | 12/10/2008 | <0.2 | 0.3 | 0.4 | <0.2 | <1.1 | <1.2 | 0.24 | -59.9 | 4.0 | 10.5 | 7720 | <1.5 | 6.30 |
| | 3/11/2009 | <0.2 | <0.2 | 0.6 | <0.020 | <1.1 | <1.2 | 0.04 | -171.2 | 4.2 | 8.4 | 7760 | 2.2 | 6.52 |
| | 6/3/2009 | <0.2 | <0.2 | 0.5 | <0.020 | <1.1 | <1.2 | 1.09 | -219.2 | 4.4 | 10.2 | 3650 | <1.5 | 6.52 |
| | 11/30/2009 | <0.2 | 0.5 | 5.0 | 0.6 | <11.4 | <12.3 | 0.29 | 41.3 | 10+ | <0.1 | 13300 | 2.1 | 6.69 |
| | 6/8/2010 | <0.02 | <0.2 | 0.4 | <0.02 | <1.1 | <1.2 | 0.89 | -33.9 | 3.8 | 12.7 | 1910 | <1.5 | 7.67 |
| | 12/9/2010 | <0.02 | 0.2 | 0.3 | <0.02 | <1.1 | <1.2 | 1.70 | 22.87 | 3.8 | 12.5 | 2000 | 1.8 | 6.90 |
| | 6/28/2011 | <0.02 | 0.2 | 0.3 | <0.02 | <1.1 | <1.2 | 0.42 | -51 | 4 | 14.7 | 2560 | 1.8 | 6.45 |
| | 12/14/2011 | <0.2 | <0.2 | 0.2 | <0.2 | <1.1 | <1.2 | 0.43 | 30.2 | 2 | 9.1 | 1270 | <1.5 | 6.61 |
| | 6/19/2012 | <0.02 | 0.3 | 0.2 | <0.02 | <5.0 | <5.0 | 0.24 | -5.3 | 4 | 13.7 | 1800 | <1.0 | 6.34 |
| | 12/3/2012 | <0.2 | 0.3 | <0.2 | <0.2 | <1.0 | <1.0 | 1.43 | 44.6 | 4.8 | 12.7 | 1900 | <1.0 | 6.17 |
| | 6/10/2013 | <0.02 | 0.3 | <0.2 | <0.02 | <1.0 | <1.0 | 0.29 | -1.5 | 4 | 12.8 | 1900 | <1.0 | 6.44 |
| | 12/5/2013 | <0.2 | 0.2 | 0.2 | <0.2 | <1 | <1 | 1.97 | 130.4 | 2.4 | 13 | 1100 | -- | 6.72 |
| | 6/2/2014 | <0.2 | 0.3 | 0.2 | <0.02 | <1.0 | <1.0 | 1 | -3.9 | 3.8 | 11.6 | 1600 | 1.4 | 6.33 |
| | 12/9/2014 | <0.2 | 0.2 | <0.2 | <0.2 | <5.0 | <5.0 | 0.66 | -23.1 | 6 | 11.2 | 1600 | <1.0 | 6.42 |
| | 6/2/2015 | <0.2 | 0.2 | <0.2 | <0.02 | <5.0 | <5.0 | -- | -8.8 | 2.5 | 13.8 | 580 | <1.0 | 5.66 |
| | 12/3/2015 | <0.2 | <0.2 | <0.2 | <0.2 | <1.0 | <1.0 | 0.44 | -27.4 | -- | 10.2 | 930 | <1.0 | 6.43 |
| AGW110 | 6/17/2004 | <1.0 | 94 | 22 | <1.0 | <0.5 | <0.5 | 0.00 | 6.18 | 0.0 | 23.5 | 0.95 | <1.50 | 5.91 |
| | 8/31/2004 | <2.0 | 18 | 50 | <2.0 | <0.5 | <0.5 | 1.2/0.07 | -154 | 3.6 | 2.8 | <0.5 | 199 | 6.55 |
| | 10/5/2004 | <1.0 | <1.0 | 69 | <1.0 | <0.5 | <0.5 | 0.00 | 23.3 | 4.5 | 6.9 | 7.4 | 248 | 6.64 |

**Table 7-1**
**Interim Remedial Action Groundwater Data Summary**
**Boeing Auburn Remedial Investigation**
**Auburn, Washington**

