

# **2022 Groundwater Monitoring Report South Woodwaste Landfill Arlington, Washington**

Submitted to  
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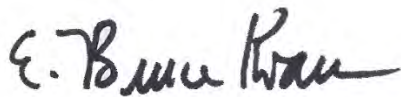
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**May 2023**

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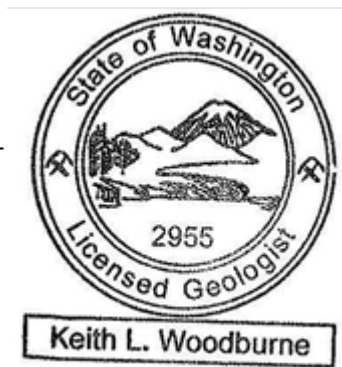


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Date: 21 May 2023



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Date: 21 May 2023

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# 1. Introduction

This report presents quarterly groundwater data collected in 2022 by Jeff Lervick PLE LLC for J.H. Baxter & Co's (Baxter) closed South Woodwaste Landfill (South Landfill, Site), located at 6520 188<sup>th</sup> Street NE in Arlington, Snohomish County, Washington (Figure 1, Source: GSI Water Solutions, Inc.). Baxter closed the South Landfill in 1991; it is covered with a vegetated soil cap.

Four monitoring wells were installed in 1988. Monitoring wells BXS-1, BXS-2, and BXS-3 are located hydraulically downgradient of the South Landfill. Monitoring well BXS-4 is located hydraulically upgradient of the South Landfill (Figures 2 and 3, Source: GSI Water Solutions, Inc.). Monitoring well BXS-4 represents background groundwater quality providing the benchmark to compare with the water quality data from downgradient wells. Boring logs, groundwater monitoring procedures, and a summary of site conditions encountered during the installation of the monitoring wells are included in the hydrogeologic report prepared by Sweet-Edwards/EMCON, Inc. (EMCON, 1989).

Sampling in 2022 was conducted in March, June, September, and December in accordance with the Washington State Department of Ecology (Ecology)-approved sampling and analysis plan (SAP) dated March 2017 (GSI 2017). Groundwater samples were collected on a quarterly basis from monitoring well BXS-3 and on a semi-annual basis from all the wells.

## 2. Hydrogeology

Semi-annual groundwater monitoring events included collecting groundwater level measurements at the four monitoring wells to understand the flow direction and gradient of the shallow groundwater beneath the South Woodwaste Landfill.

### 2.1 Groundwater Elevations

Groundwater levels were measured at the four monitoring wells before purging the wells for groundwater sampling. Groundwater elevation data for 2022 are summarized in Table 1. Monitoring well BXS-2 was damaged between second and third quarter monitoring. The damage bent the well casing, preventing the deployment of a water level probe to groundwater. Thus, the groundwater elevation in BXS-2 for the third quarter was estimated using a multiple regression analysis with measurements taken from the other 3 wells on the same date as BXS-2.

During the March and September monitoring events, groundwater elevations were highest in monitoring well BXS-4 and lowest in BXS-1. The groundwater level in BXS-4 and BXS-1 varied the greatest (21.14 feet) during the third quarter.

Groundwater elevation contour maps for February 2016 (Figure 2, Source: GSI Water Solutions, Inc.) and September 2016 (Figure 3, Source: GSI Water Solutions, Inc.) are provided for reference. Groundwater flow direction in 2022 was toward the northwest and is consistent with the regional groundwater flow in the aquifer (Figure 4, Source: GSI Water Solutions, Inc.).

## 2.2 Groundwater Velocities

Groundwater velocities ( $v_x$ ) were estimated using Darcy's law:

$$v_x = -K_i / n_e$$

Hydraulic conductivity (K) in the fine sand beneath the Site was estimated at  $3 \times 10^{-2}$  to  $6 \times 10^{-2}$  centimeters per second based on slug tests performed in monitoring wells BXS-2 and BXS-4 (EMCON, 1989). Porosity ( $n_e$ ) was assumed to be 0.300 (i.e., 30 percent).

The gradient (i) between wells BXS-2 and BXS-4, which are 1,080 feet apart, was greatest during the third quarter (0.019) (Table 2). This slope results in velocity estimates of 5.3 to 10.5 feet per day. Table 2 shows the calculated hydraulic gradients and groundwater velocities during the first and third quarter 2022. Gradient and groundwater velocity are similar to previous years.

## 3. Groundwater Quality

Groundwater monitoring events were conducted on March 11, for the first quarter; June 30, for the second quarter; September 21, for the third quarter; and December 19, for the fourth quarter of 2022. Groundwater sampling was performed using a submersible stainless-steel pump or dedicated submersible purge pumps using tubing dedicated to each well. Sampling procedures are described in the latest SAP (GSI 2017).

Field measurements using a water quality meter with flow-thru cell were taken for pH, conductivity, temperature, oxidation-reduction potential (ORP), and dissolved oxygen before groundwater sampling. Groundwater samples for conventional parameters and dissolved metals were collected quarterly. In accordance with the latest SAP, groundwater samples were analyzed by AmTest Laboratories of Kirkland, WA, for the following:

- **Conventional Parameters:** ammonia as nitrogen, chemical oxygen demand (COD), chloride, sulfate, tannin and lignin, total dissolved solids (TDS), and total organic carbon (TOC)
- **Dissolved Metals:** Arsenic, barium, iron, manganese, and nickel

### 3.1 Groundwater Sampling

Field measurements collected from February 2007 through December 2022 are summarized in Table 3A. Field sampling records are included in Appendix A. The analytical data from 2007 through 2022 are summarized in Tables 3B and 3C. Laboratory analytical reports and chain-of-custody (COC) forms for the 2022 groundwater monitoring events are included in Appendix B.

## 4. Data Review

This section describes the data review process to evaluate the adequacy and quality of the analytical data from the 2022 groundwater monitoring events. The objective of the data

review is to identify estimated, unreliable, or invalid measurements. Information about the reliability of the data is critical to the interpretation of the results. The review was performed according to guidelines prepared by the U.S. Environmental Protection Agency (EPA; EPA, 2010).

## 4.1 Field Quality Assurance (QA) /QC

During the quarterly groundwater monitoring events, field duplicates were prepared and collected by field personnel in accordance with standard practice. Field duplicate samples for the March, September and December monitoring events were collected from monitoring well BXS-3 and labeled as BXS-103.

Field duplicate results aid in the assessment of sampling and analytical precision. Analytical results for the original and duplicate samples collected from each sampling event were evaluated using the relative percent difference (RPD). RPD is the difference between the two results divided by the mean and expressed as a percent. The RPD was calculated for an analyte when both the primary sample and duplicate sample had a detected concentration. For analytes with concentrations greater than or equal to five times the associated method reporting limit (MRL) and when the RPD is greater than 35 percent, the reported values are considered estimated concentrations. For analytes with concentrations less than five times the associated MRL, the reported values are considered estimated if the absolute difference between primary and duplicate is greater than the value of the MRL. Following the RPD evaluation, the following analytes from the third quarter were qualified as estimated concentrations:

- Ammonia, dissolved arsenic, BXS-3, September 2022

## 4.2 Laboratory QA/QC

Sample coolers for each quarterly monitoring event arrived at the laboratories in good condition and with no broken bottles. The laboratory reports are complete and contain results for all samples and corresponding analyses requested on the COC forms.

All analyses were performed within the required holding time for the parameters of interest. The EPA method for pH analysis of water samples, Method 150.1 (EPA, 1999a), specifies that pH analyses be performed “as soon as possible preferably in the field at the time of sampling.” For that reason, field-analyzed pH results are used for trend analysis and statistical evaluation.

No analytes were detected in method blanks above the MRL.

Laboratory duplicate RPDs (0-28%) were below laboratory limits or, for sample concentrations less than five times the MRL, the difference between parent and duplicate sample concentrations was less than the MRL, and as such, data were not modified. Analytical values derived from measurements close to the MDL are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Matrix spike (MS) recoveries were generally within laboratory limits, or the sample value was significantly higher or lower than the added spike concentration, preventing accurate evaluation of spike recovery.

## 4.3 Statistical Analysis of Data

Groundwater sample analysis results were statistically evaluated to assess if there was a significant difference between the downgradient wells (BXS-1, BXS-2, and BXS-3) and the upgradient well (BXS-4). The following approach was used for performing the statistical analysis:

- **Non-Detects:** Non-detect results were replaced with a value of half the laboratory MRL.
- **Data Distribution:** The data are assumed to be normally distributed to meet key assumptions of the Student's t-test.
- **Parametric Hypothesis Testing:** Parametric hypothesis testing was performed using the Student's t-test for all parameters in both the upgradient and downgradient wells. For each comparison, the null hypothesis was that there was no difference between the downgradient and upgradient concentrations. The null hypothesis was tested using a two-tailed test at a significance level of 0.05. The t-test statistic ( $t_{\text{stat}}$ ) was calculated from the average and variance of quarterly sampling results in a downgradient well and the upgradient well. Each quarterly sample was compared to the previous three quarterly samples to provide a four-sample running average. The average concentration in the downgradient well was significantly higher than the upgradient well if  $t_{\text{stat}}$  was greater than the critical test statistic ( $t_c$ ). Similarly, the average concentration in the downgradient well was significantly lower than the upgradient well if  $t_{\text{stat}}$  was less than the negative value of the critical test statistic ( $t_c$ ). The critical test statistic was computed using the percent point function (ppf). The ppf is the inverse of the cumulative distribution function.

Statistically significant detections above background well (BXS-4) concentrations are shown in **bold** in the tables included in Appendix C. Statistically significant detections below background concentrations are shown in gray in the tables included in Appendix C. Historical statistically higher values above background well concentrations since 1989 are shown in Table 4.

## 5. Discussion of Results

### 5.1 Statistical Results

Appendix C presents the results of the statistical analyses for each individual parameter tested in groundwater samples from monitoring wells BXS-1 through BXS-4. Results show average concentration, variance, standard deviation, and the Student's t-test statistic. The parameters detected at a statistically higher concentration in specific downgradient wells compared to the upgradient well are:

- TOC, Tannin & Lignin, and dissolved iron in BXS-3
- COD, and dissolved manganese in BXS-2 and BXS-3
- TDS and dissolved nickel in BXS-1, BXS-2, and BXS-3.
- Sulfate in BXS-1

## 5.2 Concentration Trends over Time

Figures 5 through 16 show the concentration trends from 2007 through 2022 for each of the following parameters:

- **Ammonia as Nitrogen** (Figure 5): Since 2018, ammonia concentrations in the upgradient well (BXS-4) have been higher than downgradient wells and appear to be increasing. Levels in downgradient wells have been more consistent. Concentrations in BXS-1 and BXS-2 are typically well below background concentrations with the exception of first quarter 2017. In 2022, ammonia was similar in all wells for the first time since 2017.
- **Arsenic** (Figure 6): Arsenic concentrations are highest in BXS-3 and have been consistently above levels in BXS-4. Since 2018, however, concentrations in BXS-3 have been near 2009 levels and appear to be on the decline. Arsenic concentrations in BXS-4, BXS-2 and BXS-1 have been regularly at or slightly greater than the MDL.
- **Barium** (Figure 7): Barium concentrations in BXS-3 and BXS-2 are higher than those in BXS-4. Barium levels in all wells, however, appear to be declining. Since 2017, barium has been similar in all wells.
- **COD** (Figure 8): Until 2017, COD in all downgradient wells was generally higher than BXS-4. Since 2017, COD in BXS-4 has increased and COD levels in all wells have fluctuated and. BXS-3 has the highest levels of COD, which peaked in 2021. Despite the peak in 2021, COD in downgradient wells appears to be declining.
- **Iron** (Figure 9): Iron concentrations are highest in BXS-3 and have been regularly well above levels in BXS-4 and other downgradient wells. The trend line for iron in BXS-3, however, is declining. Background concentrations and levels in other downgradient wells have been relatively consistent and low.
- **Manganese** (Figure 10): Manganese concentrations in BXS-3 and BXS-2 have routinely been greater than those in BXS-4. Levels fluctuate the most and are highest in BXS-3 but concentrations show a decreasing trend. With the exception of increases in the third quarters of 2009 and 2017, manganese levels in other wells have been relatively consistent.
- **Nickel** (Figure 11): Since the second quarter of 2013, nickel levels in all downgradient wells have been regularly higher than those in BXS-4. Concentrations have typically been higher in BXS-2 and BXS-3 and appear to be increasing in BXS-3. With the exception of a spike in the third quarter of 2009, nickel levels in most wells have been fairly consistent.

- **Field pH** (Figure 12): Field pH has been consistently lower in wells BXS-1, BXS-2, and BXS-3 relative to BXS-4. Field pH in all wells spiked alkaline in October 2019 but otherwise has been slightly acid. Field pH appears to be decreasing in BXS-4.
- **Sulfate** (Figure 13): Except for 2017 and 2021, sulfate concentrations in BXS-1 have been routinely greater than those in BXS-4 and other downgradient wells, which are similar to background. Sulfate is lowest in BXS-3 and has been stable during the monitoring period. Concentrations in BXS-1 and BXS-4 spiked in 2021 but were very low in 2020 and 2022.
- **Tannin and Lignin** (Figure 14): Tannin and lignin concentrations in BXS-3 have regularly exceeded levels in BXS-4. Concentrations are highest in BXS-3 and appear to be increasing. Levels in other downgradient wells are relatively low, similar to background, and stable.
- **TDS** (Figure 15): TDS in BXS-3, BXS-2, and BXS-1 has been consistently higher relative to BXS-4 with the exception of third quarter 2020 and 2021. TDS is highest in BXS-2 with the exception of fourth quarter 2022, when TDS peaked in BXS-3. TDS concentrations in BXS-4 have been relatively consistent but appear to be increasing slightly. Levels are more variable in downgradient wells but are showing a decreasing trend.
- **TOC** (Figure 16): TOC levels in BXS-3, BXS-2 and BXS-1 have been consistently above those in BXS-4. TOC fluctuates the greatest and is highest in BXS-3 with the exception of the final quarters of 2011 and 2020. Concentrations in BXS-4 have been stable throughout the monitoring period but bumped in 2020 and 2021.

## 5.3 Comparison to Standards

In Washington, water quality standards for groundwater are provided in the Washington Administrative Code (WAC) 173-200-040 (Washington, 2003). Washington water quality standards for groundwater are listed in Tables 3A, 3B, and 3C.

### 5.3.1 Comparison to Washington State Standards

There were no detections in 2022 that exceeded Washington water quality standards for groundwater, with the following exceptions:

- **Arsenic:** In BXS-3, arsenic concentrations exceeded Washington's water quality standard for groundwater of 0.05 µg/L in all quarterly monitoring events except the first. Concentrations in BXS-3 ranged from <20 to 81 µg/L.
- **Iron:** In BXS-3, iron concentrations exceeded the state standard of 300 µg/L in all quarters. Levels ranged from 37,500 to 75,900 µg/L.
- **Manganese:** Manganese levels exceeded the standard of 50 µg/L during all quarters in all wells but BXS-1. Concentrations were highest in BXS-3, ranging from 3,570 to 8,880 µg/L.

- **Field pH:** Most pH measurements in each well were below the groundwater standard of 6.5 to 8.5. The exceptions were in the first and third quarters when pH levels in BXS-4 complied with the standard. Field pH levels ranged from 6.09-7.44.

Per the Snohomish Health District's request in a letter dated August 28, 2015, a dissolved arsenic plume delineation was performed in 2022. Arsenic is a naturally occurring element that can become mobilized by reduced geochemical conditions, such as those present at the Site. Once mixed with oxic downgradient waters, arsenic would immobilize through precipitation, sorption, or other complexing forces favorable for arsenic in more aerobic environments. However, to provide a conservative estimate of downgradient transport, arsenic was modeled as non-reactive solute using the Domenico equation for advection and dispersion. Calculations were performed with the Quick Domenico worksheet used by California and Pennsylvania to screen potential landfill impacts and the plume extent plotted in Figure 17. A description of the model inputs and results is provided in Appendix D.