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 11/2/2004 | <1.0 | <1.0 | 110 | 4.3 | <0.5 | <0.5 | 0.00 | 25.8 | 4.2 | 0.6 | 280 | 207 | 6.64 |
| | 12/9/2004 | <2.0 | <2.0 | 95 | 4.9 | <0.5 | <0.5 | 0.71 | 27.0 | 2.7 | 0.2 | 2000 | 69.2 | 6.91 |
| | 1/4/2005 | <1.0 | <1.0 | 91 | 3.4 | <0.5 | <0.5 | 0.00 | 20.4 | 3.5 | <0.1 | 1200 | 22.8 | 6.85 |
| | 2/9/2005 | <1.0 | <1.0 | 73 | 10 | <0.5 | <0.5 | 0.00 | 24.2 | 4.6 | 0.1 | 6800 | 78.0 | 6.92 |
| | 3/8/2005 | <1.0 | <1.0 | 75 | 17 | <0.5 | <0.5 | 0.00 | 25.7 | 6.0 | <0.2 | 2900 | 542 | 7.03 |
| | 4/6/2005 | <1.0 | <1.0 | 64 | 29 | <0.5 | <0.5 | 0.00 | 22.5 | 4.5 | <0.1 | 2000 | 358 | 7.31 |
| | 5/4/2005 | <1.0 | <1.0 | 35 | 40 | <0.5 | <0.5 | 0.00 | 23.9 | 4.8 | <0.2 | 1700 | 261 | 6.86 |
| | 6/2/2005 | <0.2 | <0.2 | 16 | 49 | <0.5 | <0.5 | 0.00 | 21.3 | 6.8 | 0.1 | 770 | 67.2 | 6.47 |
| | 7/6/2005 | <0.2 | <0.2 | 5.5 | 45 | <0.5 | <0.5 | 0.00 | 26.3 | 6.4 | <0.1 | 1000 | 26.8 | 6.32 |
| | 8/11/2005 | <0.2 | <0.2 | 1.5 | 13 | <0.5 | <0.5 | 0.00 | 26.2 | 7.0 | <0.1 | 990 | 27.2 | 6.72 |
| | 9/8/2005 | <0.2 | <0.2 | 1.0 | 3.7 | <0.5 | <0.5 | 0.00 | 36.8 | 5.8 | <0.1 | 840 | 24.9 | 6.29 |
| | 10/4/2005 | <0.2 | <0.2 | 0.6 | 1.9 | <0.5 | <0.5 | 1.10 | 12.5 | 3.0 | <0.1 | 640 | 20.8 | 6.69 |
| | 11/9/2005 | <0.2 | <0.2 | 0.5 | 1.2 | <0.5 | <0.5 | 0.00 | 27.7 | 8.2 | <0.1 | 2900 | 88.8 | 6.79 |
| | 12/5/2005 | <2.0 | <2.0 | <2.0 | <2.0 | <11.4 | <12.3 | 1.20 | 286 | 4.5 | <0.1 | 10200 | 558 | 6.49 |
| | 1/10/2006 | <1.0 | <1.0 | 1.0 | <1.0 | <11.4 | <12.3 | 0.00 | 30.0 | 9.4 | 0.1 | 15200 | 716 | 6.89 |
| | 2/3/2006 | <0.2 | 0.2 | 1.1 | 1.2 | <11.4 | <12.3 | 0.00 | 32.2 | 6.8 | 0.1 | 17500 | 564 | 7.13 |
| AGW110R | 10/2/2006 | <0.2 | 0.5 | 0.4 | 0.3 | <1.1 | <1.2 | 5.96 | -- | 3.0 | 9.1 | 5950 | 17.1 | 6.89 |
| | 1/23/2007 | <0.2 | 0.3 | 0.3 | 0.4 | 2.6 | <1.2 | 0.53 | -43.9 | 6.9 | 6.1 | 16000 | 22.7 | 6.53 |
| | 4/3/2007 | <0.2 | 0.3 | 0.4 | 0.39 | 3.6 | <1.2 | 1.67 | -40.8 | 1.5 | 4.5 | 15300 | 20.4 | 6.76 |
| | 6/12/2007 | <0.2 | 0.3 | 0.2 | 0.3 | 3.3 | <1.2 | 0.69 | -138.5 | 4.8 | 4.3 | 13800 | 24.5 | 6.46 |
| | 9/12/2007 | <0.2 | 0.3 | <0.2 | <0.2 | 1.8 | <1.2 | 1.11 | -104.9 | 3.8 | 2.6 | 13500 | 20.1 | 6.59 |
| | 12/11/2007 | <0.2 | 0.3 | 0.2 | 0.2 | <1.1 | <1.2 | 0.01 | -123.8 | 7.4 | 1.1 | 18000 | 17.2 | 6.59 |
| | 3/12/2008 | <0.2 | 0.4 | <0.2 | 0.2 | <1.1 | <1.2 | 0.01 | -129.9 | 4.4 | 1.6 | 17500 | 15.4 | 6.66 |
| | 6/3/2008 | < 0.2 | 0.3 | < 0.2 | < 0.2 | 1.3 | <1.2 | 0.86 | -455.3 | 3.2 | 0.8 | 18100 | 14.4 | 6.41 |
| | 9/4/2008 | <0.2 | 0.3 | <0.2 | <0.2 | <1.1 | <1.2 | 3.45 | -28.7 | 2.0 | 14.5 | 13700 | 16.0 | 6.39 |
| | 12/10/2008 | <0.2 | 0.3 | <0.2 | <0.2 | <1.1 | <1.2 | 0.45 | -109.4 | 2.2 | <0.1 | 4080 | 14.1 | 6.46 |
| | 3/11/2009 | <0.2 | 0.4 | 0.2 | 0.18 | <1.1 | <1.2 | 0.00 | -111.0 | 4.2 | 0.1 | 25700 | 12.2 | 6.70 |
| | 6/3/2009 | <0.2 | 0.3 | <0.2 | 0.24 | <1.1 | <1.2 | 0.04 | -308.0 | 5.0 | <0.1 | 19600 | 11.8 | 6.63 |
| | 12/1/2009 | <0.020 | 0.2 | <0.2 | 0.12 | <1.1 | <1.2 | 1.10 | -50.7 | -- | <0.1 | 22000 | 14.8 | 2.56 |
| | 6/8/2010 | <0.02 | <0.2 | <0.2 | 0.12 | <1.1 | <1.2 | 0.52 | -75.2 | 3.8 | <0.1 | 17000 | 7.76 | 6.57 |
| | 12/9/2010 | <0.02 | <0.2 | <0.2 | 0.072 | <1.1 | <1.2 | -- | -62.9 | 1.8 | 0.2 | 3410 | 7.22 | 6.48 |
| | 6/28/2011 | <0.02 | <0.2 | <0.2 | 0.15 | <1.1 | <1.2 | 0.13 | -97.8 | 3.8 | 1.2 | 17500 | 7.5 | 6.48 |
| | 12/14/2011 | <0.02 | <0.2 | <0.2 | 0.1 | <1.1 | <1.2 | 0.36 | -107.9 | 4 | <0.1 | 10400 | 7.32 | 6.61 |
| | 6/19/2012 | <0.02 | <0.2 | <0.2 | 0.11 | <5.0 | <5.0 | 0.19 | -70 | 5 | <1.0 | 12000 | 5.4 | 6.49 |
| | 12/3/2012 | <0.02 | <0.2 | <0.2 | 0.086 | <1.0 | 3 | 1.36 | 48.7 | 3.2 | <1.0 | 11000 | 3.4 | 6.29 |
| | 6/3/2013 | <0.02 | <0.2 | <0.2 | 0.13 | <1.0 | 1.2 | 0.24 | 122.4 | 3.5 | <1.0 | 10000 | 4 | 6.54 |
| | 12/5/2013 | <0.02 | <0.2 | <0.2 | 0.093 | <1 | 2.2 | 1.85 | 134.8 | 3.4 | <1 | 7200 | 3.6 | 6.87 |
| | 6/2/2014 | <0.2 | <0.2 | <0.2 | 0.11 | <1.0 | <1.0 | 1.29 | -44.1 | 5 | 4.6 | 5800 | 4.6 | 6.55 |
| | 12/9/2014 | <0.2 | <0.2 | <0.2 | 0.11 | <5.0 | <5.0 | 0.87 | -85.8 | -- | <1.0 | 8400 | 1.8 | 6.61 |
| | 6/2/2015 | <0.2 | <0.2 | <0.2 | 0.092 | <5.0 | <5.0 | -- | -105.3 | 2.7 | <1.0 | 9400 | 2.6 | 6.49 |
| | 12/3/2015 | <0.2 | <0.2 | <0.2 | 0.11 | <1.0 | <1.0 | 0.37 | -97.6 | 2 | <1.0 | 7500 | 1.9 | 6.61 |
| **Downgradient or Crossgradient Wells** | | | | | | | | | | | | | | |
| AGW006 | 6/28/1994 | | 9.4 | 14 | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/26/1994 | | 6.2 | 7.4 | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 9/22/1994 | | 12 | 13 | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/22/1995 | | 19 | 19 | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/7/1995 | <1 | 7.9 | 11 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/26/1996 | <1 | 14 | 15 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/19/1996 | <1 | 12 | 12 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 9/26/1996 | <1 | 12 | 15 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

# Table 7-1
## Interim Remedial Action Groundwater Data Summary
## Boeing Auburn Remedial Investigation
## Auburn, Washington

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 12/18/1996 | <1 | 15 | 17 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/13/1997 | <1 | 12 | 11 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/21/2003 | 0.4 | 7.1 | 3 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/1/2004 | 0.3 | 8 | 2.8 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/14/2004 | 0.2 | 4.4 | 1.6 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/2004 | <0.2 | 1.3 | 0.3 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/9/2004 | 0.2 | 5 | 4.9 | 0.03 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AGW006R | 4/2/2007 | <0.2 | 1.1 | 1.1 | 0.16 | -- | -- | 1.02 | -8.0 | -- | -- | -- | -- | 6.45 |
| | 6/11/2007 | <0.2 | 0.5 | 0.5 | <0.2 | -- | -- | 1.86 | 5.5 | -- | -- | -- | -- | 5.92 |
| | 9/11/2007 | <0.2 | 0.8 | 0.4 | <0.2 | -- | -- | 1.87 | 189.9 | -- | -- | -- | -- | 5.87 |
| | 12/12/2007 | <0.2 | 2.0 | 1.4 | <0.2 | -- | -- | 0.80 | 12.8 | -- | -- | -- | -- | 6.24 |
| | 3/13/2008 | <0.2 | 1.4 | 1.0 | <0.2 | -- | -- | 0.71 | 23.0 | -- | -- | -- | -- | 5.91 |
| | 6/4/2008 | <0.2 | 1.0 | 0.9 | <0.2 | -- | -- | 505.44 | -136.5 | -- | -- | -- | -- | 6.27 |
| | 9/3/2008 | <0.2 | 0.6 | 0.3 | <0.2 | -- | -- | -0.02 | -187.4 | -- | -- | -- | -- | 5.61 |
| | 12/9/2008 | <0.2 | 1.7 | 1.4 | <0.2 | -- | -- | 0.21 | 119.0 | -- | -- | -- | -- | 6.11 |
| | 3/10/2009 | <0.2 | 1.0 | 1.1 | 0.072 | -- | -- | 0.07 | 108.4 | -- | -- | -- | -- | 6.21 |
| | 6/2/2009 | <0.2 | 0.9 | 0.9 | 0.087 | -- | -- | 0.00 | -322.0 | -- | -- | -- | -- | 6.10 |
| | 11/30/2009 | 0.066 | 1.4 | 0.9 | 0.031 | -- | -- | 3.82 | 9.8 | -- | -- | -- | -- | 7.48 |
| | 6/7/2010 | 0.056 | 0.9 | 1 | 0.069 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/10/2010 | 0.049 | 1.3 | 1.4 | 0.062 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/24/2011 | <0.02 | < 0.2 | < 0.2 | < 0.02 | -- | -- | 0.49 | 94.6 | -- | -- | -- | -- | 6.37 |
| | 12/19/2011 | 0.032 | 1 | 1.5 | 0.05 | -- | -- | 0.23 | 84.0 | -- | -- | -- | -- | 6.21 |
| | 6/13/2012 | <0.02 | 0.3 | 0.2 | < 0.02 | -- | -- | 13.41 | 117.6 | -- | -- | -- | -- | 5.66 |
| | 12/7/2012 | 0.036 | 0.9 | 1.6 | 0.099 | -- | -- | 0.24 | 91.9 | -- | -- | -- | -- | 6.21 |
| | 6/3/2013 | <0.02 | 0.2 | 0.3 | 0.027 | -- | -- | 0.27 | 114.1 | -- | -- | -- | -- | 5.74 |
| | 12/6/2013 | 0.029 | 0.7 | 1.6 | 0.12 | -- | -- | 1.96 | 162.1 | -- | -- | -- | -- | 6.36 |
| | 5/30/2014 | < 0.2 | < 0.2 | 0.4 | 0.027 | -- | -- | 0.98 | -262.0 | -- | -- | -- | -- | 7.46 |
| | 12/10/2014 | < 0.2 | 0.5 | 1.4 | 0.12 | -- | -- | 2.39 | 70.8 | -- | -- | -- | -- | 6.35 |
| | 6/1/2015 | < 0.2 | < 0.2 | 0.2 | < 0.020 | -- | -- | 0.62 | 168.7 | -- | -- | -- | -- | 6.03 |
| | 12/1/2015 | < 0.2 | 0.5 | 1.2 | 0.1 | -- | -- | 0.27 | 82.6 | -- | -- | -- | -- | 6.36 |
| AGW053 | 6/16/2004 | 0.2 | 4.5 | <0.2 | <0.2 | <0.5 | <0.5 | 0.05 | 37.9 | 0.0 | 25.7 | <0.5 | <1.50 | 5.46 |
| | 11/3/2004 | 0.2 | 6.8 | 0.6 | <0.2 | <0.5 | <0.5 | 0.81 | 42.5 | 0.0 | 19.4 | <0.5 | <1.50 | 6.32 |
| | 12/9/2004 | 0.2 | 5.8 | 0.6 | <0.2 | <0.5 | <0.5 | 0.68 | 41.5 | 0.0 | 16.0 | 5.1 | <1.50 | 6.38 |
| | 2/9/2005 | 0.3 | 5.6 | 0.5 | <0.2 | <0.5 | <0.5 | 0.00 | 35.7 | -- | 18.6 | 0.75 | <1.50 | 6.38 |
| | 5/4/2005 | 0.2 | 4.5 | 0.8 | <0.2 | <0.5 | <0.5 | 0.00 | 38.7 | 0.0 | 24.4 | 12 | <1.50 | 6.27 |
| | 8/11/2005 | 0.2 | 4.6 | 1.1 | <0.2 | <0.5 | <0.5 | 0.00 | 45.7 | 0.0 | 26.4 | 1.5 | <1.50 | 6.20 |
| | 11/10/2005 | 0.2 | 5.7 | 0.9 | <0.2 | <0.5 | <0.5 | 3.81 | 55.6 | 0.0 | 24.5 | <0.5 | <1.50 | 6.18 |
| | 2/6/2006 | 0.3 | 4.5 | 0.4 | <0.2 | <11.4 | <12.3 | 2.10 | 51.7 | 0.0 | 24.5 | 64.4 | <1.50 | 6.50 |
| AGW053R | 10/2/2006 | 0.2 | 4.0 | 0.3 | <0.2 | <1.1 | <1.2 | 1.48 | -- | 0.0 | 44.8 | 15.1 | 3.45 | 7.10 |
| | 1/23/2007 | 0.3 | 2.6 | 0.2 | <0.2 | <1.1 | <1.2 | 1.19 | -5.6 | 0.2 | 38.6 | 69.5 | 1.74 | 6.21 |
| | 4/3/2007 | 0.3 | 2.7 | 0.2 | 0.16 | <1.1 | <1.2 | 0.74 | 7.0 | 0.0 | 39.7 | 137 | <1.50 | 6.32 |
| | 6/12/2007 | 0.3 | 2.8 | 0.2 | 0.3 | <1.1 | <1.2 | 0.64 | 3.1 | 0.0 | 33.7 | 265 | <1.50 | 6.14 |
| | 9/12/2007 | 0.2 | 3.6 | 0.5 | <0.2 | <1.1 | <1.2 | 1.08 | 162.7 | 0.0 | 47.4 | 167 | 2.04 | 6.35 |
| | 12/11/2007 | 0.3 | 3.9 | 1.5 | 0.2 | <1.1 | <1.2 | 2.32 | 28.2 | 0.6 | 45.0 | 565 | 2.10 | 6.16 |
| | 3/12/2008 | 0.3 | 3.7 | 0.6 | <0.2 | <1.1 | <1.2 | 0.01 | -7.3 | 0.4 | 32.9 | 316 | <1.50 | 6.38 |
| | 6/3/2008 | 0.3 | 3.0 | 0.4 | < 0.2 | <1.1 | <1.2 | 540.97 | -125.1 | 0.0 | 27.9 | 277 | <1.50 | 6.60 |
| | 9/4/2008 | 0.2 | 3.1 | 0.6 | <0.2 | <1.1 | <1.2 | 0.01 | -193.0 | 0.0 | 37.3 | 172 | <1.50 | 6.18 |
| | 12/10/2008 | 0.2 | 3.0 | 0.6 | <0.2 | <1.1 | <1.2 | 0.21 | 91.8 | 0.8 | 31.7 | 448 | <1.50 | 6.19 |
| | 3/11/2009 | 0.3 | 2.9 | 0.5 | 0.058 | <1.1 | <1.2 | 0.07 | 80.1 | 0.0 | 26.1 | 365 | 2.01 | 6.41 |
| | 6/3/2009 | 0.3 | 3.0 | 0.4 | 0.2 | <1.1 | <1.2 | 0.00 | -316.0 | 0.0 | 23.6 | 199 | <1.50 | 6.41 |
| | 12/1/2009 | 0.21 | 2.5 | 0.9 | 0.057 | -- | -- | 1.30 | 18.0 | -- | -- | -- | -- | 6.78 |

**Table 7-1**
**Interim Remedial Action Groundwater Data Summary**
**Boeing Auburn Remedial Investigation**
**Auburn, Washington**