The Domenico model was run for the upper range of site hydraulic gradient and conductivity (Table 2). The model was set to a 10-year run period (3650 days), at which point the modeled concentration has reached the furthest downgradient extent given a constant source, the concentration being peak arsenic measured in 2022 (Table 3C). The largest areal extent with arsenic concentrations meeting or exceeding 5 µg/L is plotted in Figure 17. Arsenic concentrations exceeding 5 µg/L were not found to persist greater than 295 feet downgradient of BXS-3, which is a plume extent similar to prior years.

## 6. Summary

Quarterly groundwater monitoring samples were collected from one upgradient well (BXS-4) and three downgradient wells (BXS-1 through BXS-3) during 2022 at the South Woodwaste Landfill. The samples were analyzed for 7 groundwater quality parameters and 5 dissolved metals.

Some groundwater samples collected during monitoring in 2022 exceeded particular Washington water quality standards for groundwater. At times, arsenic, iron, and manganese concentrations did not comply with state standards. Arsenic and iron in BXS-3 exceeded state criteria in most quarters. Manganese levels in most wells were higher than the standard during all quarters. Furthermore, all field pH measurements in downgradient wells were lower than 6.5.

## 7. References

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GSI Water Solutions, Inc. (GSI) 2017. Revised groundwater sampling and analysis plan, north and south woodwaste landfills, Arlington, WA. Prepared for J.H. Baxter Co., Eugene, OR.

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## Tables

**Table 1. Groundwater Elevation Summary for 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Well ID | Inner Casing Diameter (inches) | Total Depth (ft bgs) | Screen Length (ft) | Screened Interval (ft bgs) | TOC Elevation <sup>1</sup> (ft msl) | Date       | Depth to Groundwater (ft below TOC) | Groundwater Elevation (ft msl) |
|---------|--------------------------------|----------------------|--------------------|----------------------------|-------------------------------------|------------|-------------------------------------|--------------------------------|
| BXS-1   | 2                              | 47.90                | 10                 | 37.90 - 47.90              | 142.65                              | 3/11/2022  | 30.39                               | 112.26                         |
|         |                                |                      |                    |                            |                                     | 6/30/2022  | NM                                  | NA                             |
|         |                                |                      |                    |                            |                                     | 9/21/2022  | 33.87                               | 108.78                         |
|         |                                |                      |                    |                            |                                     | 12/19/2022 | NM                                  | NA                             |
| BXS-2   | 2                              | 45.40                | 10                 | 35.40 - 45.40              | 142.89                              | 3/11/2022  | 28.33                               | 114.56                         |
|         |                                |                      |                    |                            |                                     | 6/30/2022  | NM                                  | NA                             |
|         |                                |                      |                    |                            |                                     | 9/21/2022  | 33.02 <sup>2</sup>                  | 109.87                         |
|         |                                |                      |                    |                            |                                     | 12/19/2022 | NM                                  | NA                             |
| BXS-3   | 2                              | 44.15                | 10                 | 34.15 - 44.15              | 142.07                              | 3/11/2022  | 23.45                               | 118.62                         |
|         |                                |                      |                    |                            |                                     | 6/30/2022  | 24.25                               | 117.82                         |
|         |                                |                      |                    |                            |                                     | 9/21/2022  | 27.68                               | 114.39                         |
|         |                                |                      |                    |                            |                                     | 12/19/2022 | 29.68                               | 112.39                         |
| BXS-4   | 2                              | 47.40                | 10                 | 37.40 - 47.40              | 143.42                              | 3/11/2022  | 10.56                               | 131.51                         |
|         |                                |                      |                    |                            |                                     | 6/30/2022  | NM                                  | NA                             |
|         |                                |                      |                    |                            |                                     | 9/21/2022  | 13.50                               | 129.92                         |
|         |                                |                      |                    |                            |                                     | 12/19/2022 | NM                                  | NA                             |

**Notes**

bgs = below ground surface.

ft = feet.

msl = mean sea level.

TOC = top of casing.

NM - not monitored; ND - no data.

<sup>1</sup> Wells resurveyed in October 2002.<sup>2</sup> Depth determined from multiple regression analysis.

**Table 2. Hydraulic Gradient and Groundwater Velocity for 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date      | Gradient<br>(i) | Hydraulic Conductivity<br>(K)<br>(cm/sec) | Porosity<br>(n <sub>e</sub> ) | Velocity<br>(v <sub>x</sub> )<br>(cm/sec) | Velocity<br>(v <sub>x</sub> )<br>(ft/day) |
|-----------|-----------------|-------------------------------------------|-------------------------------|-------------------------------------------|-------------------------------------------|
| 3/11/2022 | 0.016           | 0.0300 to 0.0600                          | 0.300                         | 0.002 to 0.003                            | 4.4 to 8.9                                |
|           |                 |                                           |                               |                                           |                                           |
| 9/21/2022 | 0.019           |                                           |                               | 0.002 to 0.004                            | 5.3 to 10.5                               |

**Notes**

Gradient = BXS-4 groundwater elevation - BXS-2 groundwater elevation/1,080 ft.

cm = centimeter.

ft = feet.

NC = not calculated.

sec = second.

**Table 3A. Summary of Groundwater Sampling Field Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date       | pH              |       |       |       | Conductivity |       |       |       | Temperature |       |       |       | ORP   |       |       |       | Dissolved Oxygen |       |       |       |
|------------|-----------------|-------|-------|-------|--------------|-------|-------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|------------------|-------|-------|-------|
|            | (standard unit) |       |       |       | (μS/cm)      |       |       |       | (°C)        |       |       |       | (mV)  |       |       |       | (mg/L)           |       |       |       |
|            | 6.5 - 8.5       |       |       |       | --           |       |       |       | --          |       |       |       | --    |       |       |       | --               |       |       |       |
| SMCL       | 6.5 - 8.5       |       |       |       | --           |       |       |       | --          |       |       |       | --    |       |       |       | --               |       |       |       |
| WA WQ Std  | 6.5 - 8.5       |       |       |       | --           |       |       |       | --          |       |       |       | --    |       |       |       | --               |       |       |       |
| Well ID    | BXS-4           | BXS-3 | BXS-2 | BXS-1 | BXS-4        | BXS-3 | BXS-2 | BXS-1 | BXS-4       | BXS-3 | BXS-2 | BXS-1 | BXS-4 | BXS-3 | BXS-2 | BXS-1 | BXS-4            | BXS-3 | BXS-2 | BXS-1 |
| 2/5/2007   | 8.60            | 7.12  | 6.81  | 6.75  | 166          | 730   | 672   | 299   | 9.5         | 13.2  | 12.1  | 11.4  | -40   | -103  | 1     | 241   | 9.80             | 2.40  | 3.00  | 2.30  |
| 4/18/2007  | 8.09            | 6.62  | 6.47  | 6.31  | 176          | 808   | 796   | 379   | 9.5         | 13.1  | 12.3  | 11.7  | -136  | -113  | 45    | 187   | 1.20             | 1.80  | 1.20  | 0.80  |
| 7/18/2007  | 8.25            | 6.64  | 6.52  | 6.38  | 222          | 867   | 922   | 415   | 9.8         | 13.1  | 12.5  | 12.0  | -145  | -113  | 62    | 219   | 0.00             | 0.00  | 0.00  | 0.00  |
| 10/9/2007  | 7.83            | 6.30  | 6.19  | 6.02  | 199          | 810   | 804   | 495   | 9.8         | 12.8  | 12.5  | 12.0  | -148  | -97   | 40    | 226   | 0.00             | 0.00  | 0.00  | 0.00  |
| 1/9/2008   | 7.81            | 6.25  | 6.18  | 5.91  | 196          | 788   | 772   | 369   | 9.3         | 12.1  | 12.1  | 11.4  | -147  | -67   | 54    | 251   | 0.00             | 0.00  | 0.00  | 0.00  |
| 4/30/2008  | 7.66            | 6.23  | 6.10  | 5.98  | 201          | 846   | 794   | 485   | 9.1         | 12.9  | 12.2  | 11.8  | -157  | -126  | 32    | 138   | 0.00             | 0.00  | 0.08  | 0.15  |
| 7/29/2008  | 7.98            | 6.42  | 6.37  | 6.14  | 180          | 726   | 732   | 510   | 9.4         | 12.9  | 12.4  | 12.0  | -150  | -90   | 31    | 185   | 0.33             | 0.37  | 1.77  | 5.80  |
| 10/22/2008 | 8.32            | 6.55  | 6.48  | 6.28  | 177          | 722   | 733   | 496   | 9.6         | 12.7  | 12.4  | 12.0  | -173  | -93   | 20    | 157   | 0.07             | 0.12  | 0.14  | 1.10  |
| 2/1/2009   | 8.09            | 6.77  | 6.56  | 6.42  | 176          | 734   | 749   | 401   | 9.2         | 12.7  | 12.0  | 11.6  | -154  | -118  | 59    | 299   | 2.33             | 2.04  | 1.87  | 2.66  |
| 5/1/2009   | 8.25            | 6.44  | 6.35  | 6.33  | 185          | 736   | 812   | 335   | 9.4         | 13.2  | 12.6  | 12.0  | -192  | -99   | 86    | 121   | 1.21             | 0.08  | 0.10  | 0.53  |
| 8/1/2009   | 7.89            | 6.52  | 6.64  | 6.41  | 185          | 695   | 797   | 309   | 9.4         | 12.6  | 12.3  | 11.9  | -172  | -128  | 36    | 245   | 8.60             | 6.28  | 6.03  | 6.04  |
| 11/1/2009  | 7.96            | 6.50  | 6.46  | 6.37  | 192          | 755   | 815   | 315   | 9.3         | 12.2  | 12.0  | 11.5  | -167  | -98   | 52    | 257   | 6.73             | 2.86  | 1.98  | 1.18  |
| 2/10/2010  | 8.05            | 6.59  | 6.55  | 6.58  | 180          | 726   | 799   | 274   | 9.3         | 12.9  | 12.1  | 12.0  | -183  | -73   | -3    | 74    | 0.11             | 0.17  | 0.31  | 1.23  |
| 5/26/2010  | 7.46            | 6.04  | 5.96  | 5.90  | 189          | 719   | 853   | 288   | 9.3         | 12.8  | 17.0  | 12.0  | -247  | -142  | 59    | 129   | 0.00             | 0.00  | 0.00  | 0.00  |
| 8/18/2010  | 7.63            | 5.98  | 5.87  | 5.94  | 230          | 690   | 833   | 309   | 9.7         | 12.5  | 12.3  | 12.3  | -285  | -51   | 141   | 258   | 0.00             | 0.18  | 0.38  | 0.93  |
| 11/18/2010 | 7.99            | 6.37  | 6.52  | 6.34  | 184          | 694   | 813   | 344   | 9.7         | 12.8  | 12.1  | 11.9  | -287  | -193  | -42   | -30   | 0.43             | 0.12  | 1.98  | 0.24  |
| 2/9/2011   | 8.02            | 6.22  | 6.16  | 6.24  | 187          | 710   | 844   | 334   | 9.5         | 12.8  | 11.9  | 12.0  | -164  | -128  | 36    | -167  | 0.10             | 0.11  | 0.26  | 0.28  |
| 5/17/2011  | 7.99            | 6.24  | 6.20  | 6.25  | 183          | 732   | 929   | 315   | 9.9         | 12.8  | 12.2  | 12.6  | -205  | -120  | 32.0  | 158   | 0.36             | 0.38  | 0.43  | 0.45  |
| 8/24/2011  | 7.77            | 5.79  | 5.73  | 5.75  | 190          | 741   | 833   | 337   | 10.2        | 13.0  | 12.4  | 12.4  | -172  | -115  | 45    | 164   | 0.09             | 0.09  | 0.19  | 0.18  |
| 11/3/2011  | 8.36            | 6.43  | 6.37  | 6.46  | 192          | 673   | 852   | 346   | 9.8         | 12.5  | 12.0  | 12.0  | -274  | -140  | 39    | 150   | 1.12             | 1.04  | 1.19  | 1.29  |
| 2/14/2012  | 7.72            | 6.92  | 6.74  | 6.67  | 192          | 696   | 865   | 359   | 10.4        | 13.1  | 12.5  | 12.6  | -142  | -118  | 74    | 302   | 3.10             | 4.17  | 4.21  | 5.76  |
| 5/2/2012   | 6.97            | 5.70  | 5.65  | 5.06  | 193          | 693   | 914   | 319   | 10.4        | 13.1  | 12.7  | 12.6  | -98   | -49   | 141   | 396   | 1.37             | 1.86  | 2.23  | 3.94  |
| 8/21/2012  | 6.62            | 5.33  | 5.34  | 4.90  | 192          | 707   | 895   | 308   | 10.7        | 13.1  | 12.8  | 12.8  | -84   | -47   | 182   | 330   | 1.53             | 1.97  | 2.39  | 2.28  |
| 11/13/2012 | 7.68            | 6.29  | 6.26  | 6.10  | 147          | 520   | 641   | 239   | 12.5        | 12.5  | 12.9  | 10.5  | -125  | -82   | 216   | 439   | 2.39             | 4.73  | 7.79  | 6.45  |
| 2/12/2013  | 7.07            | 5.66  | 5.72  | 5.57  | 184          | 529   | 869   | 278   | 9.7         | 12.4  | 11.8  | 12.0  | -118  | -92   | 76    | 337   | 2.16             | 3.68  | 0.82  | 0.91  |
| 6/4/2013   | 7.32            | 5.92  | 5.84  | 5.69  | 190          | 635   | 892   | 271   | 10.1        | 12.2  | 12.0  | 12.2  | -141  | -99   | 90    | 313   | 0.83             | 2.62  | 1.52  | 0.44  |
| 8/25/2013  | 7.62            | 6.30  | 6.22  | 6.03  | 193          | 709   | 871   | 299   | 10.2        | 12.2  | 12.0  | 12.5  | -119  | -104  | 118   | 315   | 0.36             | 0.80  | 2.96  | 2.22  |
| 12/2/2013  | 7.39            | 5.88  | 5.66  | 5.63  | 198          | 699   | 882   | 313   | 9.8         | 11.9  | 11.6  | 12.1  | -124  | -112  | 135   | 328   | 1.02             | 5.46  | 5.74  | 2.36  |
| 3/17/2014  | 5.92            | 6.28  | 6.16  | 6.06  | 189          | 730   | 817   | 299   | 10.0        | 12.2  | 11.6  | 12.7  | -112  | -94   | 128   | 268   | 1.85             | 8.84  | 12.60 | 2.07  |
| 6/2/2014   | 7.47            | 5.72  | 5.79  | 5.64  | 213          | 793   | 952   | 318   | 10.1        | 12.3  | 12.2  | 13.3  | -92   | -86   | 84    | 213   | 0.15             | 0.00  | 0.00  | 0.00  |
| 9/29/2014  | 7.69            | 6.25  | 6.15  | 5.99  | 212          | 733   | 918   | 306   | 10.5        | 12.3  | 12.0  | 12.5  | -126  | -94   | 106   | 273   | 0.00             | 0.00  | 0.00  | 0.00  |