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 6/8/2010 | 0.25 | 2.4 | 0.6 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/9/2010 | 0.2 | 2 | 0.4 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/28/2011 | 0.2 | 1.7 | 0.4 | < 0.02 | -- | -- | 0.82 | 69.0 | -- | -- | -- | -- | 6.67 |
| | 12/14/2011 | 0.22 | 1.6 | 0.3 | < 0.02 | -- | -- | 0.10 | 47.4 | -- | -- | -- | -- | 6.16 |
| | 6/19/2012 | 0.3 | 1.7 | 0.4 | 0.025 | -- | -- | 0.40 | 185.0 | -- | -- | -- | -- | 6.21 |
| | 12/3/2012 | 0.057 | 1.2 | 0.2 | < 0.02 | -- | -- | 4.79 | 215.0 | -- | -- | -- | -- | 5.97 |
| | 12/5/2013 | 0.21 | 1.5 | 0.4 | 0.043 | -- | -- | 2.19 | 141.5 | -- | -- | -- | -- | 6.73 |
| | 6/2/2014 | 0.3 | 1.3 | 0.2 | < 0.02 | -- | -- | 2.11 | 141.8 | -- | -- | -- | -- | 6.23 |
| | 12/9/2014 | 0.2 | 1.3 | 0.3 | < 0.02 | -- | -- | 0.47 | 57.8 | -- | -- | -- | -- | 6.31 |
| | 6/2/2015 | 0.2 | 2 | 1.1 | 0.027 | -- | -- | -- | 94.3 | -- | -- | -- | -- | 5.41 |
| | 12/3/2015 | 0.22 | 1.7 | 0.6 | 0.031 | -- | -- | 0.32 | 68.2 | -- | -- | -- | -- | 6.34 |
| AGW055 | 10/30/1996 | <1 | 8.4 | 5.9 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/18/1996 | <1 | 11 | 11 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/13/1997 | <1 | 13 | 11 | <2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/21/2003 | 0.4 | 4 | 0.8 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/11/2005 | 0.3 | 4.1 | 4.8 | 0.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/1/2005 | 0.2 | 2.6 | 1.8 | 0.11 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AGW055R | 4/2/2007 | <0.2 | 1.8 | 1.9 | 0.29 | -- | -- | 1.90 | -18.1 | -- | -- | -- | -- | 6.65 |
| | 6/11/2007 | <0.2 | 2.5 | 3.0 | 0.3 | -- | -- | 0.39 | 22.0 | -- | -- | -- | -- | 6.25 |
| | 9/11/2007 | <0.2 | 1.2 | 1.5 | <0.2 | -- | -- | 2.15 | -463.6 | -- | -- | -- | -- | 6.51 |
| | 12/12/2007 | <0.2 | 0.8 | 1.0 | <0.2 | -- | -- | 0.01 | -143.2 | -- | -- | -- | -- | 6.73 |
| | 3/13/2008 | <0.2 | 1.5 | 1.8 | <0.2 | -- | -- | 0.01 | -136.5 | -- | -- | -- | -- | 6.67 |
| | 6/4/2008 | <0.2 | 1.5 | 2.3 | 0.2 | -- | -- | 1.67 | -452.9 | -- | -- | -- | -- | 6.45 |
| | 9/3/2008 | <0.2 | 1.2 | 1.8 | <0.2 | -- | -- | 1.14 | -96.7 | -- | -- | -- | -- | 6.41 |
| | 12/9/2008 | <0.2 | 1.1 | 1.4 | <0.2 | -- | -- | 2.09 | -81.9 | -- | -- | -- | -- | 6.25 |
| | 3/10/2009 | <0.2 | 1.4 | 2.3 | 0.34 | -- | -- | 0.01 | -97.4 | -- | -- | -- | -- | 6.61 |
| | 6/2/2009 | <0.2 | 1.2 | 1.9 | 0.3 | -- | -- | 0.15 | -102.7 | -- | -- | -- | -- | 6.67 |
| | 11/30/2009 | <0.020 | 0.7 | 0.8 | 0.038 | -- | -- | 2.91 | -5.3 | -- | -- | -- | -- | 7.58 |
| | 6/7/2010 | < 0.02 | 0.8 | 1.6 | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/10/2010 | < 0.02 | 0.7 | 1.2 | 0.097 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/24/2011 | < 0.02 | 0.6 | 1.5 | 0.2 | -- | -- | 0.63 | 7.4 | -- | -- | -- | -- | 7.22 |
| | 12/19/2011 | < 0.02 | 0.7 | 1.4 | 0.1 | -- | -- | 0.13 | -10.7 | -- | -- | -- | -- | 6.60 |
| | 6/13/2012 | < 0.02 | 0.7 | 1.5 | 0.16 | -- | -- | 0.11 | 9.9 | -- | -- | -- | -- | 6.32 |
| | 12/7/2012 | < 0.02 | 0.6 | 1.1 | 0.066 | -- | -- | 0.07 | 1.2 | -- | -- | -- | -- | 6.55 |
| | 6/3/2013 | < 0.02 | 0.6 | 1.4 | 0.18 | -- | -- | 0.19 | 106.0 | -- | -- | -- | -- | 6.53 |
| | 12/6/2013 | < 0.02 | 0.7 | 1.5 | 0.12 | -- | -- | 2.26 | 160.9 | -- | -- | -- | -- | 6.65 |
| | 5/30/2014 | < 0.2 | 0.6 | 1.5 | 0.16 | -- | -- | 0.47 | -302.4 | -- | -- | -- | -- | 7.23 |
| | 12/10/2014 | < 0.2 | 0.5 | 0.9 | 0.064 | -- | -- | 1.50 | -13.3 | -- | -- | -- | -- | 6.63 |
| | 6/1/2015 | < 0.2 | 0.5 | 1.7 | 0.15 | -- | -- | 0.27 | 129.0 | -- | -- | -- | -- | 6.45 |
| | 12/1/2015 | < 0.2 | 0.5 | 0.7 | 0.051 | -- | -- | 0.30 | -33.2 | -- | -- | -- | -- | 6.67 |
| AGW066 | 2/10/2005 | <0.2 | 12 | 3.4 | <0.2 | -- | -- | 0.00 | 50.2 | -- | -- | -- | -- | 5.92 |
| | 5/3/2005 | <0.2 | 11 | 4.1 | <0.2 | <0.5 | <0.5 | 0.00 | 53.8 | 3.8 | 23.8 | 29 | <1.50 | 6.28 |
| | 8/12/2005 | <0.2 | 13 | 4.9 | <0.2 | <0.5 | <0.5 | 1.93 | 45.8 | 3.0 | 31.2 | 83 | <1.50 | 5.96 |
| | 11/9/2005 | <0.2 | 12 | 4.3 | <0.2 | <0.5 | <0.5 | 0.00 | 62.1 | 6.0 | 42.2 | 110 | <1.50 | 5.65 |
| | 12/1/2005 | <0.2 | 13 | 4.6 | <0.2 | -- | -- | 0.92 | 197 | -- | -- | -- | -- | 6.18 |
| | 2/3/2006 | <0.2 | 12 | 4.2 | <0.2 | <11.4 | <12.3 | 0.21 | 76.5 | 4.4 | 22.1 | 701 | <1.50 | 6.07 |
| | 4/17/2006 | <0.2 | 11 | 4.8 | <0.2 | <11.4 | <12.3 | 0.37 | 71.5 | 2.54 | 20.7 | 378 | <1.50 | 6.11 |
| | 6/6/2006 | <0.2 | 13 | 5.7 | <0.2 | -- | -- | 6.95 | 285 | -- | -- | -- | -- | 6.07 |
| | 4/2/2007 | <0.2 | 7.8 | 4.9 | <0.020 | <1.1 | <1.2 | 3.59 | 6.0 | 0.00 | 26.4 | <0.7 | <1.50 | 6.21 |
| | 6/11/2007 | <0.2 | 8.6 | 4.6 | <0.2 | <1.1 | <1.2 | 2.36 | 12.4 | 0.00 | 31.9 | 129 | 1.61 | 5.87 |
| | 9/11/2007 | <0.2 | 9.5 | 3.8 | <0.2 | <1.1 | <1.2 | 1.64 | 31.7 | 3.60 | 82.8 | 142 | 1.54 | 5.82 |

# Table 7-1
## Interim Remedial Action Groundwater Data Summary
## Boeing Auburn Remedial Investigation
## Auburn, Washington