**Table 3A. Summary of Groundwater Sampling Field Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date       | pH                |       |       |       | Conductivity |       |       |       | Temperature |       |       |       | ORP    |        |        |       | Dissolved Oxygen |       |       |       |
|------------|-------------------|-------|-------|-------|--------------|-------|-------|-------|-------------|-------|-------|-------|--------|--------|--------|-------|------------------|-------|-------|-------|
|            | (standard unit)   |       |       |       | (μS/cm)      |       |       |       | (°C)        |       |       |       | (mV)   |        |        |       | (mg/L)           |       |       |       |
|            | SMCL<br>6.5 - 8.5 |       |       |       | --           |       |       |       | --          |       |       |       | --     |        |        |       | --               |       |       |       |
| Well ID    | BXS-4             | BXS-3 | BXS-2 | BXS-1 | BXS-4        | BXS-3 | BXS-2 | BXS-1 | BXS-4       | BXS-3 | BXS-2 | BXS-1 | BXS-4  | BXS-3  | BXS-2  | BXS-1 | BXS-4            | BXS-3 | BXS-2 | BXS-1 |
| 11/17/2014 | 7.48              | 5.99  | 5.88  | 5.69  | 192          | 675   | 822   | 285   | 10.2        | 11.9  | 11.6  | 12.2  | -117   | -77    | 111    | 285   | 0.00             | 10.75 | 0.71  | 0.00  |
| 2/23/2015  | 7.28              | 5.84  | 5.78  | 5.86  | 194          | 682   | 798   | 269   | 10.2        | 12.4  | 11.8  | 12.8  | -102   | -71    | 125    | 299   | 1.02             | 1.28  | 1.25  | 1.58  |
| 9/14/2015  | 7.50              | 6.26  | 6.24  | 6.02  | 196          | 674   | 778   | 268   | 10.8        | 12.2  | 11.9  | 13.3  | -136   | -107   | 142    | 114   | 1.09             | 1.33  | 1.32  | 1.23  |
| 12/7/2015  | 7.06              | 6.04  | 5.94  | 5.28  | 187          | 676   | 732   | 286   | 10.3        | 12.0  | 11.7  | 12.4  | -143   | -112   | 159    | 286   | 1.25             | 1.04  | 1.07  | 1.18  |
| 2/29/2016  | 6.98              | 6.00  | 5.95  | 5.86  | 196          | 644   | 795   | 280   | 10.5        | 12.4  | 11.8  | 12.4  | -74    | -102   | 153    | 365   | 1.37             | 0.92  | 0.98  | 1.15  |
| 6/16/2016  | 7.69              | 6.49  | 6.57  | 6.03  | 197          | 663   | 754   | 356   | 11.1        | 12.4  | 12.4  | 12.9  | -162   | -120   | 13.2   | 339   | 0.79             | 0.72  | 2.54  | 0.74  |
| 9/26/2016  | 6.84              | 6.19  | 6.10  | 5.81  | 189          | 627   | 637   | 344   | 11.8        | 12.5  | 12.5  | 12.8  | -128   | -153   | 148    | 315   | 0.75             | 0.75  | 2.97  | 0.90  |
| 3/8/2017   | 7.28              | 6.12  | 6.08  | 5.87  | 188          | 694   | 680   | 373   | 12.7        | 13.1  | 12.8  | 13.1  | 57     | 109    | 57     | 161   | 3.37             | 1.37  | 0.76  | 2.43  |
| 6/10/2017  | NT                | NT    | 6.36  | NT    | NT           | NT    | 354   | NT    | NT          | NT    | 12.4  | NT    | NT     | NT     | 106    | NT    | NT               | NT    | 2.90  | NT    |
| 9/16/2017  | 6.97              | 6.18  | 6.12  |       | 156          | 507   | 567   |       | 12.9        | 12.8  | 12.3  |       | -146.4 | -126.3 | -120.9 |       | 0.88             | 1.62  | 2.56  |       |
| 12/14/2017 | NT                | NT    | 6.26  | NT    | NT           | NT    | 587   | NT    | NT          | NT    | 12.4  | NT    | NT     | NT     | 78.9   | NT    | NT               | NT    | 0.42  | NT    |
| 3/17/2018  |                   | 6.28  |       | 6.18  |              | 335   |       | 186   |             | 10.4  |       | 14.1  |        | 18.9   |        | -50.1 |                  | 5.77  |       | 1.62  |
| 6/16/2018  |                   |       | 6.15  |       |              |       | 375   |       |             |       | 12.7  |       |        |        | 68.4   |       |                  |       | 0.35  |       |
| 9/29/2018  | 7.92              | 6.13  | 6.01  | 5.71  | 243          | 447   | 505   | 247   | 15.3        | 12.7  | 12.1  | 12.5  | -67    | -61    | 136    | 265   | 0.08             | 0.03  | 0.00  | 0.00  |
| 11/17/2018 |                   |       |       |       |              |       |       |       |             |       |       |       |        |        |        |       |                  |       |       |       |
| 3/16/2019  | 7.29              | 6.15  | 6.16  | 6.03  | 208          | 449   | 482   | 231   | 7.6         | 11.7  | 12.4  | 11.6  | -92.5  | -117.1 | 30.5   | 10.9  | 0.16             | 0.20  | 0.25  | 0.27  |
| 6/1/2019   | NT                | NT    | EM    | NT    | NT           | 1502  | NT    | NT    | NT          | 14.4  | NT    | NT    | NT     | -376   | NT     | NT    | NT               | 0.10  | NT    | NT    |
| 10/12/2019 | 9.58              | 8.02  | 7.97  | 8.09  | 263          | 753   | 773   | 366   | 12.5        | 13.2  | 13.6  | 13.3  | -83    | -82    | 16     | 103   | 0.00             | 3.21  | 0.00  | 0.82  |
| 12/22/2019 | NT                | 5.73  | NT    | NT    | NT           | 449   | NT    | NT    | NT          | 10.5  | NT    | NT    | NT     | -90.2  | NT     | NT    | NT               | 0.00  | NT    | NT    |
| 4/1/2020   | 7.04              | 6.35  | 6.31  | 6.31  | 255          | 615   | 660   | 230   | 10.1        | 12.6  | 12.2  | 12.8  | 6.9    | -9.9   | 4.7    | 18.7  | 5.50             | 4.24  | 4.31  | 5.08  |
| 6/26/2020  | NT                | 6.47  | NT    | NT    | NT           | 624   | NT    | NT    | NT          | 14.5  | NT    | NT    | NT     | -106   | NT     | NT    | NT               | 0.00  | NT    | NT    |
| 9/22/2020  | 7.15              | NT    | 6.46  | 6.25  | 249          | NT    | 485   | 255   | 14.7        | NT    | 11.7  | 13.2  | -13    | NT     | 83.9   | 106.9 | 3.17             | NT    | 1.61  | 2.21  |
| 9/25/2020  | NT                | 6.03  | NT    | NT    | NT           | 613   | NT    | NT    | NT          | 13.3  | NT    | NT    | NT     | -59.2  | NT     | NT    | NT               | 0.84  | NT    | NT    |
| 12/29/2020 | NT                | 5.99  | NT    | NT    | NT           | 604   | NT    | NT    | NT          | 12.3  | NT    | NT    | NT     | -54    | NT     | NT    | NT               | 1.19  | NT    | NT    |
| 3/11/2021  | 6.51              | 6.14  | 6.05  | 6.24  | 267          | 585   | 664   | 330   | 9.8         | 12.9  | 12.8  | 12.2  | -167   | -132   | 18     | 479   | 5.30             | 1.59  | 3.61  | 1.13  |
| 6/16/2021  | NT                | 6.47  | NT    | NT    | NT           | 586   | NT    | NT    | NT          | 13.8  | NT    | NT    | NT     | -120   | NT     | NT    | NT               | 0.00  | NT    | NT    |
| 9/30/2021  | 6.98              | 6.26  | 6.17  | 6.02  | 268          | 540   | 548   | 351   | 13.8        | 12.9  | 13.0  | 12.8  | -118.8 | -138.7 | 48.9   | 61.7  | 0.21             | 0.25  | 0.23  | 0.48  |
| 12/23/2021 | NT                | 5.75  | NT    | NT    | NT           | 414   | NT    | NT    | NT          | 13.0  | NT    | NT    | NT     | -89.1  | NT     | NT    | NT               | 0.32  | NT    | NT    |

**Table 3A. Summary of Groundwater Sampling Field Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date       | pH<br>(standard unit) |       |       |       | Conductivity<br>( $\mu$ S/cm) |       |       |       | Temperature<br>(°C) |       |       |       | ORP<br>(mV) |       |       |       | Dissolved Oxygen<br>(mg/L) |       |       |       |
|------------|-----------------------|-------|-------|-------|-------------------------------|-------|-------|-------|---------------------|-------|-------|-------|-------------|-------|-------|-------|----------------------------|-------|-------|-------|
| SMCL       | 6.5 - 8.5             |       |       |       | --                            |       |       |       | --                  |       |       |       | --          |       |       |       | --                         |       |       |       |
| WA WQ Std  | 6.5 - 8.5             |       |       |       | --                            |       |       |       | --                  |       |       |       | --          |       |       |       | --                         |       |       |       |
| Well ID    | BXS-4                 | BXS-3 | BXS-2 | BXS-1 | BXS-4                         | BXS-3 | BXS-2 | BXS-1 | BXS-4               | BXS-3 | BXS-2 | BXS-1 | BXS-4       | BXS-3 | BXS-2 | BXS-1 | BXS-4                      | BXS-3 | BXS-2 | BXS-1 |
| 3/11/2022  | 7.44                  | 6.34  | 6.37  | 6.26  | 217                           | 585   | 623   | 407   | 11.6                | 12.5  | 12.0  | 12.0  | -101        | -102  | 26    | 21    | 0.00                       | 0.05  | 5.90  | 4.40  |
| 6/30/2022  | NT                    | 6.14  | NT    | NT    | NT                            | 413   | NT    | NT    | NT                  | 13.6  | NT    | NT    | NT          | -81.9 | NT    | NT    | NT                         | 5.08  | NT    | NT    |
| 9/21/2022  | 6.97                  | 6.25  | 6.17  | 6.09  | 229                           | 587   | 600   | 434   | 15.3                | 12.8  | 13.4  | 12.6  | -24         | -93   | 48.6  | 41.4  | 1.40                       | 0.90  | 1.03  | 2.03  |
| 12/19/2022 | NT                    | 6.26  | NT    | NT    | NT                            | 433   | NT    | NT    | NT                  | 12.3  | NT    | NT    | NT          | -62.1 | NT    | NT    | NT                         | 1.02  | NT    | NT    |

**Notes** $\mu$ S/cm = microSiemens per centimeter.

°C = degree Celsius.

mg/L = milligrams per liter.

mV = millivolt. EM = equipment malfunction.

NT = not tested.

ORP = oxidation-reduction potential.

SMCL = Federal secondary maximum contaminant levels for drinking water.

WA WQ Std = State of Washington's water quality standards for groundwater (WAC 173-200).