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 12/11/2007 | <0.2 | 8.7 | 6.5 | <0.2 | <1.1 | <1.2 | 0.76 | 37.1 | 0.60 | 23.4 | 6.5 | <1.50 | 5.98 |
| | 3/13/2008 | <0.2 | 8.8 | 2.7 | <0.2 | <1.1 | <1.2 | 0.47 | -25.0 | 2.60 | 38.5 | 20.2 | 2.26 | 5.84 |
| | 6/3/2008 | < 0.2 | 8.4 | 3.2 | < 0.2 | <1.1 | <1.2 | 1.66 | -451.4 | 2.20 | 37.8 | 56.4 | <1.50 | 5.85 |
| | 9/3/2008 | <0.2 | 8.2 | 3.9 | <0.2 | <1.1 | <1.2 | -0.01 | -233.7 | 3.80 | 64.5 | 77.0 | <1.50 | 5.74 |
| | 12/9/2008 | <0.2 | 7.2 | 2.2 | <0.2 | <1.1 | <1.2 | 0.30 | 17.9 | 3.80 | 43.6 | 18.0 | <1.50 | 5.86 |
| | 3/12/2009 | <0.2 | 8.0 | 3.2 | 0.021 | <1.1 | <1.2 | 0.18 | 3.8 | 2.40 | 39.7 | 54.1 | 2.01 | 6.09 |
| | 6/2/2009 | <0.2 | 7.0 | 2.2 | <0.020 | <1.1 | <1.2 | 0.25 | -40.9 | 3.20 | 45.9 | 28.6 | 1.67 | 6.19 |
| | 11/30/2009 | 0.048 | 6.6 | 1.5 | <0.020 | -- | -- | 1.40 | 54.0 | -- | -- | -- | -- | 6.51 |
| | 6/7/2010 | 0.042 | 5.9 | 1.8 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/10/2010 | 0.025 | 5 | 1.6 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/24/2011 | < 0.02 | 2.6 | 0.6 | < 0.02 | -- | -- | 0.21 | 126.6 | -- | -- | -- | -- | 5.82 |
| | 12/14/2011 | 0.036 | 5.5 | 1.7 | < 0.02 | -- | -- | 0.07 | 72.2 | -- | -- | -- | -- | 5.87 |
| | 6/14/2012 | < 0.02 | 5.1 | 2 | < 0.02 | -- | -- | 0.18 | 100.2 | -- | -- | -- | -- | 5.62 |
| | 12/7/2012 | 0.042 | 0.9 | 1.6 | < 0.02 | -- | -- | 0.14 | 36.0 | -- | -- | -- | -- | 5.96 |
| | 6/3/2013 | 0.025 | 4.5 | 2 | < 0.02 | -- | -- | 0.33 | 126.1 | -- | -- | -- | -- | 5.82 |
| | 12/6/2013 | 0.032 | 5.4 | 2 | < 0.02 | -- | -- | 1.90 | 165.9 | -- | -- | -- | -- | 6.02 |
| | 6/2/2014 | < 0.02 | 2.8 | 1.1 | < 0.02 | -- | -- | 0.81 | 75.3 | -- | -- | -- | -- | 5.77 |
| | 12/10/2014 | 0.033 | 5.3 | 1.3 | < 0.2 | -- | -- | 1.36 | 26.2 | -- | -- | -- | -- | 6.46 |
| | 6/4/2015 | 0.031 | 4.7 | 2.2 | < 0.020 | -- | -- | 0.01 | 209.4 | -- | -- | -- | -- | 5.96 |
| | 12/4/2015 | 0.032 | 4.3 | 1.1 | < 0.2 | -- | -- | 0.20 | 36.2 | -- | -- | -- | -- | 6.11 |
| AGW067 | 2/10/2005 | <0.2 | 12 | 6.2 | <0.2 | -- | -- | 0.00 | 41.6 | -- | -- | -- | -- | 6.09 |
| | 5/3/2005 | <0.2 | 11 | 7.3 | <0.2 | <0.5 | <0.5 | 0.76 | 50.1 | 0.4 | 39.0 | 1.8 | <1.50 | 6.33 |
| | 8/12/2005 | <0.2 | 10 | 8.4 | <0.2 | <0.5 | <0.5 | 1.25 | 54.5 | 0.4 | 37.0 | 0.74 | <1.50 | 5.93 |
| | 11/9/2005 | <0.2 | 9.8 | 7.4 | <0.2 | <0.5 | <0.5 | 0.00 | 58.6 | 0.0 | 26.0 | <0.5 | <1.50 | 5.52 |
| | 12/1/2005 | <0.2 | 12 | 7.5 | <0.2 | -- | -- | 0.67 | 200 | -- | -- | -- | -- | 7.45 |
| | 2/3/2006 | <0.2 | 11 | 5.8 | <0.2 | <11.4 | <12.3 | 0.15 | 63.9 | 0.6 | 24.9 | 22.4 | <1.50 | 6.26 |
| | 4/17/2006 | <0.2 | 10 | 7.4 | <0.2 | <11.4 | <12.3 | 1.09 | 64.1 | <0.040 | 37.0 | <6.54 | <1.50 | 5.79 |
| | 6/6/2006 | <0.2 | 12 | 7.8 | <0.2 | -- | -- | 6.26 | 273 | -- | -- | -- | -- | 5.75 |
| | 4/2/2007 | <0.2 | 9.8 | 4.6 | 0.055 | <1.1 | <1.2 | 1.15 | 13.7 | 3.8 | 23.8 | 131 | 1.96 | 6.04 |
| | 6/12/2007 | <0.2 | 9.5 | 6.2 | <0.2 | <1.1 | <1.2 | 1.24 | 14.2 | 0.0 | 29.7 | <0.7 | <1.50 | 6.08 |
| | 9/12/2007 | <0.2 | 7.6 | 8.5 | <0.2 | <1.1 | <1.2 | 1.96 | 179.4 | 0.0 | 30.8 | 14.2 | <1.50 | 6.12 |
| | 12/11/2007 | <0.2 | 8.9 | 2.6 | <0.2 | <1.1 | <1.2 | 0.85 | 0 | 2.4 | 57.5 | 50.3 | <1.2 | 5.85 |
| | 3/13/2008 | <0.2 | 9.4 | 6.5 | <0.2 | <1.1 | <1.2 | 0.58 | 21.6 | 0.4 | 25.1 | 1.2 | 1.57 | 6.02 |
| | 6/4/2008 | <0.2 | 8.9 | 6.4 | <0.2 | <1.1 | <1.2 | -- | -- | -- | 24.5 | <0.7 | <1.50 | 6.44 |
| | 9/3/2008 | <0.2 | 6.9 | 8.7 | <0.2 | <1.1 | <1.2 | 0.00 | -212.6 | 0.0 | 27.6 | 3.1 | <1.50 | 5.89 |
| | 12/9/2008 | <0.2 | 7.2 | 6.0 | <0.2 | <1.1 | <1.2 | 0.26 | 119.3 | 0.2 | 22.2 | <0.7 | <1.50 | 6.00 |
| | 3/12/2009 | <0.2 | 8.4 | 6.9 | <0.020 | <1.1 | <1.2 | 0.01 | 125.8 | -- | 22.6 | <0.7 | 3.89 | 6.22 |
| | 3/13/2009 | <0.2 | 8.2 | 6.7 | 0.022 | -- | -- | 0.13 | 146.5 | 0.0 | 23.1 | -- | -- | 6.16 |
| | 6/4/2009 | <0.2 | 7.2 | 5.7 | <0.020 | <1.1 | <1.2 | 0.00 | 83 | 0.0 | 20.8 | <0.7 | <1.50 | 6.25 |
| | 11/30/2009 | 0.049 | 7.1 | 4.2 | 0.022 | -- | -- | 2.22 | 7.0 | -- | -- | -- | -- | 7.38 |
| | 6/7/2010 | 0.053 | 5.9 | 4.6 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/10/2010 | 0.049 | 5.8 | 3.6 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/20/2011 | 0.055 | 5.8 | 3.8 | < 0.02 | -- | -- | 0.9 | 163.3 | -- | -- | -- | -- | 5.76 |
| | 12/14/2011 | 0.053 | 4.5 | 2.4 | < 0.02 | -- | -- | 0.5 | 94.9 | -- | -- | -- | -- | 5.92 |
| | 6/21/2012 | < 0.02 | 5.9 | 3.3 | < 0.02 | -- | -- | 61.7 | 264.8 | -- | -- | -- | -- | 6.11 |
| | 12/3/2012 | 0.058 | 4.5 | 2.5 | < 0.02 | -- | -- | 1.4 | 126.8 | -- | -- | -- | -- | 5.42 |
| | 6/3/2013 | 0.059 | 5.2 | 2.9 | < 0.02 | -- | -- | 0.4 | 130.0 | -- | -- | -- | -- | 6.08 |
| | 12/6/2013 | 0.06 | 4.9 | 2.7 | < 0.02 | -- | -- | 2.8 | 166.6 | -- | -- | -- | -- | 6.40 |
| | 6/2/2014 | 0.035 | 4.4 | 3.1 | < 0.02 | -- | -- | 1.7 | -12.8 | -- | -- | -- | -- | 6.39 |
| | 12/10/2014 | 0.047 | 4.1 | 2.5 | < 0.2 | -- | -- | 2.2 | 60.8 | -- | -- | -- | -- | 6.33 |
| | 6/4/2015 | 0.053 | 5.8 | 3.8 | < 0.020 | -- | -- | 0.1 | 219.1 | -- | -- | -- | -- | 6.50 |

# Table 7-1
## Interim Remedial Action Groundwater Data Summary
## Boeing Auburn Remedial Investigation
## Auburn, Washington