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date       | pH<br>(standard unit)<br>6.5 - 8.5<br>6.5 - 8.5 |        |           |        |           |        |           |        |           | Conductivity<br>(µS/cm)<br>--<br>-- |       |           |       |           |       |           |       |           |             |
|------------|-------------------------------------------------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|-------------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|            |                                                 |        |           |        |           |        |           |        |           |                                     |       |           |       |           |       |           |       |           |             |
|            |                                                 |        |           |        |           |        |           |        |           |                                     |       |           |       |           |       |           |       |           |             |
|            | Well ID                                         | BXS-4  | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2  | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank                         | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
| 2/1/2007   |                                                 | 7.81   | 7.90      | 6.38   |           | 6.36   |           | 6.36   |           | 5.79                                | 193   | 192       | 517   |           | 743   |           | 338   |           | 4           |
| 4/18/2007  |                                                 | 7.61   | 7.45      | 6.05   |           | 6.10   |           | 5.94   |           | 5.66                                | 195   | 199       | 565   |           | 779   |           | 377   |           | 2           |
| 7/18/2007  |                                                 | 7.69   |           | 6.34   |           | 6.96   |           | 6.28   | 6.23      | 6.04                                | 201   |           | 518   |           | 798   |           | 410   | 401       | 2           |
| 10/9/2007  |                                                 | 7.82   | 7.85      | 6.36   |           | 6.35   |           | 6.18   |           | 5.72                                | 200   | 201       | 638   |           | 814   |           | 482   |           | 3           |
| 1/9/2008   |                                                 | 7.75   |           | 6.41   |           | 6.46   |           | 6.23   | 6.25      | 5.10                                | 215   |           | 681   |           | 747   |           | 375   | 360       | 5           |
| 4/30/2008  |                                                 | 7.76   |           | 6.36   |           | 6.44   |           | 6.38   | 6.38      | 6.21                                | 188   |           | 658   |           | 797   |           | 475   | 472       | 2,630       |
| 7/29/2008  |                                                 | 7.83   |           | 6.32   |           | 6.45   | 6.40      | 6.27   |           | 5.30                                | 206   |           | 659   |           | 853   | 865       | 592   |           | 4           |
| 10/22/2008 |                                                 | 7.83   |           | 6.33   |           | 6.41   | 6.40      | 6.49   |           |                                     | 210   |           | 700   |           | 892   | 877       | 592   |           |             |
| 2/1/2009   |                                                 | 7.94   |           | 6.30   |           | 6.50   |           | 6.67   | 6.42      | 5.89                                | 209   |           | 604   |           | 889   |           | 489   | 479       | 6           |
| 5/1/2009   |                                                 | 7.92   |           | 6.29   |           | 6.29   |           | 6.38   | 6.30      | 5.64                                | 171   |           | 496   |           | 768   |           | 357   | 328       | 2           |
| 8/1/2009   |                                                 | 6.32   |           | 6.45   | 6.42      | 6.40   |           | 6.31   |           | 5.44                                | 176   |           | 412   | 413       | 757   |           | 299   |           | 3           |
| 11/1/2009  |                                                 | 7.66   |           | 6.41   |           | 6.41   |           | 6.42   | 6.42      | 6.40                                | 194   |           | 598   |           | 823   |           | 299   | 314       | 3           |
| 2/10/2010  |                                                 | 8.04   |           | 6.38   |           | 6.56   | 6.56      | 6.70   |           | 6.43                                | 187   |           | 634   |           | 848   | 854       | 298   |           | 2 J         |
| 5/26/2010  |                                                 | 7.87   |           | 6.26   |           | 6.33   |           | 6.41   | 6.48      | 4.93                                | 192   |           | 461   |           | 881   |           | 297   | 300       | 4           |
| 8/18/2010  |                                                 | 7.83   |           | 6.15   |           | 6.30   |           | 6.42   | 6.46      | 7.91                                | 209   |           | 423   |           | 805   |           | 311   | 316       | 137         |
| 11/18/2010 |                                                 | 7.72   |           | 5.99   |           | 6.27   |           | 6.35   | 6.34      | 6.00                                | 172   |           | 543   |           | 901   |           | 377   | 364       | 3           |
| 2/9/2011   |                                                 | 7.88   |           | 6.23   |           | 6.38   |           | 6.49   | 6.51      |                                     | 155   |           | 371   |           | 729   |           | 296   | 296       | 5           |
| 5/17/2011  |                                                 | 7.79   |           | 6.28   |           | 6.42   |           | 6.32   | 6.50      | 6.06                                | 219   |           | 377   |           | 801   |           | 321   | 310       | 3           |
| 8/24/2011  |                                                 | 8.14   |           | 6.45   |           | 6.47   |           | 6.46   | 6.74      | 6.03                                | 202   |           | 603   |           | 941   |           | 359   | 359       | 2 J         |
| 11/3/2011  |                                                 | 7.78   |           | 6.35   |           | 6.49   |           | 6.75   | 6.57      | 7.33                                | 195   |           | 505   |           | 884   |           | 360   | 361       | 2           |
| 2/14/2012  |                                                 | 7.94   |           | 6.42   |           | 6.54   |           | 6.64   | 6.59      | 6.04                                | 194   |           | 425   |           | 873   |           | 363   | 361       | 2           |
| 5/2/2012   |                                                 | 7.91   |           | 6.35   |           | 6.68   |           | 6.70   | 6.59      | 6.86                                | 168   |           | 435   |           | 925   |           | 329   | 288       | 3           |
| 8/21/2012  |                                                 | 7.66   |           | 6.32   |           | 6.62   |           | 6.43   | 6.69      | 6.39                                | 192   |           | 451   |           | 898   |           | 311   | 315       | 3           |
| 11/13/2012 |                                                 | 8.09   |           | 6.62   |           | 6.63   |           | 6.81   | 6.77      | 7.42                                | 193   |           | 463   |           | 867   |           | 316   | 326       | 2,490       |
| 2/12/2013  |                                                 | 8.28   |           | 6.60   |           | 7.03   |           | 7.07   | 6.93      | 7.27                                | 194   |           | 377   |           | 939   |           | 303   | 299       | 2 J         |
| 6/4/2013   |                                                 | 8.21   |           | 6.60   |           | 6.75   |           | 6.94   | 6.78      | 7.32                                | 202   |           | 516   |           | 945   |           | 290   | 299       | 2 J         |
| 8/27/2013  |                                                 | 8.04   |           | 6.54   |           | 6.62   |           | 6.69   | 6.63      | 6.43                                | 188   |           | 428   |           | 876   |           | 293   | 292       | 2 J         |
| 12/2/2013  |                                                 | 8.13   |           | 6.58   |           | 6.88   |           | 6.93   | 6.79      | 6.20                                | 193   |           | 513   |           | 866   |           | 312   | 310       | 2 J         |
| 3/17/2014  |                                                 | 8.30   |           | 6.57   |           | 6.76   |           | 6.80   | 6.75      | 6.38                                | 170   |           | 408   |           | 774   |           | 314   | 260       | 7           |
| 6/2/2014   |                                                 | 8.00   |           | 6.44   |           | 6.42   |           | 6.52   | 6.48      | 5.97                                | 192   |           | 4,790 |           | 861   |           | 290   | 292       | 2 J         |
| 9/29/2014  |                                                 | 8.04   |           | 6.59   |           | 7.26   |           | 7.11   | 7.34      | 6.35                                | 192   |           | 396   |           | 840   |           | 281   | 284       | 3           |
| 11/17/2014 |                                                 | 7.61   |           | 6.23   |           | 6.69   |           | 7.04   | 6.75      | 7.77                                | 190   |           | 406   |           | 819   |           | 281   | 294       | 3           |
| 2/23/2015  |                                                 | 7.90 H |           | 6.33 H |           | 6.59 H |           | 6.78 H | 6.55 H    | 6.22 H                              | 209   |           | 430   |           | 876   |           | 292   | 279       | 2 J         |
| 9/14/2015  |                                                 | 7.92 H |           | 6.31 H |           | 6.61 H |           | 6.71 H | 6.51 H    | 7.00 H                              | 204   |           | 348   |           | 807   |           | 283   | 280       | 2 J         |
| 12/7/2015  |                                                 | 7.82 H |           | 6.19 H |           | 6.52 H |           | 6.49 H | 6.54 H    |                                     | 204   |           | 396   |           | 784   |           | 312   | 303       |             |
| 2/29/2016  |                                                 | 7.83   |           | 6.27   |           | 6.67   |           | 6.45   | 6.56      | 6.44                                | 220   |           | 413   |           | 866   |           | 317   | 315       | 2.9         |
| 6/16/2016  |                                                 | 8.06   |           | 6.24   |           | 6.55   |           | 6.57   | 6.63      | 5.80                                | 216   |           | 450   |           | 817   |           | 397   | 396       | 1.5 J       |
| 9/26/2016  |                                                 | 8.00   |           | 6.29   |           | 6.54   |           | 6.39   | 6.48      | 5.81                                | 207   |           | 548   |           | 747   |           | 380   | 385       | 10.8        |
| 3/8/2017   |                                                 | 7.7    |           | 6.42   |           | 6.42   |           | 6.80   | 6.40      |                                     | 198   |           | 425   |           | 704   |           | 396   | 398       |             |
| 6/10/2017  |                                                 |        |           |        |           | 6.96   |           |        |           |                                     |       |           |       |           | 445   |           |       |           |             |
| 9/16/2017  |                                                 |        |           |        |           |        |           |        |           |                                     | 195   |           |       |           |       |           |       |           |             |
| 12/14/2017 |                                                 |        |           |        |           |        |           |        |           |                                     |       |           |       |           |       |           |       |           |             |
| 3/17/2018  |                                                 | 8.3    |           |        |           |        |           |        |           |                                     | 207   |           |       |           |       |           |       |           |             |
| 6/16/2018  |                                                 |        |           |        |           |        |           |        |           |                                     |       |           |       |           |       |           |       |           |             |
| 9/29/2018  |                                                 |        |           |        |           |        |           |        |           |                                     |       |           |       |           |       |           |       |           |             |
| 11/17/2018 |                                                 |        |           |        |           |        |           |        |           |                                     |       |           |       |           |       |           |       |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | pH<br>(standard unit)<br>6.5 - 8.5<br>6.5 - 8.5 |              |       |           |       |              |       |              |                | Conductivity<br>(μS/cm)<br>--<br>-- |           |       |           |       |              |       |              |                |
|--------------------------------------------------|-------------------------------------------------|--------------|-------|-----------|-------|--------------|-------|--------------|----------------|-------------------------------------|-----------|-------|-----------|-------|--------------|-------|--------------|----------------|
|                                                  | BXS-4                                           | BXS-4<br>Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank | BXS-4                               | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 3/16/2019                                       |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
|                                                  | 6/1/2019                                        |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 10/12/2019                                       |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 12/22/2019                                       |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 4/1/2020                                         |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 6/26/2020                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 9/22/2020                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 9/25/2020                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 12/29/2020                                       |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 3/11/2021                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 6/16/2021                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 9/30/2021                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 12/23/2021                                       |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 3/11/2022                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 6/30/2022                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 9/21/2021                                        |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |
| 12/19/2022                                       |                                                 |              |       |           |       |              |       |              |                |                                     |           |       |           |       |              |       |              |                |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date       | Chloride<br>(mg/L) |       |           |        |           |       |           |        |           | Nitrate + Nitrite as N<br>(mg/L) |        |           |        |           |         |           |        |           |             |
|------------|--------------------|-------|-----------|--------|-----------|-------|-----------|--------|-----------|----------------------------------|--------|-----------|--------|-----------|---------|-----------|--------|-----------|-------------|
|            | 250                |       |           |        |           |       |           |        |           | 10                               |        |           |        |           |         |           |        |           |             |
|            | 250                |       |           |        |           |       |           |        |           | 10                               |        |           |        |           |         |           |        |           |             |
|            | Well ID            | BXS-4 | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank                      | BXS-4  | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2   | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank |
| 2/1/2007   |                    | 1.6   | 1.6       | 3.1    |           | 4.9   |           | 6.4    |           | 0.2 U                            | 0.28   | 0.58      | 0.96   |           | 0.94    |           | 0.75   |           | 0.03 J      |
| 4/18/2007  |                    | 1.9   | 1.9       | 2.3    |           | 4.5   |           | 5.4    |           | 0.2 U                            | 0.23   | 1.21      | 0.20   |           | 0.63    |           | 0.85   |           | 0.01 J      |
| 7/18/2007  |                    | 1.7   |           | 2.8    |           | 4.1   |           | 5.1    | 5.0       | 0.2 U                            | 0.05 U |           | 0.19   |           | 0.08    |           | 0.70   | 0.68      | 0.01 J      |
| 10/9/2007  |                    | 1.7   | 1.7       | 2.7    |           | 4.3   |           | 5.2    |           | 0.1 J                            | 0.05 U | 0.05 U    | 0.17   |           | 0.05 U  |           | 0.47   |           | 0.05 U      |
| 1/9/2008   |                    | 2.0   |           | 3.1    |           | 4.5   |           | 5.8    | 5.8       | 0.2 U                            | 0.05 U |           | 0.07   |           | 0.05 U  |           | 0.58   | 0.54      | 0.05 U      |
| 4/30/2008  |                    | 1.8   |           | 2.4    |           | 4.4   |           | 5.0    | 5.1       | 0.0 J                            | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.74   | 0.73      | 0.05 U      |
| 7/29/2008  |                    | 1.8   |           | 2.8    |           | 4.2   | 4.4       | 4.5    |           | 0.2 U                            | 0.10   |           | 0.15   |           | 0.05 U  | 0.05 U    | 1.48   |           | 0.05 U      |
| 10/22/2008 |                    | 1.9   |           | 3.6    |           | 4.9   | 4.9       | 5.1    |           |                                  | 0.05 U |           | 0.10   |           | 0.03 J  | 0.01 J    | 0.51   |           |             |
| 2/1/2009   |                    | 1.7   |           | 2.6    |           | 4.2   |           | 7.6    | 7.6       | 0.0 J                            | 0.05 U |           | 0.17   |           | 0.01 J  |           | 0.99   | 1.02      | 0.05        |
| 5/1/2009   |                    | 2.2   |           | 4.5    |           | 6.1   |           | 7.3    | 7.3       | 0.2 U                            | 0.01 J |           | 0.21   |           | 0.03 J  |           | 0.12   | 0.13      | 0.02 J      |
| 8/1/2009   |                    | 1.8   |           | 3.8    | 3.7       | 4.3   |           | 5.9    |           | 0.2 U                            | 0.05 U |           | 0.17   | 0.17      | 0.02 J  |           | 0.11   |           | 0.05 U      |
| 11/1/2009  |                    | 1.9   |           | 3.3    |           | 4.4   |           | 6.5    | 6.6       | 0.2 U                            | 0.05 U |           | 0.06   |           | 0.05 U  |           | 0.05 U | 0.05 U    | 0.05 U      |
| 2/10/2010  |                    | 1.81  |           | 2.90   |           | 4.20  | 4.20      | 5.30   |           | 0.06 J                           | 0.05 U |           | 0.13   |           | 0.05 U  | 0.05 U    | 0.04 J |           | 0.05 U      |
| 5/26/2010  |                    | 1.88  |           | 3.40   |           | 4.10  |           | 5.90   | 6.00      | 0.04 J                           | 0.03 J |           | 0.22   |           | 0.04 J  |           | 0.11   | 0.11      | 0.04 J      |
| 8/18/2010  |                    | 1.91  |           | 3.04   |           | 3.32  |           | 5.67   | 5.70      | 1.57                             | 0.04 J |           | 0.18   |           | 0.04 J  |           | 0.14   | 0.14      | 0.17        |
| 11/18/2010 |                    | 1.57  |           | 2.74   |           | 3.21  |           | 5.38   | 5.29      | 0.40 U                           | 0.05 U |           | 0.12   |           | 0.05 U  |           | 0.09   | 0.09      | 0.05 U      |
| 2/9/2011   |                    | 2.10  |           | 2.37   |           | 3.43  |           | 6.99   | 7.09      | 0.40 U                           | 0.05 U |           | 190    |           | 0.05 U  |           | 0.05 U | 0.05 U    | 0.05 U      |
| 5/17/2011  |                    | 1.65  |           | 2.07   |           | 3.05  |           | 6.17   | 5.94      | 0.40 U                           | 0.01 J |           | 0.14   |           | 0.02 J  |           | 0.15   | 0.14      | 0.01 J      |
| 8/24/2011  |                    | 1.69  |           | 1.85   |           | 2.88  |           | 5.71   | 5.71      | 0.40 U                           | 0.01 J |           | 0.10   |           | 0.01 J  |           | 0.06   | 0.06      | 0.01 J      |
| 11/3/2011  |                    | 1.93  |           | 2.49   |           | 3.38  |           | 6.01   | 5.74      | 0.40 U                           | 0.05 U |           | 0.14   |           | 0.01 J  |           | 0.10   | 0.09      | 0.05 U      |
| 2/14/2012  |                    | 1.67  |           | 2.11   |           | 2.91  |           | 5.33   | 5.37      | 0.40 U                           | 0.03 J |           | 0.13   |           | 0.02 J  |           | 0.08   | 0.08      | 0.03 J      |
| 5/2/2012   |                    | 1.66  |           | 1.50   |           | 2.97  |           | 5.70   | 5.65      | 0.40 U                           | 0.05 U |           | 0.10   |           | 0.01 J  |           | 0.05 J | 0.03 J    | 0.05 U      |
| 8/21/2012  |                    | 1.62  |           | 1.58   |           | 2.96  |           | 4.75   | 4.72      | 0.40 U                           | 0.05 U |           | 0.10   |           | 0.05 U  |           | 0.05   | 0.07      | 0.05 U      |
| 11/13/2012 |                    | 1.63  |           | 1.69   |           | 3.00  |           | 4.80   | 4.80      | 0.40 U                           | 0.01 J |           | 0.05 U |           | 0.01 J  |           | 0.04 J | 0.03 J    | 0.05 U      |
| 2/12/2013  |                    | 1.61  |           | 2.08   |           | 3.07  |           | 5.70   | 5.70      | 0.40 U                           | 0.02 J |           | 0.13   |           | 0.05 U  |           | 0.09   | 0.09      | 0.05 U      |
| 6/4/2013   |                    | 1.62  |           | 1.98   |           | 3.00  |           | 3.60   | 3.60      | 0.40 U                           | 0.05 U |           | 0.05   |           | 0.05 U  |           | 0.09   | 0.07      | 0.05 U      |
| 8/27/2013  |                    | 1.90  |           | 1.88   |           | 3.39  |           | 4.00   | 3.90      | 0.40 U                           | 0.02 J |           | 0.03 J |           | 0.02 J  |           | 0.13   | 0.14      | 0.04 J      |
| 12/2/2013  |                    | 1.54  |           | 1.57   |           | 2.65  |           | 3.56   | 3.56      | 0.40 U                           | 0.05 U |           | 0.20   |           | 0.01 J  |           | 0.03 J | 0.03 J    | 0.01 J      |
| 3/17/2014  |                    | 1.81  |           | 2.20 J |           | 2.90  |           | 5.97   | 5.89      | 0.40 U                           | 0.05 U |           | 0.18 U |           | 0.05 U  |           | 0.13 U | 0.13 U    | 0.03 J      |
| 6/2/2014   |                    | 1.64  |           | 1.73   |           | 2.74  |           | 5.23   | 5.18      | 0.40 U                           | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.14   | 0.14      | 0.05 U      |
| 9/29/2014  |                    | 1.62  |           | 1.71   |           | 2.57  |           | 4.44   | 4.45      | 0.40 U                           | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.05 U | 0.05 U    | 0.06        |
| 11/17/2014 |                    | 2.02  |           | 1.76   |           | 3.16  |           | 5.04 J | 0.52 J    | 0.40 U                           | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.05 U | 0.05 U    | 0.03 J      |
| 2/23/2015  |                    | 1.58  |           | 1.38   |           | 2.32  |           | 4.56   | 4.58      | 0.40 U                           | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.07   | 0.07      | 0.05 U      |
| 9/14/2015  |                    | 1.93  |           | 1.97   |           | 2.54  |           | 5.41   | 5.51      | 0.20 U                           | 0.05 U |           | 0.03 J |           | 0.05 U  |           | 0.16 J | 0.09 J    | 0.05 U      |
| 12/7/2015  |                    | 1.66  |           | 1.54   |           | 2.06  |           | 4.58   | 4.69      |                                  | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.37   | 0.36      |             |
| 2/29/2016  |                    | 1.83  |           | 1.62   |           | 2.37  |           | 4.90   | 4.73      | 0.20 U                           | 0.05 J |           | 0.05 U |           | 0.05 U  |           | 0.39   | 0.38      | 0.05 U      |
| 6/16/2016  |                    | 1.97  |           | 1.57   |           | 2.52  |           | 3.44   | 3.45      | 0.20 U                           | 0.05 U |           | 0.05 U |           | 0.05 U  |           | 0.22   | 0.14      | 0.05 U      |
| 9/26/2016  |                    | 1.91  |           | 2.13   |           | 2.53  |           | 3.41   | 3.53      | 0.20 U                           | 0.05 U |           | 0.16   |           | 0.05    |           | 0.22   | 0.16      | 0.05 U      |
| 3/8/2017   |                    | 1.97  |           | 1.77   |           | 2.16  |           | 3.01   | 3.04      |                                  | 0.359  |           | 0.04 J |           | 0.05 U  |           | 0.26 J | 0.57 J    |             |