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 12/4/2015 | 0.068 | 3.7 | 1.8 | < 0.2 | -- | -- | 0.4 | 90.4 | -- | -- | -- | -- | 6.28 |
| AGW072 | 11/6/2000 | <0.2 | 4.2 | 0.6 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/18/2001 | 0.2 | 4.4 | 0.5 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/2001 | 0.2 | 5 | 0.6 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/17/2002 | 0.2 | 4.8 | 0.7 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/24/2002 | 0.2 | 4.5 | 0.4 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/19/2003 | 0.2 | 4.8 | 0.5 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/17/2003 | 0.2 | 2.7 | <0.2 | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3/2/2004 | 0.2 | 4 | 0.3 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/7/2004 | 0.2 | 4.1 | 0.3 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/17/2004 | 0.3 | 3.9 | 0.3 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/3/2004 | 0.2 | 3.7 | 0.8 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4/17/2006 | <0.2 | 4 | 0.7 | <0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4/2/2007 | <0.2 | 3.4 | 0.3 | <0.02 | -- | -- | 1.45 | 17.3 | -- | -- | -- | -- | 6.48 |
| | 6/11/2007 | <0.2 | 3.2 | 0.3 | <0.2 | -- | -- | 0.49 | 1.2 | -- | -- | -- | -- | 6.23 |
| | 9/12/2007 | <0.2 | 2.7 | 0.4 | <0.2 | -- | -- | 0.75 | -11.3 | -- | -- | -- | -- | 6.13 |
| | 12/11/2007 | <0.2 | 2.4 | 0.5 | <0.2 | -- | -- | 0.00 | -78.5 | -- | -- | -- | -- | 6.55 |
| | 3/13/2008 | <0.2 | 3.0 | 0.4 | <0.2 | -- | -- | 0.00 | -72.5 | -- | -- | -- | -- | 6.57 |
| | 6/4/2008 | <0.2 | 3.3 | 0.4 | <0.2 | -- | -- | 1.31 | -465.6 | -- | -- | -- | -- | 6.34 |
| | 9/3/2008 | <0.2 | 2.4 | 0.5 | <0.2 | -- | -- | 3.59 | -4.3 | -- | -- | -- | -- | 6.40 |
| | 12/9/2008 | <0.2 | 2.5 | 0.5 | <0.2 | -- | -- | 2.83 | -130.4 | -- | -- | -- | -- | 6.47 |
| | 3/10/2009 | <0.2 | 3.1 | 0.5 | <0.020 | -- | -- | 0.05 | 14.0 | -- | -- | -- | -- | 6.58 |
| | 6/2/2009 | <0.2 | 2.8 | 0.3 | <0.020 | -- | -- | 0.17 | -66.6 | -- | -- | -- | -- | 6.65 |
| | 11/30/2009 | 0.068 | 2.0 | 0.4 | <0.020 | -- | -- | 2.41 | -0.8 | -- | -- | -- | -- | 7.53 |
| | 6/7/2010 | 0.083 | 2.2 | 0.3 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/10/2010 | 0.088 | 2.2 | 0.4 | < 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/24/2011 | 0.11 | 2.2 | < 0.2 | < 0.02 | -- | -- | 1.99 | 81.2 | -- | -- | -- | -- | 6.57 |
| | 12/19/2011 | 0.087 | 1.9 | < 0.2 | < 0.02 | -- | -- | 0.34 | 148.0 | -- | -- | -- | -- | 6.55 |
| | 6/14/2012 | 0.13 | 2 | < 0.2 | < 0.02 | -- | -- | 1.47 | 112.6 | -- | -- | -- | -- | 6.11 |
| | 12/7/2012 | 0.12 | 1.7 | < 0.2 | < 0.02 | -- | -- | 0.58 | 146.0 | -- | -- | -- | -- | 6.46 |
| | 6/3/2013 | 0.11 | 1.6 | < 0.2 | < 0.02 | -- | -- | 0.71 | 112.9 | -- | -- | -- | -- | 6.51 |
| | 12/6/2013 | 0.12 | 1.6 | < 0.2 | < 0.02 | -- | -- | 2.12 | 153.0 | -- | -- | -- | -- | 6.63 |
| | 6/2/2014 | 0.12 | 1.6 | < 0.2 | < 0.02 | -- | -- | 3.66 | 101.2 | -- | -- | -- | -- | 6.36 |
| | 12/10/2014 | 0.096 | 1.5 | < 0.2 | < 0.2 | -- | -- | 2.15 | 110.0 | -- | -- | -- | -- | 6.54 |
| | 6/4/2015 | 0.13 | 1.5 | < 0.2 | < 0.020 | -- | -- | 0.15 | 196.7 | -- | -- | -- | -- | 6.65 |
| | 12/4/2015 | 0.12 | 1.3 | < 0.2 | < 0.2 | -- | -- | 0.61 | 122.4 | -- | -- | -- | -- | 6.56 |
| AGW112 | 6/17/2004 | 0.3 | 2.4 | <0.2 | <0.2 | <0.5 | <0.5 | 0.00 | 23.0 | 0.0 | 22.2 | <0.5 | <1.50 | 6.28 |
| | 9/1/2004 | 0.4 | 4.6 | 0.8 | <0.2 | <0.5 | <0.5 | 0.27/0.49 | 224 | 0.5 | 9.5 | <0.5 | 2.47 | 5.82 |
| | 10/6/2004 | 0.4 | 5.2 | 1.0 | 0.3 | <0.5 | <0.5 | 0.00 | 40.0 | 0.0 | 12.1 | <0.5 | <1.50 | 6.35 |
| | 11/3/2004 | 0.4 | 4.7 | 1.2 | 0.3 | <0.5 | <0.5 | 0.00 | 31.4 | 0.5 | 6.5 | 6.3 | <1.50 | 6.52 |
| | 12/9/2004 | 0.3 | 3.6 | 2.1 | 0.2 | <0.5 | <0.5 | 0.00 | 29.5 | 0.5 | 4.0 | 51 | <1.50 | 6.61 |
| | 1/4/2005 | 0.3 | 2.5 | 2.3 | <0.2 | <0.5 | <0.5 | 0.00 | 24.6 | 0.6 | 4.4 | 170 | <1.50 | 6.58 |
| | 2/9/2005 | 0.3 | 2.4 | 1.6 | <0.2 | <0.5 | <0.5 | 0.00 | 22.2 | 0.6 | 8.7 | 120 | <1.50 | 6.66 |
| | 3/8/2005 | 0.2 | 2.4 | 1.3 | <0.2 | <0.5 | <0.5 | 0.00 | 20.1 | 0.6 | 12.9 | 150 | <1.50 | 6.73 |
| | 4/6/2005 | 0.3 | 2.5 | 1.0 | <0.2 | <0.5 | <0.5 | 0.00 | 19.7 | 0.8 | 15.3 | 230 | <1.50 | 6.98 |
| | 5/4/2005 | 0.2 | 2.4 | 1.1 | <0.2 | <0.5 | <0.5 | 0.00 | 20.4 | 0.8 | 16.4 | 330 | <1.50 | 6.66 |
| | 6/2/2005 | 0.3 | 2.4 | 1.0 | <0.2 | <0.5 | <0.5 | 0.00 | 18.7 | 0.7 | 16.6 | 230 | <1.50 | 6.31 |
| | 7/6/2005 | 0.2 | 2.4 | 0.7 | <0.2 | <0.5 | <0.5 | 0.00 | 23.4 | 0.8 | 19.1 | 200 | <1.50 | 6.09 |
| | 8/11/2005 | 0.2 | 2.6 | 0.8 | <0.2 | <0.5 | <0.5 | 0.00 | 25.2 | 0.8 | 21.4 | 300 | <1.50 | 6.63 |
| | 9/8/2005 | 0.3 | 3.1 | 1.2 | 0.4 | <0.5 | <0.5 | 0.00 | 28.2 | 0.6 | 20.9 | 300 | <1.50 | 6.19 |
| | 10/4/2005 | 0.3 | 3.3 | 1.3 | 0.4 | <0.5 | <0.5 | 0.00 | 15.0 | 0.8 | 18.0 | 150 | <1.50 | 6.61 |

**Table 7-1**
**Interim Remedial Action Groundwater Data Summary**
**Boeing Auburn Remedial Investigation**
**Auburn, Washington**