| 6/10/2017  |                    |       |           |        |           | 5.71  |           |        |           |                                  |        |           |        |           | 0.165   |           |        |           |             |
| 9/16/2017  |                    | 2.00  |           |        |           |       |           |        |           |                                  | 0.055  |           |        |           |         |           |        |           |             |
| 12/14/2017 |                    |       |           |        |           | 4.78  |           |        |           |                                  |        |           |        |           | 0.005 U |           |        |           |             |
| 3/17/2018  |                    | 1.96  |           | 2.20   |           | 2.20  | 2.20      | 4.1    |           |                                  | 0.05 U |           |        |           |         |           |        |           |             |
| 6/16/2018  |                    |       |           |        |           | 2.20  |           |        |           |                                  |        |           |        |           |         |           |        |           |             |
| 9/29/2018  |                    |       |           | 0.11 J | 2.3       | 2.30  |           | 5.70   |           |                                  |        |           | 0.01   | 0.01      | 0.01    |           | 0.20   |           |             |
| 11/17/2018 |                    |       |           | 8.50   |           |       |           |        |           |                                  |        |           |        |           |         |           |        |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std | Chloride<br>(mg/L)<br>250<br>250 |       |           |       |           |       |           |       |           | Nitrate + Nitrite as N<br>(mg/L)<br>10<br>10 |       |           |       |           |       |           |       |           |             |
|-----------------------------------|----------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|----------------------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|                                   | Well ID                          | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank                                  | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
|                                   |                                  |       |           |       |           |       |           |       |           |                                              |       |           |       |           |       |           |       |           |             |
|                                   |                                  |       |           |       |           |       |           |       |           |                                              |       |           |       |           |       |           |       |           |             |
| 3/16/2019                         | 2.76                             |       |           | 2.16  |           | 2.49  |           | 5.55  |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 6/1/2019                          |                                  |       |           | 1.45  | 1.38      |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 10/12/2019                        | 2.58                             |       |           | 1.74  | 1.58      | 2.10  |           | 5.36  |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 12/22/2019                        |                                  |       |           | 1.73  |           |       |           |       |           | 0.5 U                                        | NT    |           |       | NT        |       |           | NT    |           |             |
| 4/1/2020                          |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 6/26/2020                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 9/22/2020                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 9/25/2020                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 12/29/2020                        |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 3/11/2021                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 6/16/2021                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 9/30/2021                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 12/23/2021                        |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 3/11/2022                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 6/30/2022                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 9/21/2021                         |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |
| 12/19/2022                        |                                  |       |           |       |           |       |           |       |           |                                              | NT    |           |       | NT        |       |           | NT    |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Solids, total dissolved (TDS) |           |       |           |       |           |       |           |             | Sulfate |           |        |           |       |           |        |           |             |
|-----------------------|-------------------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|---------|-----------|--------|-----------|-------|-----------|--------|-----------|-------------|
|                       | (mg/L)                        |           |       |           |       |           |       |           |             | (mg/L)  |           |        |           |       |           |        |           |             |
|                       | 500                           |           |       |           |       |           |       |           |             | 250     |           |        |           |       |           |        |           |             |
|                       | 500                           |           |       |           |       |           |       |           |             | 250     |           |        |           |       |           |        |           |             |
| MCL/SMCL<br>WA WQ Std |                               |           |       |           |       |           |       |           |             |         |           |        |           |       |           |        |           |             |
| Well ID               | BXS-4                         | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank | BXS-4   | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank |
| 2/1/2007              | 142                           | 146       | 522   |           | 420   |           | 231   |           | 5 U         | 1.4     | 1.4       | 0.1 J  |           | 0.2 J |           | 14.8   |           | 0.2 U       |
| 4/18/2007             | 151                           | 140       | 493   |           | 490   |           | 229   |           | 5 U         | 1.3     | 1.3       | 0.2 U  |           | 0.2 U |           | 13.9   |           | 0.2 U       |
| 7/18/2007             | 154                           |           | 414   |           | 495   |           | 262   | 248       | 5 U         | 1.4     |           | 0.2 U  |           | 0.2 U |           | 11.3   | 11.4      | 0.2 U       |
| 10/9/2007             | 159                           | 151       | 476   |           | 478   |           | 294   |           | 5 U         | 1.3     | 1.3       | 0.1 J  |           | 0.1 J |           | 9.4    |           | 0.2 U       |
| 1/9/2008              | 148                           |           | 578   |           | 508   |           | 239   | 233       | 5 U         | 0.8     |           | 0.2 U  |           | 0.2 U |           | 14.0   | 14.9      | 0.2 U       |
| 4/30/2008             | 118                           |           | 496   |           | 430   |           | 265   | 256       | 5 U         | 1.3     |           | 0.1 J  |           | 0.2 J |           | 9.6    | 9.7       | 0.2 U       |
| 7/29/2008             | 161                           |           | 415   |           | 506   | 505       | 363   |           | 5 U         | 1.3     |           | 0.1 J  |           | 0.1 J | 0.2       | 6.2    |           | 0.2 U       |
| 10/22/2008            | 139                           |           | 465   |           | 478   | 491       | 323   |           |             | 1.1     |           | 0.1 J  | 323       | 0.2 J | 0.4       | 6.7    |           |             |
| 2/1/2009              | 136                           |           | 461   |           | 498   |           | 261   | 263       | 5 U         | 1.4     |           | 0.1 J  |           | 0.1 J |           | 6.4    | 6.4       | 0.0 J       |
| 5/1/2009              | 130                           |           | 460   |           | 513   |           | 223   | 220       | 7           | 1.7     |           | 0.4    |           | 0.2 U |           | 6.7    | 6.6       | 0.2 U       |
| 8/1/2009              | 119                           |           | 378   | 425       | 491   |           | 178   |           | 5 U         | 1.1     |           | 0.1 J  | 0.1 J     | 0.1 J |           | 13.9   |           | 0.2 U       |
| 11/1/2009             | 121                           |           | 452   |           | 496   |           | 198   | 201       | 5 U         | 3.3     |           | 0.2 U  |           | 0.2 U |           | 15.0   | 14.9      | 0.2 U       |
| 2/10/2010             | 152                           |           | 422   |           | 518   | 501       | 186   |           | 5           | 1.6     |           | 0.1 J  |           | 0.1 J | 0.1 J     | 19.6   |           | 0.0 J       |
| 5/26/2010             | 129                           |           | 340   |           | 508   |           | 166   | 178       | 5 U         | 1.5     |           | 0.8    |           | 0.2 J |           | 15.3   | 13.4      | 0.4         |
| 8/18/2010             | 202                           |           | 381   |           | 564   |           | 250   | 241       | 134         | 1.6     |           | 0.8    |           | 1.1   |           | 14.1   | 14.0      | 1.1         |
| 11/18/2010            | 98                            |           | 330   |           | 462   |           | 153   | 161       | 5 U         | 1.1     |           | 0.4 U  |           | 0.4 U |           | 12.3   | 11.7      | 0.4 U       |
| 2/9/2011              | 165                           |           | 377   |           | 512   |           | 211   | 216       | 5 U         | 1.5     |           | 1.0    |           | 1.3   |           | 15.2   | 15.4      | 0.4 U       |
| 5/17/2011             | 129                           |           | 374   |           | 559   |           | 209   | 194       | 5 U         | 0.9     |           | 0.2 J  |           | 0.3 J |           | 15.9   | 15.1      | 0.4 U       |
| 8/24/2011             | 128                           |           | 399   |           | 550   |           | 188   | 199       | 5 U         | 1.0     |           | 0.4 J  |           | 0.6   |           | 16.2   | 16.7      | 0.4 U       |
| 11/3/2011             | 115                           |           | 350   |           | 532   |           | 217   | 220       | 5 U         | 1.1     |           | 0.6    |           | 0.8   |           | 15.8   | 15.0      | 0.4 U       |
| 2/14/2012             | 131                           |           | 344   |           | 518   |           | 214   | 269       | 5 U         | 0.9     |           | 0.3 J  |           | 0.4 J |           | 15.7   | 15.6      | 0.4 U       |
| 5/2/2012              | 129                           |           | 336   |           | 547   |           | 230   | 222       | 5.5         | 0.8     |           | 0.3 J  |           | 0.3 J |           | 16.4   | 16.3      | 0.4 U       |
| 8/21/2012             | 119                           |           | 376   |           | 569   |           | 189   | 210       | 5 U         | 0.8     |           | 0.4    |           | 0.5   |           | 14.7   | 14.6      | 0.2 U       |
| 11/13/2012            | 131                           |           | 331   |           | 537   |           | 188   | 188       | 5 U         | 0.9     |           | 0.4    |           | 0.5   |           | 14.5   | 14.5      | 0.2 U       |
| 2/12/2013             | 107                           |           | 288   |           | 539   |           | 160   | 174       | 5.5         | 0.8     |           | 0.2    |           | 0.3   |           | 14.3   | 14.6      | 0.2 U       |
| 6/4/2013              | 141                           |           | 340   |           | 553   |           | 179   | 168       | 5 U         | 0.8     |           | 0.4    |           | 0.6   |           | 13.5   | 13.3      | 0.2 U       |
| 8/27/2013             | 141                           |           | 349   |           | 574   |           | 201   | 189       | 5 U         | 0.8     |           | 0.1 J  |           | 0.2 J |           | 12.7   | 12.6      | 0.2 U       |
| 12/2/2013             | 132                           |           | 356   |           | 530   |           | 223   | 197       | 5.5         | 0.8     |           | 0.1 J  |           | 0.2 J |           | 12.3   | 11.9      | 0.2 U       |
| 3/17/2014             | 137                           |           | 332   |           | 504   |           | 176   | 184       | 5 U         | 1.0     |           | 2.0 U  |           | 0.3   |           | 12.7   | 12.7      | 0.2 U       |
| 6/2/2014              | NT                            |           | NT    |           | NT    |           | NT    | NT        | NT          | 0.9     |           | 0.2 U  |           | 0.1 J |           | 10.1   | 9.9       | 0.2 U       |
| 9/29/2014             | 131                           |           | 312   |           | 513   |           | 169   | 162       | 5 U         | 0.8     |           | 0.1 J  |           | 0.2   |           | 7.2    | 7.0       | 0.2 U       |
| 11/17/2014            | NT                            |           | NT    |           | NT    |           | NT    | NT        | NT          | 1.6     |           | 0.2 J* |           | 0.3   |           | 8.4 J* | 0.8 J*    | 0.2 U       |
| 2/23/2015             | 122                           |           | 325   |           | 479   |           | 156   | 157       | 5 U         | 0.8     |           | 0.2    |           | 0.3   |           | 7.7    | 7.7       | 0.2 U       |
| 9/14/2015             | 111                           |           | 267   |           | 430   |           | 140   | 147       | 5 U         | 1.2     |           | 0.4    |           | 0.5   |           | 9.7    | 9.9       | 0.2 U       |
| 12/7/2015             | 112                           |           | 285   |           | 424   |           | 146   | 155       |             | 1.1     |           | 0.2 J  |           | 0.3   |           | 10.7   | 10.6      |             |
| 2/29/2016             | 101                           |           | 290   |           | 447   |           | 145   | 125       | 5 U         | 0.2 U   |           | 0.2 U  |           | 0.2 U |           | 9.0    | 9.1       | 0.15 J      |
| 6/16/2016             | 118                           |           | 301   |           | 443   |           | 190   | 197       | 5 U         | 1.1     |           | 0.4    |           | 0.5   |           | 6.9    | 7.5       | 0.2 U       |
| 9/26/2016             | 143                           |           | 311   |           | 419   |           | 213   | 194       | 5.0 U       | 1.5     |           | 0.2 U  |           | 0.2   |           | 6.0    | 5.3       | 0.2 U       |
| 3/8/2017              | 128                           |           |       |           |       |           | 226   | 221       |             | 2.1     |           | 0.1 J  |           | 0.2 J |           | 4.3    | 4.6       |             |
| 6/10/2017             |                               |           |       |           | 252   |           |       |           |             |         |           |        |           | 7.36  |           |        |           |             |
| 9/16/2017             | 139                           |           | 216   |           | 406   |           | 193   | 188       | 2           | 1.9     |           | 0.2 U  |           | 0.2 U |           | 5.6    | 5.7       | ND U        |
| 12/14/2017            |                               |           |       |           | 460   |           |       |           |             |         |           |        |           | 51.6  |           |        |           |             |
| 3/17/2018             | 133                           |           | 440   |           | 450   | 460       | 240   |           |             | 1.7     |           | 0.2    |           | 0.3   | 0.4       | 9.1    |           |             |
| 6/16/2018             |                               |           |       |           | 430   |           |       |           |             |         |           |        |           | 0.5   |           |        |           |             |
| 9/29/2018             | 159                           |           | 210   | 260       | 420   |           | 200   |           |             | 0.6     |           | 0.1    | 0.15      | 0.3   |           | 10.9   |           |             |
| 11/17/2018            |                               |           | 330   |           |       |           |       |           |             |         |           | 2.0    |           |       |           |        |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std | Solids, total dissolved (TDS)<br>(mg/L)<br>500<br>500 |       |           |       |           |       |           |       |           | Sulfate<br>(mg/L)<br>250<br>250 |       |           |       |           |       |           |       |           |             |
|-----------------------------------|-------------------------------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|---------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|                                   | Well ID                                               | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank                     | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
|                                   | 3/16/2019                                             | 150   |           | 360   |           | 420   |           | 200   |           |                                 | 3.0   |           | 2.3   |           | 7.7   |           | 14.8  |           |             |
|                                   | 6/1/2019                                              |       |           | 220   | 230       |       |           |       |           |                                 |       |           | 0.22  | 0.18      |       |           |       |           |             |
| 10/12/2019                        | 110                                                   |       | 250       | 260   | 330       |       | 160       |       |           |                                 | 0.2   |           | 0.30  | 0.30      | 0.5   |           | 15.0  |           |             |
| 12/22/2019                        |                                                       |       | 340       |       |           |       |           |       | 1         |                                 |       |           | 0.3   |           |       |           |       |           | 0.1 U       |
| 4/1/2020                          | 120                                                   |       | 250       | 240   | 330       |       | 140       |       | 2.1       |                                 | 0.6   |           | 0.1 U | 0.1 U     | 0.1   |           | 17.2  |           | 0.1 U       |
| 6/26/2020                         |                                                       |       | 320       |       |           |       |           |       |           |                                 |       |           | 0.1 U |           |       |           |       |           |             |
| 9/22/2020                         | 330                                                   |       | NT        |       | 390       | 390   | 190       |       |           |                                 | 0.3   |           | NT    |           | 0.22  | 0.21      | 13.8  |           |             |
| 9/25/2020                         | NT                                                    |       | 310       |       | NT        |       | NT        |       |           |                                 | NT    |           | 0.15  |           | NT    |           | NT    |           |             |
| 12/29/2020                        |                                                       |       | 330       |       |           |       |           |       |           |                                 |       |           | 0.20  |           |       |           |       |           |             |
| 3/11/2021                         | 150                                                   |       | 330       | 330   | 390       |       | 220       |       |           |                                 | NT    |           | NT    |           | NT    |           | NT    |           |             |
| 6/16/2021                         | NT                                                    |       | 310       |       | NT        |       | NT        |       |           |                                 | NT    |           | 0.13  |           | NT    |           | NT    |           |             |
| 9/30/2021                         | 160                                                   |       | 77        | 160 J | 360       |       | 210       |       | 1 U       |                                 | 19.6  |           | 0.1 U | 0.1 U     | 13.2  |           | 13.2  |           | 0.1 U       |
| 12/23/2021                        | NT                                                    |       | 200       |       | NT        |       | NT        |       |           |                                 | NT    |           | 0.6   |           | NT    |           | NT    |           |             |
| 3/11/2022                         | 150                                                   |       | 300       | 290   | 340       |       | 220       |       | 1 U       |                                 | 1.9   |           | 0.76  | 0.86      | 0.2   |           | 15.0  |           | 0.1 U       |
| 6/30/2022                         | NT                                                    |       | 310       |       | NT        |       | NT        |       |           |                                 | NT    |           | 0.34  |           | NT    |           | NT    |           |             |
| 9/21/2021                         | 140                                                   |       | 190       | 180   | 330       |       | 230       |       |           |                                 | 0.4   |           | 0.16  | 0.14      | 0.3   |           | 11.3  |           |             |
| 12/19/2022                        | NT                                                    |       | 550       | 580   | NT        |       | NT        |       |           |                                 | NT    |           | 0.82  | 0.84      | NT    |           | NT    |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std | Ammonia as N<br>(mg/L)<br>--<br>-- |        |           |        |           |        |           |        |           | Chemical Oxygen Demand (COD)<br>(mg/L)<br>--<br>-- |       |           |       |           |       |           |       |           |             |
|-----------------------------------|------------------------------------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|----------------------------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|                                   | Well ID                            | BXS-4  | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2  | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank                                        | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
|                                   |                                    |        |           |        |           |        |           |        |           |                                                    |       |           |       |           |       |           |       |           |             |
| 2/1/2007                          |                                    | 0.50   | 0.52      | 0.93   |           | 0.05 U |           | 0.05 U |           | 0.03 J                                             | 5.0 U | 5.0 U     | 75    |           | 36    |           | 6.0   |           | 50 U        |
| 4/18/2007                         |                                    | 0.50   | 0.50      | 0.71   |           | 0.05 U |           | 0.05 U |           | 0.05 U                                             | 6.0   | 6.0       | 80    |           | 39    |           | 14.0  |           | 4.0 J       |
| 7/18/2007                         |                                    | 0.50   |           | 0.74   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 67    |           | 31    |           | 5.0 U | 6.0       | 5.0 U       |
| 10/9/2007                         |                                    | 0.48   | 0.49      | 0.98   |           | 0.05 U |           | 0.05 U |           | 0.05 U                                             | 5.0 U | 5.0 U     | 71    |           | 33    |           | 17.0  |           | 5.0 U       |
| 1/9/2008                          |                                    | 0.55   |           | 0.41   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.02 J                                             | 5.0 U |           | 61    |           | 35    |           | 12.0  | 13.0      | 5.0 U       |
| 4/30/2008                         |                                    | 0.46   |           | 0.39   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 3.0 J |           | 76    |           | 42    |           | 13.0  | 14.0      | 5.0 U       |
| 7/29/2008                         |                                    | 0.48   |           | 0.75   |           | 0.05 U | 0.05 U    | 0.05 U |           | 0.08                                               | 6.0   |           | 75    |           | 37    | 35        | 24    |           | 9.0         |
| 10/22/2008                        |                                    | 0.53   |           | 0.54   |           | 0.05 U | 0.05 U    | 0.05 U |           |                                                    | 6.0   |           | 65    |           | 39    | 41        | 16.0  |           |             |
| 2/1/2009                          |                                    | 0.51   |           | 1.44   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 69    |           | 42    |           | 16.0  | 16.0      | 5.0 U       |
| 5/1/2009                          |                                    | 0.61   |           | 1.08   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 22    |           | 70    |           | 38    |           | 13.0  | 11.0      | 5.0 U       |
| 8/1/2009                          |                                    | 0.49   |           | 1.24   | 1.14      | 0.05 U |           | 0.05 U |           | 0.01 J                                             | 3.0 J |           | 106   | 83        | 43    |           | 12.0  |           | 3.0 J       |