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 11/10/2005 | 0.2 | 2.4 | 1.0 | 0.4 | <0.5 | <0.5 | 0.00 | 35.5 | 0.6 | 18.2 | 530 | <1.50 | 6.56 |
| | 12/6/2005 | 0.2 | 2.8 | 1.1 | 0.4 | <11.4 | <12.3 | 1.59 | 145 | 1.0 | 13.2 | 3680 | <1.50 | 6.75 |
| | 1/10/2006 | 0.3 | 2.6 | 1.0 | <0.2 | <11.4 | <12.3 | 0.00 | 31.8 | 0.6 | 15.4 | 3270 | <1.50 | 6.83 |
| | 2/6/2006 | 0.3 | 2.1 | 0.6 | <0.2 | <11.4 | <12.3 | 0.00 | 32.5 | 0.6 | 20.6 | 1010 | <1.50 | 6.75 |
| AGW112R | 10/2/2006 | 0.2 | 2.7 | 0.8 | 0.2 | <1.1 | 1.6 | 1.41 | -- | 1.0 | 24.5 | 217 | <1.50 | 7.01 |
| | 1/23/2007 | 0.2 | 1.8 | 0.3 | <0.2 | <1.1 | <1.2 | 0.61 | -37.9 | 0.4 | 20.8 | 10.2 | <1.50 | 6.50 |
| | 4/3/2007 | 0.3 | 1.7 | <0.2 | <0.020 | <1.1 | <1.2 | 0.92 | -29.5 | 0.4 | 21.5 | 1.8 | <1.50 | 6.79 |
| | 6/12/2007 | 0.3 | 1.9 | <0.2 | <0.2 | <1.1 | <1.2 | 0.86 | -18.4 | -- | 21.6 | 1.0 | <1.50 | 6.41 |
| | 9/12/2007 | 0.2 | 2.3 | 0.4 | <0.2 | <1.1 | <1.2 | 2.30 | 83.3 | 0.4 | 25.5 | <0.7 | <1.50 | 6.63 |
| | 12/11/2007 | 0.2 | 2.0 | 0.7 | <0.2 | <1.1 | <1.2 | 2.92 | -10.6 | 0.4 | 25.6 | 260 | <1.5 | 6.42 |
| | 3/12/2008 | 0.3 | 2.5 | 0.3 | <0.2 | <1.1 | <1.2 | 2.65 | -50.4 | 0.8 | 21.1 | 1.2 | <1.50 | 6.57 |
| | 6/3/2008 | 0.3 | 2.1 | 0.3 | < 0.2 | <1.1 | <1.2 | 2.30 | -464.3 | 0.0 | 21.0 | <0.7 | <1.50 | 6.33 |
| | 9/4/2008 | 0.3 | 2.9 | 0.6 | <0.2 | <1.1 | <1.2 | 2.95 | 2.3 | 0.4 | 24.1 | 12.1 | 1.59 | 5.98 |
| | 12/10/2008 | 0.2 | 3.2 | 1.1 | <0.2 | <1.1 | <1.2 | 2.36 | 22.3 | 0.0 | 19.9 | 5120 | <1.50 | 6.61 |
| | 3/11/2009 | 0.2 | 2.2 | 0.3 | <0.020 | <1.1 | <1.2 | 0.00 | 16.0 | 0.8 | 19.4 | <0.7 | 1.69 | 6.66 |
| | 6/3/2009 | 0.2 | 2.6 | 0.4 | <0.020 | <1.1 | <1.2 | 0.10 | 49.4 | 0.0 | 18.7 | <0.7 | <1.50 | 6.47 |
| | 12/1/2009 | 0.15 | 2.7 | 1.3 | 0.073 | -- | -- | 2.08 | 19.5 | -- | -- | -- | -- | 7.41 |
| | 6/8/2010 | 0.22 | 2 | 0.4 | <0.020 | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 12/9/2010 | 0.17 | 3.7 | 1.1 | <0.020 | -- | -- | -- | -- | -- | -- | -- | -- | |
| | 6/28/2011 | 0.23 | 1.4 | 0.3 | <0.020 | -- | -- | 1.15 | 79.4 | -- | -- | -- | -- | 6.45 |
| | 12/14/2011 | 0.22 | 4.6 | 1.4 | 0.027 | -- | -- | 0.08 | 69.1 | -- | -- | -- | -- | 6.20 |
| | 6/19/2012 | 0.29 | 1.7 | 0.4 | <0.020 | -- | -- | 0.30 | 214.9 | -- | -- | -- | -- | 6.30 |
| | 12/3/2012 | 0.22 | 4 | 1.3 | 0.036 | -- | -- | 2.04 | 290.1 | -- | -- | -- | -- | 6.43 |
| | 6/3/2013 | 0.2 | 1.4 | 0.3 | <0.020 | -- | -- | 0.38 | 144.1 | -- | -- | -- | -- | 6.77 |
| | 12/5/2013 | 0.16 | 2.3 | 0.8 | <0.020 | -- | -- | 1.97 | 139.8 | -- | -- | -- | -- | 6.70 |
| | 6/2/2014 | 0.22 | 1 | 0.2 | <0.020 | -- | -- | 1.71 | 149.5 | -- | -- | -- | -- | 6.22 |
| | 12/9/2014 | 0.19 | 2.2 | 0.8 | 0.089 | -- | -- | 0.71 | 65.4 | -- | -- | -- | -- | 6.28 |
| | 6/2/2015 | 0.2 | 1.4 | 0.2 | <0.020 | -- | -- | 14.74 | 102.0 | -- | -- | -- | -- | 6.05 |
| | 12/3/2015 | 0.2 | 2 | 0.8 | 0.098 | -- | -- | 0.41 | 109.3 | -- | -- | -- | -- | 6.33 |
| AGW125 | 4/2/2007 | <0.2 | 14 | 3.3 | 0.054 | 1.4 | 2.2 | 0.87 | 3.0 | 1.5 | 21.7 | 22.0 | 5.66 | 6.37 |
| | 6/11/2007 | <0.2 | 13 | 3.5 | <0.2 | <1.1 | <1.2 | 1.65 | 3.4 | 1.8 | 35.2 | 30.2 | 6.54 | 6.00 |
| | 9/12/2007 | <0.2 | 12 | 3.4 | <0.2 | <1.1 | <1.2 | 3.72 | 14.4 | 2.0 | 17.9 | 25.7 | 8.04 | 6.34 |
| | 12/11/2007 | <0.2 | 13 | 2.5 | <0.2 | <1.1 | <1.2 | 1.11 | -12.8 | 1.8 | 17.8 | 39.5 | 4.82 | -- |
| | 3/13/2008 | <0.2 | 16 | 3.4 | <0.2 | <1.1 | <1.2 | 0.41 | -8.6 | 1.8 | 17.0 | 23.7 | 7.58 | 5.97 |
| | 6/3/2008 | < 0.2 | 11 | 3.4 | < 0.2 | <1.1 | <1.2 | -- | -106.0 | 1.8 | 18.3 | 45.2 | 6.78 | 6.53 |
| | 9/3/2008 | <0.2 | 10 | 3.8 | <0.2 | <1.1 | <1.2 | 0.00 | -202.5 | 3.2 | 32.7 | 15.3 | 7.51 | 6.03 |
| | 12/9/2008 | <0.2 | 11 | 2.5 | <0.2 | <1.1 | <1.2 | 0.24 | 6.2 | 1.0 | 18.6 | 15.7 | 5.56 | 6.09 |
| | 3/10/2009 | <0.2 | 12 | 3.2 | 0.046 | <1.1 | <1.2 | 0.10 | -19.3 | 2.0 | 20.3 | 30.5 | 7.20 | 6.30 |
| | 6/3/2009 | <0.2 | 12 | 2.9 | 0.044 | <1.1 | <1.2 | 0.00 | -42.8 | 2.0 | 23.3 | 33.0 | 7.10 | 5.57 |
| | 11/30/2009 | 0.024 | 12 | 1.5 | <0.020 | <1.1 | <1.2 | 2.21 | 11.2 | 1.6 | 21.2 | 22.1 | 8.03 | 7.65 |
| | 6/8/2010 | < 0.02 | 9.3 | 2.2 | 0.029 | < 1.1 | < 1.2 | 1.33 | 46.3 | 2.2 | 25.2 | 28.1 | 6.38 | 7.10 |
| | 12/10/2010 | < 0.02 | 10 | 2.1 | 0.024 | < 1.1 | < 1.2 | -- | 31.2 | 1.8 | 22.1 | 26.9 | 5.13 | 6.39 |
| | 6/20/2011 | < 0.02 | 7.8 | 1.5 | < 0.02 | < 1.1 | < 1.2 | 6.57 | 22.2 | 1.8 | 22.8 | 3.2 | 5.97 | 6.21 |
| | 12/14/2011 | < 0.02 | 8.6 | 1.9 | 0.041 | < 1.1 | < 1.2 | 6.76 | 16.8 | 2 | 46.5 | 25.9 | 6.43 | 6.3 |
| | 6/14/2012 | < 0.02 | 9.1 | 2.3 | 0.029 | < 1 | < 1 | 0.09 | 26.7 | 2.8 | 23.1 | 21 | 6.00 | 5.97 |
| | 12/7/2012 | 0.03 | 9.8 | 2.1 | 0.032 | < 1 | < 1 | 0.78 | 164.4 | 3 | 21.1 | 33 | 5.90 | 6.13 |
| | 6/3/2013 | < 0.02 | 8.8 | 2.2 | 0.039 | < 1 | < 1 | 0.18 | 115.8 | 3.2 | 22.4 | 24 | 8.10 | 6.15 |
| | 12/6/2013 | 0.021 | 9.7 | 2.2 | 0.04 | < 1 | < 1 | 2.13 | 168.6 | 2.1 | 17.5 | 50 | 7.10 | 6.25 |
| | 6/2/2014 | 0.024 | 7.4 | 1.9 | 0.022 | < 1 | < 1 | 0.89 | 65.4 | 2.2 | 18.2 | 7.8 | 3.80 | 6.14 |
| | 12/10/2014 | 0.021 | 10 | 1.8 | 0.033 | < 1 | < 1 | 1.76 | 15.3 | 2.1 | 16.3 | 43 | 4.40 | 6.7 |
| | 6/4/2015 | 0.025 | 9.1 | 2.2 | 0.031 | < 5.0 | < 5.0 | 0.06 | 213.7 | 2 | 19.4 | 26 | 4.70 | 6.33 |