| 11/1/2009                         |                                    | 0.54   |           | 0.56   |           | 0.03 J |           | 0.05 J | 0.18      | 0.02 J                                             | 5.0 U |           | 66    |           | 42    |           | 13.7  | 13.7      | 5.0 U       |
| 2/10/2010                         |                                    | 0.53   |           | 1.23   |           | 0.05 U | 0.05 U    | 0.05 U |           | 0.05 U                                             | 5.0 U |           | 68    |           | 35    | 35        | 5.0 U |           | 5.0 U       |
| 5/26/2010                         |                                    | 0.56   |           | 0.97   |           | 0.03 J |           | 0.03 J | 0.02 J    | 0.05 U                                             | 3.3 J |           | 74    |           | 41    |           | 11.0  | 10.5      | 5.0 U       |
| 8/18/2010                         |                                    | 0.53   |           | 1.22   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 74    |           | 41    |           | 10.9  | 11.8      | 5.0 U       |
| 11/18/2010                        |                                    | 0.50   |           | 1.02   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.6   |           | 68    |           | 42    |           | 14.7  | 12.2      | 7.6         |
| 2/9/2011                          |                                    | 0.51   |           | 1.21   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 75    |           | 44    |           | 9.1   | 5.0 U     | 5.0 U       |
| 5/17/2011                         |                                    | 0.54   |           | 0.70   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 3.4 J |           | 71    |           | 45    |           | 8.2   | 9.7       | 5.0 U       |
| 8/24/2011                         |                                    | 0.55   |           | 0.66   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 84    |           | 42    |           | 9.8   | 8.8       | 5.0 U       |
| 11/3/2011                         |                                    | 0.57   |           | 0.05 U |           | 0.04 J |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 69    |           | 38    |           | 4.7 J | 7.6       | 5.0 U       |
| 2/14/2012                         |                                    | 0.54   |           | 0.81   |           | 0.05 U |           | 0.02 J | 0.05 U    | 0.05 U                                             | 6.1   |           | 74    |           | 43    |           | 19.7  | 60        | 3.5 J       |
| 5/2/2012                          |                                    | 0.54   |           | 0.56   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 63    |           | 42    |           | 8.4   | 5.0 U     | 5.0 U       |
| 8/21/2012                         |                                    | 0.54   |           | 0.58   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 3.6 J |           | 69    |           | 44    |           | 6.6   | 6.1       | 5.0 U       |
| 11/13/2012                        |                                    | 0.51   |           | 0.93   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 65    |           | 38    |           | 5.9   | 10.3      | 5.0 U       |
| 2/12/2013                         |                                    | 0.52   |           | 0.74   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 57    |           | 41    |           | 6.3   | 7.3       | 5.0 U       |
| 6/4/2013                          |                                    | 0.53   |           | 1.01   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 63    |           | 41    |           | 5.9   | 7.4       | 5.0 U       |
| 8/27/2013                         |                                    | 0.54   |           | 0.71   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 3.0 J |           | 68    |           | 42    |           | 7.5   | 10.1      | 5.0 U       |
| 12/2/2013                         |                                    | 0.55   |           | 0.82   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 65    |           | 37    |           | 6.7   | 5.2       | 5.0 U       |
| 3/17/2014                         |                                    | 0.55   |           | 1.21   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 73    |           | 39    |           | 6.7   | 5.7       | 5.0 U       |
| 6/2/2014                          |                                    | 0.58   |           | 0.91   |           | 0.05 U |           | 0.05 U | 0.05 J    | 0.05 U                                             | 5.0 U |           | 71    |           | 40    |           | 7.1   | 7.6       | 5.0 U       |
| 9/29/2014                         |                                    | 0.52   |           | 1.24   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 68    |           | 39    |           | 6.3   | 5.8       | 5.0 U       |
| 11/17/2014                        |                                    | 0.55   |           | 1.08   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 65    |           | 34    |           | 5.6   | 6.6       | 5.0 U       |
| 2/23/2015                         |                                    | 0.54   |           | 1.05   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.05 U                                             | 5.0 U |           | 69    |           | 37    |           | 6.8   | 8.5       | 5.0 U       |
| 9/14/2015                         |                                    | 0.54   |           | 1.00   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.03 J                                             | 5.0 U |           | 82    |           | 40    |           | 8.2   | 6.6       | 5.0 U       |
| 12/7/2015                         |                                    | 0.51   |           | 1.00   |           | 0.05 U |           | 0.05 U | 0.04 J    |                                                    | 5.0 U |           | 73    |           | 38    |           | 7.3   | 7.7       |             |
| 2/29/2016                         |                                    | 0.45   |           | 1.16   |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.025 J                                            | 5.0 U |           | 66    |           | 44    |           | 8.6   | 7.0       | 5.0 U       |
| 6/16/2016                         |                                    | 0.53   |           | 1.13   |           | 0.05 U |           | 0.05 U | 0.10 U    | 0.028 J                                            | 4.8 J |           | 76    |           | 45    |           | 12.1  | 10.6      | 5.0 U       |
| 9/26/2016                         |                                    | 0.52   |           | 0.94   |           | 0.05 U |           | 0.46   | 0.05 U    | 0.05 U                                             | 5.7   |           | 85    |           | 41    |           | 9.9   | 9.9       | 5.0 U       |
| 3/8/2017                          |                                    | 0.05 U |           | 0.88   |           | 0.05 U |           | 0.05 U | 0.31      |                                                    | 9.7   |           | 71.1  |           | 34.9  |           | 9.7   | ND U      |             |
| 6/10/2017                         |                                    |        |           |        |           | 0.05 U |           |        |           |                                                    |       |           |       |           | 4.8 J |           |       |           |             |
| 9/16/2017                         |                                    | 0.536  |           | 0.993  |           | 0.05 U |           | 0.05 U | 0.05 U    | 0.259                                              | 3.6 J |           | 70    |           | 35    |           | 8.2   | 9.3       | ND U        |
| 12/14/2017                        |                                    |        |           |        |           | 0.00 U |           |        |           |                                                    |       |           |       |           | 14    |           |       |           |             |
| 3/17/2018                         |                                    | 0.515  |           | 0.847  |           | 0.012  | 0.015     | 0.006  |           |                                                    | 11.4  |           | 40    |           | 19    | 19        | 5 U   |           |             |
| 6/16/2018                         |                                    |        |           |        |           | 0.01   |           |        |           |                                                    |       |           |       |           | 27    |           |       |           |             |
| 9/29/2018                         |                                    | 2.18   |           | 0.844  | 0.842     | 0.005  |           | 0.005  |           |                                                    | 41.6  |           | 49    | 62        | 38    |           | 27.0  |           |             |
| 11/17/2018                        |                                    |        |           | 0.824  |           |        |           |        |           |                                                    |       |           | 54    |           |       |           |       |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std | Ammonia as N<br>(mg/L) |       |           |        |           |       |           |       |           | Chemical Oxygen Demand (COD)<br>(mg/L) |       |           |       |           |       |           |       |           |
|-----------------------------------|------------------------|-------|-----------|--------|-----------|-------|-----------|-------|-----------|----------------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|
|                                   | --                     |       |           |        |           |       |           |       |           | --                                     |       |           |       |           |       |           |       |           |
|                                   | --                     |       |           |        |           |       |           |       |           | --                                     |       |           |       |           |       |           |       |           |
|                                   | Well ID                | BXS-4 | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank                            | BXS-4 | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup |
| 3/16/2019                         | 1.16                   |       | 1.04      |        | 0.02 U    |       | 0.02 U    |       |           | 10 U                                   |       | 37        |       | 12        |       | 10 U      |       |           |
| 6/1/2019                          |                        |       | 0.02 U    | 0.02 U |           |       |           |       |           |                                        |       | 50        | 40    |           |       |           |       |           |
| 10/12/2019                        | 1.26                   |       | 0.823     | 0.85   | 0.03      |       | 0.029     |       |           | 12                                     |       | 57        | 60    | 38        |       | 15.0      |       |           |
| 12/22/2019                        |                        |       | 0.807     |        |           |       |           |       | 0.2 U     |                                        |       | 40        |       |           |       |           |       | 10 U      |
| 4/1/2020                          | 3.29                   |       | 0.673     | 0.676  | 0.02 U    |       | 0.02 U    |       | 0.2 U     | 66                                     |       | 66        | 57    | 29        |       | 10 U      |       | 10 U      |
| 6/26/2020                         |                        |       | 0.819     |        |           |       |           |       |           |                                        |       | 74        |       |           |       |           |       |           |
| 9/22/2020                         | 6.36                   |       | NT        |        | 0.027     | 0.021 | 0.02 U    |       |           | 71                                     |       | NT        |       | 15        | 18    | 10 U      |       |           |
| 9/25/2020                         | NT                     |       | 0.571     |        | NT        |       | NT        |       |           | NT                                     |       | 35        |       | NT        |       | NT        |       |           |
| 12/29/2020                        |                        |       | 0.43      |        |           |       |           |       |           |                                        |       | 42        |       |           |       |           |       |           |
| 3/11/2021                         | 3.76                   |       | 0.655     | 0.647  | 0.02 U    |       | 0.02 U    |       |           | 40                                     |       | 35        | 35    | 18        |       | 10 U      |       |           |
| 6/16/2021                         | NT                     |       | 0.744     |        | NT        |       | NT        |       |           |                                        |       | 110       |       |           |       |           |       |           |
| 9/30/2021                         | 4.58                   |       | 0.834     | 0.846  | 0.02 U    |       | 0.02 U    |       | 0.02 U    | 10 U                                   |       | 35        | 49    | 21        |       | 10 U      |       | 10 U      |
| 12/23/2021                        | NT                     |       | 0.661     |        | NT        |       | NT        |       |           |                                        |       | 43        |       |           |       |           |       |           |
| 3/11/2022                         | 1.83                   |       | 0.535     | 0.526  | 0.02 U    |       | 0.02 U    |       | 0.02 U    | 10 U                                   |       | 49        | 49    | 24        |       | 10 U      |       | 10 U      |
| 6/30/2022                         | NT                     |       | 0.632     |        | NT        |       | NT        |       |           | NT                                     |       | 10 U      |       | NT        |       | NT        |       |           |
| 9/21/2021                         | 0.16                   |       | 0.68 J    | 0.183  | 0.328     |       | 0.02      |       |           | 10 U                                   |       | 35        | 26    | 18        |       | 10 U      |       |           |
| 12/19/2022                        | NT                     |       | 0.824     | 0.83   | NT        |       | NT        |       |           | NT                                     |       | 75        | 86    | NT        |       | NT        |       |           |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date       | Tannin and Lignin<br>(mg/L) |        |           |       |           |       |           |        |           | Total Organic Carbon (TOC)<br>(mg/L) |        |           |       |           |        |           |        |           |             |
|------------|-----------------------------|--------|-----------|-------|-----------|-------|-----------|--------|-----------|--------------------------------------|--------|-----------|-------|-----------|--------|-----------|--------|-----------|-------------|
|            | --                          |        |           |       |           |       |           |        |           | --                                   |        |           |       |           |        |           |        |           |             |
|            | --                          |        |           |       |           |       |           |        |           | --                                   |        |           |       |           |        |           |        |           |             |
|            | Well ID                     | BXS-4  | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank                          | BXS-4  | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2  | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank |
| 2/1/2007   |                             | 0.30   | 0.40      | 4.10  |           | 1.10  |           | 0.16 J |           | 0.09 J                               | 1.10   | 1.00      | 28    |           | 15.60  |           | 3.60   |           | 0.08 J      |
| 4/18/2007  |                             | 0.30   | 0.30      | 11.90 |           | 1.30  |           | 0.20 U |           | 0.20 U                               | 1.00   | 1.00      | 28    |           | 16.70  |           | 4.80   |           | 0.25 J      |
| 7/18/2007  |                             | 0.30   |           | 13.40 |           | 1.30  |           | 0.12 J | 0.13 J    | 0.20 U                               | 0.90   |           | 29    |           | 15.60  |           | 5.20   | 5.20      | 0.07 J      |
| 10/9/2007  |                             | 0.30   | 0.30      | 4.70  |           | 1.10  |           | 0.30   |           | 0.20 U                               | 1.00   | 0.90      | 26    |           | 15.50  |           | 7.10   |           | 0.08 J      |
| 1/9/2008   |                             | 0.30   |           | 8.00  |           | 1.20  |           | 0.30   | 0.30      | 0.06 J                               | 0.80   |           | 24    |           | 15.80  |           | 6.00   | 6.10      | 0.14 J      |
| 4/30/2008  |                             | 0.30   |           | 23    |           | 1.20  |           | 0.20   | 0.20      | 0.20 U                               | 0.90   |           | 28    |           | 17.50  |           | 5.90   | 5.90      | 0.50 U      |
| 7/29/2008  |                             | 0.20   |           | 11.50 |           | 1.20  | 1.20      | 0.20   |           | 0.20 U                               | 0.90   |           | 28    |           | 15.90  | 16.20     | 8.30   |           | 0.50 U      |
| 10/22/2008 |                             | 0.30   |           | 2.50  |           | 1.10  | 1.10      | 0.20   |           |                                      | 0.90   |           | 24    |           | 15.50  | 16.30     | 6.60   |           |             |
| 2/1/2009   |                             | 0.20   |           | 3.40  |           | 1.40  |           | 0.17 J | 0.20      | 0.20 U                               | 0.90   |           | 22    |           | 16.60  |           | 5.20   | 5.20      | 0.50 U      |
| 5/1/2009   |                             | 0.30   |           | 3.50  |           | 0.90  |           | 0.30   | 0.30      | 0.20 U                               | 1.00   |           | 22    |           | 15.80  |           | 4.70   | 4.90      | 0.50 U      |
| 8/1/2009   |                             | 0.30   |           | 10.70 | 31        | 0.90  |           | 0.09 J |           | 0.20 U                               | 1.10   |           | 29    | 28        | 16.90  |           | 5.10   |           | 0.17 J      |
| 11/1/2009  |                             | 0.39   |           | 20.10 |           | 1.32  |           | 0.19 J | 0.18 J    | 0.04 J                               | 0.72   |           | 24    |           | 16.70  |           | 5.27   | 5.15      | 0.50 U      |
| 2/10/2010  |                             | 0.28   |           | 10.00 |           | 1.30  | 1.04      | 0.07 J |           | 0.20 U                               | 0.77   |           | 24    |           | 17.10  | 16.50     | 3.91   |           | 0.50 U      |
| 5/26/2010  |                             | 0.32   |           | 31    |           | 1.10  |           | 0.11 J | 0.11 J    | 0.20 U                               | 0.93   |           | 25    |           | 17.30  |           | 4.17   | 4.14      | 0.10 J      |
| 8/18/2010  |                             | 0.34   |           | 5.22  |           | 1.68  |           | 0.18 J | 0.14 J    | 0.04 J                               | 0.81   |           | 22    |           | 15.30  |           | 3.70   | 3.46      | 0.50 U      |
| 11/18/2010 |                             | 0.36   |           | 13.10 |           | 1.43  |           | 0.15 J | 0.16 J    | 0.04 J                               | 2.61   |           | 25    |           | 18.20  |           | 7.41   | 7.18      | 0.08 J      |
| 2/9/2011   |                             | 0.42   |           | 15.70 |           | 1.58  |           | 0.21   | 0.25      | 0.09 J                               | 1.15   |           | 22    |           | 17.20  |           | 4.37   | 4.16      | 0.50 U      |
| 5/17/2011  |                             | 0.30   |           | 15.00 |           | 0.46  |           | 0.10 J | 0.14 J    | 0.20 U                               | 0.94   |           | 18.80 |           | 16.40  |           | 2.94   | 3.01      | 0.07 J      |
| 8/24/2011  |                             | 0.26   |           | 21    |           | 1.15  |           | 0.09 J | 0.12 J    | 0.20 U                               | 0.67   |           | 26    |           | 14.20  |           | 2.98   | 3.06      | 0.50 U      |
| 11/3/2011  |                             | 0.36   |           | 7.70  |           | 1.51  |           | 0.24   | 0.24      | 0.07 J                               | 1.00   |           | 4.41  |           | 14.60  |           | 3.13   | 3.35      | 0.50 U      |
| 2/14/2012  |                             | 0.50   |           | 22    |           | 2.36  |           | 0.22   | 0.20      | 0.10 J                               | 1.19   |           | 22    |           | 15.40  |           | 3.09   | 3.28      | 0.08 J      |
| 5/2/2012   |                             | 0.41   |           | 50    |           | 1.46  |           | 0.13 J | 0.18 J    | 0.20 U                               | 0.68   |           | 17.30 |           | 15.50  |           | 2.64   | 4.04      | 0.50 U      |
| 8/21/2012  |                             | 0.20 J |           | 21    |           | 1.42  |           | 0.20 U | 0.20 U    | 0.20 U                               | 0.84   |           | 19.30 |           | 14.80  |           | 2.51   | 2.56      | 0.50 U      |
| 11/13/2012 |                             | 0.33   |           | 12.70 |           | 1.63  |           | 0.17   | 0.27      | 0.20 U                               | 0.90   |           | 19.80 |           | 14.30  |           | 2.74   | 2.81      | 0.08 J      |
| 2/12/2013  |                             | 0.31   |           | 13.20 |           | 1.06  |           | 0.09 J | 0.09 J    | 0.20 U                               | 0.73   |           | 15.40 |           | 15.50  |           | 2.54   | 2.46      | 0.50 U      |
| 6/4/2013   |                             | 0.25   |           | 13.10 |           | 1.73  |           | 0.06 J | 0.07 J    | 0.20 U                               | 0.82   |           | 18.40 |           | 15.40  |           | 2.39   | 2.44      | 0.50 U      |
| 8/27/2013  |                             | 0.28   |           | 8.60  |           | 1.18  |           | 0.13 J | 0.15 J    | 0.20 U                               | 0.88   |           | 18.90 |           | 14.60  |           | 2.54   | 2.49      | 0.50 U      |
| 12/2/2013  |                             | 0.18 J |           | 5.75  |           | 1.38  |           | 0.10 J | 0.20 U    | 0.20 U                               | 0.90   |           | 18.40 |           | 14.30  |           | 2.48   | 2.54      | 0.08 J      |
| 3/17/2014  |                             | 0.23   |           | 29    |           | 1.52  |           | 0.03 J | 0.06 J    | 0.20 U                               | 0.84   |           | 20.40 |           | 13.30  |           | 2.29   | 2.23      | 0.50 U      |
| 6/2/2014   |                             | 0.28   |           | 20.80 |           | 1.27  |           | 0.20 U | 1.15 J    | 0.12 J                               | 1.00 U |           | 19.80 |           | 14.60  |           | 2.34   | 2.48      | 0.26 J      |
| 9/29/2014  |                             | 0.30   |           | 23    |           | 0.92  |           | 0.10 J | 0.08 J    | 0.20 U                               | 0.78   |           | 19.50 |           | 14.00  |           | 2.25   | 2.15      | 0.50 U      |
| 11/17/2014 |                             | 0.29   |           | 20.50 |           | 1.37  |           | 0.11 J | 0.10 J    | 0.20 U                               | 0.78   |           | 18.00 |           | 13.80  |           | 2.45   | 2.32      | 0.12 J      |
| 2/23/2015  |                             | 0.31   |           | 23    |           | 1.33  |           | 0.20 U | 0.20 U    | 0.060 J                              | 0.81 U |           | 19.00 |           | 14.50  |           | 2.47   | 2.44      | 0.25 J      |
| 9/14/2015  |                             | 0.22   |           | 4.49  |           | 1.34  |           | 0.09 J | 0.08 J    | 0.20 U                               | 1.00 U |           | 22    |           | 12.80  |           | 2.45 U | 2.56 U    | 0.80 J      |
| 12/7/2015  |                             | 0.34   |           | 1.13  |           | 1.23  |           | 0.14 J | 0.11 J    |                                      | 0.94   |           | 17.10 |           | 12.80  |           | 3.00   | 2.78      |             |
| 2/29/2016  |                             | 0.20   |           | 5.30  |           | 1.32  |           | 0.05 J | 0.09 J    | 0.20 U                               | 0.79   |           | 16.60 |           | 15.00  |           | 2.76   | 2.65      | 0.13 J      |
| 6/16/2016  |                             | 0.21   |           | 7.80  |           | 1.19  |           | 0.09 J | 0.09 J    | 0.20 U                               | 0.85   |           | 19.60 |           | 13.60  |           | 3.06   | 3.07      | 0.27 J      |
| 9/26/2016  |                             | 0.12 J |           | 3.75  |           | 1.04  |           | 0.11 J | 0.12 J    | 0.20 U                               | 0.86   |           | 22    |           | 13.30  |           | 3.28   | 3.31      | 0.50 U      |
| 3/8/2017   |                             | 0.15 J |           | 49.50 |           | 1.18  |           | 0.13 J | 0.13 J    |                                      | 2.96   |           | 19.0  |           | 14.10  |           | 3.82   | 0.37 J    |             |
| 6/10/2017  |                             |        |           |       |           | 1.00  |           |        |           |                                      |        |           |       |           | 3.75   |           |        |           |             |
| 9/16/2017  |                             | 0.2 J  |           | 18.5  |           | 1.26  |           | 0.12 J | 0.08 J    | ND U                                 | 1.06   |           | 21.3  |           | 14.7   |           | 3.47   | 3.29      | ND U        |
| 12/14/2017 |                             |        |           |       |           | 2.8   |           |        |           |                                      |        |           |       |           | 11.0   |           |        |           |             |
| 3/17/2018  |                             | 0.21   |           | 2.2   |           | 1.9   | 1.8       | 0.2    |           |                                      | 1.53   |           | 54.0  |           | 59.0 J | 16.0      | 14     |           |             |
| 6/16/2018  |                             |        |           |       |           | 1.5   |           |        |           |                                      |        |           |       |           | 30.0   |           |        |           |             |
| 9/29/2018  |                             | 0.51   |           | 62.0  | 57.0      | 1.5   |           | 0.20   |           |                                      | 1.66   |           | 19.0  | 19.0      | 11.0   |           | 2.6    |           |             |
| 11/17/2018 |                             |        |           | 50.0  |           |       |           |        |           |                                      |        |           | 22.0  |           |        |           |        |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std | Tannin and Lignin<br>(mg/L) |       |           |        |           |       |           |       |           | Total Organic Carbon (TOC)<br>(mg/L) |       |           |        |           |       |           |       |           |
|-----------------------------------|-----------------------------|-------|-----------|--------|-----------|-------|-----------|-------|-----------|--------------------------------------|-------|-----------|--------|-----------|-------|-----------|-------|-----------|
|                                   | --                          |       |           |        |           |       |           |       |           | --                                   |       |           |        |           |       |           |       |           |
|                                   | --                          |       |           |        |           |       |           |       |           | --                                   |       |           |        |           |       |           |       |           |
|                                   | Well ID                     | BXS-4 | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank                          | BXS-4 | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup |
| 3/16/2019                         | 0.49                        |       | 47        |        | 2.5       |       | 0.22      |       |           | 1.5                                  |       | 18.0      |        | 12.0      |       | 2.4       |       |           |
| 6/1/2019                          |                             |       | 320 J     | 53.0 J |           |       |           |       |           |                                      |       | 45.0 J    | 20.0 J | 12.0      |       |           |       |           |
| 10/12/2019                        | 0.95                        |       | 100.0     | 99.0   | 2.8       |       | 0.39      |       |           | 2.3                                  |       | 20.0      | 20.0   | 13.0      |       | 3.2       |       |           |
| 12/22/2019                        |                             |       | 89.0      |        |           |       |           |       | 0.1 U     |                                      |       | 19.0      |        |           |       |           |       | 0.5 U     |
| 4/1/2020                          | 1.1                         |       | 24        | 27     | 3.9       |       | 0.1 U     |       | 0.34      | 6.7                                  |       | 18.0      | 20.0   | 13.0      |       | 2.4       |       | 0.5 U     |
| 6/26/2020                         |                             |       | 86        |        |           |       |           |       |           |                                      |       | 22.0      |        |           |       |           |       |           |
| 9/22/2020                         | 5.1                         |       | NT        |        | 1.7       | 1.8   | 0.13      |       |           | 3.8                                  |       | NT        |        | 12.0      | 13    | 3.4       |       |           |
| 9/25/2020                         | NT                          |       | 94.0      |        | NT        |       | NT        |       |           | NT                                   |       | 19.0      |        | NT        |       | NT        |       |           |
| 12/29/2020                        |                             |       | 53.0      |        |           |       |           |       |           |                                      |       | 8.8       |        |           |       |           |       |           |
| 3/11/2021                         | 1.2                         |       | 29.0      | 19.0   | 2.3       |       | 0.22      |       |           | 6.4                                  |       | 20.0      | 26.0   | 18.0      |       | 10        |       |           |
| 6/16/2021                         |                             |       | 33.0      |        |           |       |           |       |           |                                      |       | 23.0      |        |           |       |           |       |           |
| 9/30/2021                         | 2.4                         |       | 80.0      | 81.0   | 2.0       |       | 0.55      |       | 0.12      | 5.0                                  |       | 25.0      | 25.0   | 15.0      |       | 5.3       |       | 0.5 U     |
| 12/23/2021                        |                             |       | 34.0      |        |           |       |           |       |           |                                      |       | 20.0      |        |           |       |           |       |           |
| 3/11/2022                         | 0.38                        |       | 40.0      | 43.0   | 1.6       |       | 0.21      |       | 0.1 U     | 3.2                                  |       | 25.0      | 27.0   | 27.0      |       | 10        |       | 0.5 U     |
| 6/30/2022                         | NT                          |       | 37.0      |        | NT        |       | NT        |       |           | NT                                   |       | 83.0      |        | NT        |       | NT        |       |           |
| 9/21/2021                         | 0.82                        |       | 26.0      | 31.0   | 1.1       |       | 0.29      |       |           | 2.6                                  |       | 21.0      | 21.0   | 13.0      |       | 3.8       |       |           |
| 12/19/2022                        | NT                          |       | 42.0      | 37.0   | NT        |       | NT        |       |           | NT                                   |       | 25.0      | 26.0   | NT        |       | NT        |       |           |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Total Coliforms |           |        |           |         |           |       |           |             | Pentachlorophenol |           |       |           |                   |           |       |           |             |
|-----------------------|-----------------|-----------|--------|-----------|---------|-----------|-------|-----------|-------------|-------------------|-----------|-------|-----------|-------------------|-----------|-------|-----------|-------------|
|                       | MPN/100 mL      |           |        |           |         |           |       |           |             | µg/L              |           |       |           |                   |           |       |           |             |
|                       | 1/100 mL        |           |        |           |         |           |       |           |             | 1 µg/L/None       |           |       |           |                   |           |       |           |             |
|                       | 1/100 mL        |           |        |           |         |           |       |           |             | --                |           |       |           |                   |           |       |           |             |
| MCL/SMCL<br>WA WQ Std |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| Well ID               | BXS-4           | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2   | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank | BXS-4             | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2             | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
| 2/1/2007              | 1.0 U           | 1.0 U     | 1.0 U  |           | 1.0 U   |           | 1.0 U |           | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 4/18/2007             | 1.0 U           | 1.0 U     | 1.0 U  |           | 1.0 U   |           | 1.0 U |           | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 7/18/2007             | 1.0             |           | 6.0    |           | 2,420 > |           | 1.0 U | 1.0       | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 10/9/2007             | 1.0 U           | 1.0 U     | 1.0 U  |           | 5.1     |           | 1.0 U |           | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 1/9/2008              | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 3.1         |                   |           |       |           |                   |           |       |           |             |
| 4/30/2008             | 1.0 U           |           | 1.0 U  |           | 2.0     |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 7/29/2008             | 1.0 U           |           | 1.0 U  |           | 249     | 71        | 1.0 U |           | 18.7        |                   |           |       |           |                   |           |       |           |             |
| 10/22/2008            | 1.0 U           |           | 1.0 U  |           | 1.0 U   | 1.0 U     | 1.0 U |           | 25          |                   |           |       |           |                   |           |       |           |             |
| 2/1/2009              | 1.0 U           |           | 1.0 U  |           | 17.5    |           | 1.0   | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 5/1/2009              | 1.0 U           |           | 1.0    |           | 1.0     |           | 1.0 U | 1.0 U     | 4.2         |                   |           |       |           |                   |           |       |           |             |
| 8/1/2009              | 1.0 U           |           | 1.0 U  | 1.0 U     | 1.0 U   |           | 1.0 U |           | 1.0         |                   |           |       |           |                   |           |       |           |             |
| 11/1/2009             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 3.1         |                   |           |       |           |                   |           |       |           |             |
| 2/10/2010             | 1.0 U           |           | 1.0 U  |           | 1.0     | 1.0       | 1.0 U |           | 1.0         |                   |           |       |           |                   |           |       |           |             |
| 5/26/2010             | 1.0 U           |           | 1.0 U  |           | 2.0     |           | 165   | 165       | 48          |                   |           |       |           |                   |           |       |           |             |
| 8/18/2010             | 1.0 U           |           | 1.0 U  |           | 1.0     |           | 9.7   | 3.0       | 18.9        |                   |           |       |           |                   |           |       |           |             |
| 11/18/2010            | 1.0             |           | 5.2    |           | 2.0     |           | 1.0   | 1.0 U     | 1.0         |                   |           |       |           |                   |           |       |           |             |
| 2/9/2011              | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 5/17/2011             | 2.0             |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0       | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 8/24/2011             | 1.0 U           |           | 1.0 U  |           | 18.1    |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 11/3/2011             | 1.0 U           |           | P      |           | P       |           | P     |           | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 2/14/2012             | 2.0             |           | 1.0 U  |           | 5.2     |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 5/2/2012              |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 8/21/2012             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 2.0   | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 11/13/2012            | 1.0 U           |           | 1.0 U  |           | 1.0     |           | 1.0 U |           | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 2/12/2013             | 1.0 U           |           | 10.0 U |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 6/4/2013              |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 8/27/2013             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 12/2/2013             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 41 J  | 24 J      | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 3/17/2014             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 6/2/2014              | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 9/29/2014             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 11/17/2014            | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 4.1   | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 2/23/2015             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 9/14/2015             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 3.1   | 3.1       | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 12/7/2015             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 2.0   | 3.1       | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 2/29/2016             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 6/16/2016             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 9/26/2016             | 1.0 U           |           | 1.0 U  |           | 1.0 U   |           | 1.0 U | 1.0 U     | 1.0 U       |                   |           |       |           |                   |           |       |           |             |
| 3/8/2017              |                 |           |        |           |         |           |       |           |             | 0.8               |           | ND U  |           | ND U              |           | 49 D  | 41        | ND U        |
| 6/10/2017             |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 9/16/2017             |                 |           |        |           |         |           |       |           |             |                   |           | ND U  |           | ND U <sub>i</sub> |           | 32    | 11        |             |
| 12/14/2017            |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 3/17/2018             |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 6/16/2018             |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 9/29/2018             |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |
| 11/17/2018            |                 |           |        |           |         |           |       |           |             |                   |           |       |           |                   |           |       |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Total Coliforms |           |       |           |       |           |       |           |             | Pentachlorophenol |           |       |           |       |           |       |           |             |
|-----------------------|-----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|-------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|                       | MPN/100 mL      |           |       |           |       |           |       |           |             | µg/L              |           |       |           |       |           |       |           |             |
|                       | 1/100 mL        |           |       |           |       |           |       |           |             | 1 µg/L/None       |           |       |           |       |           |       |           |             |
|                       | 1/100 mL        |           |       |           |       |           |       |           |             | --                |           |       |           |       |           |       |           |             |
| MCL/SMCL<br>WA WQ Std |                 |           |       |           |       |           |       |           |             |                   |           |       |           |       |           |       |           |             |
| Well ID               | BXS-4           | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank | BXS-4             | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
| 3/16/2019             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 6/1/2019              | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 10/12/2019            | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 12/22/2019            | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 4/1/2020              | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 6/26/2020             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 9/22/2020             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 9/25/2020             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 12/29/2020            | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 3/11/2021             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 6/16/2021             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 9/30/2021             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 12/23/2021            | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 3/11/2022             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 6/30/2022             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 9/21/2021             | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |
| 12/19/2022            | NT              |           | NT    |           | NT    |           | NT    |           |             | NT                |           | NT    |           | NT    |           | NT    |           |             |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Polynuclear Aromatic Hydrocarbons |              |       |              |       |              |       |              |                |
|--------------------------------------------------|-----------------------------------|--------------|-------|--------------|-------|--------------|-------|--------------|----------------|
|                                                  | µg/L                              |              |       |              |       |              |       |              |                |
|                                                  | 0.2 µg/L/None                     |              |       |              |       |              |       |              |                |
|                                                  | 0.01 µg/L                         |              |       |              |       |              |       |              |                |
|                                                  | BXS-4                             | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
| 2/1/2007                                         |                                   |              |       |              |       |              |       |              |                |
| 4/18/2007                                        |                                   |              |       |              |       |              |       |              |                |
| 7/18/2007                                        |                                   |              |       |              |       |              |       |              |                |
| 10/9/2007                                        |                                   |              |       |              |       |              |       |              |                |
| 1/9/2008                                         |                                   |              |       |              |       |              |       |              |                |
| 4/30/2008                                        |                                   |              |       |              |       |              |       |              |                |
| 7/29/2008                                        |                                   |              |       |              |       |              |       |              |                |
| 10/22/2008                                       |                                   |              |       |              |       |              |       |              |                |
| 2/1/2009                                         |                                   |              |       |              |       |              |       |              |                |
| 5/1/2009                                         |                                   |              |       |              |       |              |       |              |                |
| 8/1/2009                                         |                                   |              |       |              |       |              |       |              |                |
| 11/1/2009                                        |                                   |              |       |              |       |              |       |              |                |
| 2/10/2010                                        |                                   |              |       |              |       |              |       |              |                |
| 5/26/2010                                        |                                   |              |       |              |       |              |       |              |                |
| 8/18/2010                                        |                                   |              |       |              |       |              |       |              |                |
| 11/18/2010                                       |                                   |              |       |              |       |              |       |              |                |
| 2/9/2011                                         |                                   |              |       |              |       |              |       |              |                |
| 5/17/2011                                        |                                   |              |       |              |       |              |       |              |                |
| 8/24/2011                                        |                                   |              |       |              |       |              |       |              |                |
| 11/3/2011                                        |                                   |              |       |              |       |              |       |              |                |
| 2/14/2012                                        |                                   |              |       |              |       |              |       |              |                |
| 5/2/2012                                         |                                   |              |       |              |       |              |       |              |                |
| 8/21/2012                                        |                                   |              |       |              |       |              |       |              |                |
| 11/13/2012                                       |                                   |              |       |              |       |              |       |              |                |
| 2/12/2013                                        |                                   |              |       |              |       |              |       |              |                |
| 6/4/2013                                         |                                   |              |       |              |       |              |       |              |                |
| 8/27/2013                                        |                                   |              |       |              |       |              |       |              |                |
| 12/2/2013                                        |                                   |              |       |              |       |              |       |              |                |
| 3/17/2014                                        |                                   |              |       |              |       |              |       |              |                |
| 6/2/2014                                         |                                   |              |       |              |       |              |       |              |                |
| 9/29/2014                                        |                                   |              |       |              |       |              |       |              |                |
| 11/17/2014                                       |                                   |              |       |              |       |              |       |              |                |
| 2/23/2015                                        |                                   |              |       |              |       |              |       |              |                |
| 9/14/2015                                        |                                   |              |       |              |       |              |       |              |                |
| 12/7/2015                                        |                                   |              |       |              |       |              |       |              |                |
| 2/29/2016                                        |                                   |              |       |              |       |              |       |              |                |
| 6/16/2016                                        |                                   |              |       |              |       |              |       |              |                |
| 9/26/2016                                        |                                   |              |       |              |       |              |       |              |                |
| 3/8/2017                                         |                                   |              |       |              |       |              |       |              | 0.1 J          |
| 6/10/2017                                        |                                   |              |       |              |       |              |       |              |                |
| 9/16/2017                                        |                                   |              | 0.013 |              | 0.007 |              | 0.030 | 0.013        |                |
| 12/14/2017                                       |                                   |              |       |              |       |              |       |              |                |
| 3/17/2018                                        |                                   |              |       |              |       |              |       |              |                |
| 6/16/2018                                        |                                   |              |       |              |       |              |       |              |                |
| 9/29/2018                                        |                                   |              |       |              |       |              |       |              |                |
| 11/17/2018                                       |                                   |              |       |              |       |              |       |              |                |