# Table 7-1
## Interim Remedial Action Groundwater Data Summary
## Boeing Auburn Remedial Investigation
## Auburn, Washington

| | | Volatile Organic Compounds | | | | | | Aquifer Redox Conditions | | | | | Donor Indicators | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date | PCE (µg/L) | TCE (µg/L) | cDCE (µg/L) | VC (µg/L) | Ethene (µg/L) | Ethane (µg/L) | DO (mg/L) | ORP (mV) | Iron (mg/L) | Sulfate (mg/L) | Methane (µg/L) | TOC (mg/L) | pH |
| | 12/4/2015 | 0.024 | 9.1 | 1.7 | 0.034 | < 1.0 | < 1.0 | 0.37 | 18.1 | 2.0 | 16.2 | 37 | 4.50 | 6.33 |
| AGW126 | 4/2/2007 | <0.2 | 15 | 6.0 | 0.13 | 3.0 | 4.9 | 0.47 | -10.7 | 2.0 | 18.6 | 477 | 1.94 | 6.45 |
| | 6/11/2007 | <0.2 | 21 | 5.9 | <0.2 | <1.1 | <1.2 | 0.49 | -7.0 | 2.0 | 18.2 | 160 | 1.85 | 6.32 |
| | 9/12/2007 | <0.2 | 17 | 5.4 | <0.2 | <1.1 | <1.2 | 0.74 | -88.6 | 3.6 | 17.8 | 1040 | 1.79 | 6.10 |
| | 12/11/2007 | <0.2 | 12 | 7.7 | <0.2 | <1.1 | <1.2 | 0.01 | -67.6 | 3.6 | 16.7 | 2060 | 2.31 | 6.40 |
| | 3/13/2008 | <0.2 | 16 | 6.0 | <0.2 | <1.1 | <1.2 | 0.02 | -92.6 | 3.4 | 18.6 | 144 | 2.89 | 6.41 |
| | 6/3/2008 | < 0.2 | 13 | 6.6 | < 0.2 | <1.1 | <1.2 | 2.69 | -446.1 | 1.2 | 18.9 | 539 | 1.87 | 6.22 |
| | 9/3/2008 | <0.2 | 11 | 7.3 | <0.2 | <1.1 | <1.2 | 2.60 | -28.0 | 3.6 | 20.8 | 366 | 2.51 | 6.16 |
| | 12/9/2008 | <0.2 | 10 | 6.9 | <0.2 | <1.1 | <1.2 | 3.09 | -51.7 | 2.2 | 18.0 | 384 | 1.52 | 6.06 |
| | 3/10/2009 | <0.2 | 13 | 6.3 | 0.048 | <1.1 | <1.2 | 0.01 | -147.0 | 4.0 | 19.6 | 183 | 2.38 | 6.36 |
| | 6/3/2009 | <0.2 | 13 | 6.1 | 0.14 | <1.1 | <1.2 | 0.17 | -105.4 | 3.4 | 19.3 | 166 | <1.50 | 6.32 |
| | 11/30/2009 | 0.022 | 9.9 | 5.5 | 0.12 | <1.1 | <1.2 | 1.20 | -20.0 | 4.0 | 17.4 | 1930 | 4.84 | 6.79 |
| | 6/8/2010 | 0.023 | 10 | 4.9 | 0.039 | < 1.1 | < 1.2 | 1.07 | -29.3 | 3.0 | 18.1 | 196 | 1.89 | 6.40 |
| | 12/10/2010 | < 0.020 | 9.2 | 5.3 | 0.059 | < 1.1 | < 1.2 | -- | -55.2 | 1.4 | 19.2 | 385 | 1.58 | 6.40 |
| | 6/20/2011 | < 0.020 | 11 | 5 | 0.045 | < 1.1 | < 1.2 | 0.59 | -32.2 | 2.2 | 19.3 | 32.5 | 2.09 | 6.21 |
| | 12/14/2011 | < 0.020 | 9.2 | 4.6 | 0.17 | < 1.1 | < 1.2 | 0.17 | -20.8 | 4.2 | 18.9 | 539 | 2.14 | 6.34 |
| | 6/14/2012 | < 0.020 | 9.6 | 7.1 | 0.1 | < 1 | < 1 | 0.13 | -0.3 | 5.4 | 22.2 | 42 | 1.2 | 6.07 |
| | 12/7/2012 | 0.025 | 9.5 | 5.4 | 0.057 | < 1 | < 1 | 0.41 | -20.4 | 4.5 | 17.2 | 660 | <1.0 | 6.3 |
| | 6/3/2013 | < 0.020 | 11 | 6.2 | 0.063 | < 1 | < 1 | 0.25 | 123.6 | 3.3 | 18.5 | 42 | 1.1 | 6.23 |
| | 12/6/2013 | < 0.020 | 11 | 5.7 | 0.051 | < 1 | < 1 | 1.85 | 155.9 | 2.6 | 16 | 120 | 1.1 | 6.43 |
| | 6/2/2014 | < 0.020 | 13 | 6.4 | 0.055 | < 1 | < 1 | 0.61 | 27.6 | 4.6 | 17.3 | 22 | 2.6 | 6.25 |
| | 12/10/2014 | < 0.020 | 10 | 5.4 | 0.096 | < 1 | < 1 | 1.51 | -29 | 3.1 | 13.3 | 1400 | <1.0 | 6.64 |
| | 6/4/2015 | < 0.020 | 11 | 6 | 0.054 | < 5.0 | < 5.0 | 0.01 | 193.1 | 3 | 17.9 | 100 | <1.0 | 6.47 |
| | 12/4/2015 | < 0.020 | 8 | 4.7 | 0.11 | < 1 | < 1 | 0.30 | -31.1 | 2.5 | 12.3 | 2100 | <1.0 | 6.47 |

**Notes:**

1. Injections were performed July 7 - July 27, 2004; January 17 - February 1, 2005; and October 18-27, 2005.
2. Iron results presented are for ferrous iron ($Fe^{+2}$).
3. Well designations with R are replacement wells.

**Abbreviations/Acronyms:**

-- = parameter was not analyzed, not measured, or historic information
cDCE = cis-1,2-dichloroethene
DO = dissolved oxygen
µg/L = micrograms per liter
mg/L = milligrams per liter
mV = milliVolt
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
VC = vinyl chloride