**Table 3B. Summary of Groundwater Conventional Parameters: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Polynuclear Aromatic Hydrocarbons |              |       |              |       |              |       |              |                |
|-----------------------|-----------------------------------|--------------|-------|--------------|-------|--------------|-------|--------------|----------------|
|                       | µg/L                              |              |       |              |       |              |       |              |                |
|                       | 0.2 µg/L/None                     |              |       |              |       |              |       |              |                |
|                       | 0.01 µg/L                         |              |       |              |       |              |       |              |                |
| MCL/SMCL<br>WA WQ Std |                                   |              |       |              |       |              |       |              |                |
| Well ID               | BXS-4                             | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
| 3/16/2019             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 6/1/2019              | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 10/12/2019            | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 12/22/2019            | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 4/1/2020              | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 6/26/2020             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 9/22/2020             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 9/25/2020             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 12/29/2020            | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 3/11/2021             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 6/16/2021             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 9/30/2021             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 12/23/2021            | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 3/11/2022             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 6/30/2022             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 9/21/2021             | NT                                |              | NT    |              | NT    |              | NT    |              |                |
| 12/19/2022            | NT                                |              | NT    |              | NT    |              | NT    |              |                |

**Notes**

µS/cm = microSiemens per centimeter.      mg/L = milligrams per liter.      MPN = most probable number.

J = result is an estimated concentration that is less than the method reporting limit, but greater than or equal to the method detection limit.

J\* = result is an estimated concentration because of lab imprecision.      NT = not tested.

U = analyte was not detected above the reported sample quantification limit.

MCL = Federal maximum contaminant levels for drinking water. SMCL = Federal secondary maximum contaminant level for drinking water.

WA WQ Std = State of Washington's water quality standards for groundwater (WAC 173-200).

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Arsenic, dissolved |              |       |              |        |              |        |              |                |  |
|-----------------------|--------------------|--------------|-------|--------------|--------|--------------|--------|--------------|----------------|--|
|                       | (µg/L)             |              |       |              |        |              |        |              |                |  |
|                       | 10                 |              |       |              |        |              |        |              |                |  |
|                       | 0.05               |              |       |              |        |              |        |              |                |  |
| MCL/SMCL<br>WA WQ Std |                    |              |       |              |        |              |        |              |                |  |
| Well ID               | BXS-4              | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2  | BXS-2<br>Dup | BXS-1  | BXS-1<br>Dup | Field<br>Blank |  |
| 2/1/2007              | 6.8                | 5.8          | 145   |              | 1.1 B  |              | 5.0 U  |              | 5.0 U          |  |
| 4/18/2007             | 6.0                | 6.0          | 113   |              | 0.7 B  |              | 5.0 U  |              | 1.5 B          |  |
| 7/18/2007             | 5.4                |              | 113   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 10/9/2007             | 5.4                | 4.8 B        | 67    |              | 5.0 U  |              | 5.0 U  |              | 5.0 U          |  |
| 1/9/2008              | 6.7                |              | 43    |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 0.7 U          |  |
| 4/30/2008             | 4.4 J              |              | 117   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 0.7 U          |  |
| 7/30/2008             | 5.4                |              | 111   |              | 0.8 J  | 5.0 U        | 5.0 U  |              | 0.6 U          |  |
| 10/22/2008            | 7.2                |              | 47    |              | 5.0 U  | 5.0 U        | 1.1 J  |              |                |  |
| 2/1/2009              | 14.4               |              | 114   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 5/1/2009              | 6.2                |              | 120   |              | 1.6 J  |              | 0.6 J  | 0.7 J        | 5.0 U          |  |
| 8/1/2009              | 0.8 J              |              | 5.0 U | 2.5 J        | 1.5 J  |              | 0.8 J  |              | 5.0 U          |  |
| 11/1/2009             | 6.0                |              | 64    |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 2/10/2010             | 7.1                |              | 133   |              | 3.0 J  | 2.5 J        | 1.6 J  |              | 5.0 U          |  |
| 5/26/2010             | 5.5                |              | 149   |              | 0.9 J  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 8/18/2010             | 5.3                |              | 139   |              | 0.9 J  |              | 5.0 U  | 5.0 U        | 3.0 J          |  |
| 11/18/2010            | 5.6                |              | 186   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 2/9/2011              | 5.5                |              | 119   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 5/17/2011             | 6.2                |              | 139   |              | 1.1 J  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 8/24/2011             | 6.4                |              | 155   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 11/3/2011             | 6.2                |              | 156   |              | 1.0 J  |              | 5.0 U  | 0.6 J        | 5.0 U          |  |
| 2/14/2012             | 5.2                |              | 158   |              | 0.6 J  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 5/2/2012              | 5.8                |              | 133   |              | 0.9 J  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 8/21/2012             | 4.9 J              |              | 135   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 11/13/2012            | 6.2                |              | 170   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 2/12/2013             | 6.1                |              | 119   |              | 5.0 U  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 6/4/2013              | 6.8                |              | 138   |              | 1.5 J  |              | 5.0 U  | 1.1 J        | 1.1 J          |  |
| 8/27/2013             | 6.3                |              | 140   |              | 1.0 J  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 12/2/2013             | 6.4                |              | 164   |              | 1.3 J  |              | 5.0 U  | 5.0 U        | 5.0 U          |  |
| 3/17/2014             | 6.00               |              | 175   |              | 0.78   |              | 0.50 U | 0.50 U       | 0.50 U         |  |
| 6/2/2014              | 6.00               |              | 157   |              | 0.70   |              | 0.20 J | 0.30 J       | 0.50 U         |  |
| 9/29/2014             | 5.86               |              | 191   |              | 0.69   |              | 0.25 J | 0.24 J       | 0.50 U         |  |
| 11/17/2014            | 5.7                |              | 174   |              | 0.7    |              | 0.3 J  | 0.3 J        | 0.5 U          |  |
| 2/23/2015             | 5.9                |              | 163   |              | 0.7    |              | 0.2 J  | 0.3 J        | 0.5 U          |  |
| 9/14/2015             | 5.9                |              | 185   |              | 0.6    |              | 0.5 U  | 0.2 J        | 0.5 U          |  |
| 12/7/2015             | 6.32               |              | 174   |              | 0.76   |              | 0.26 J | 0.26 J       |                |  |
| 2/29/2016             | 6.30               |              | 147   |              | 0.69   |              | 0.29 J | 0.23 J       | 0.50 U         |  |
| 6/16/2016             | 6.1                |              | 138   |              | 0.7    |              | 0.3 J  | 0.3 J        | 0.50 U         |  |
| 9/26/2016             | 6.56               |              | 191   |              | 0.47 J |              | 0.25 J | 0.26 J       | 0.50 U         |  |
| 3/8/2017              | ND U               |              | 161   |              | ND U   |              | ND U   | ND U         |                |  |
| 6/10/2017             |                    |              |       |              | ND U   |              |        |              |                |  |
| 9/16/2017             | 8 J                |              | 181   |              | ND U   |              | ND U   | ND U         | ND U           |  |
| 12/14/2017            |                    |              |       |              | 5.0    |              |        |              |                |  |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                             | Arsenic, dissolved |              |       |              |        |              |        |              |                |
|----------------------------------|--------------------|--------------|-------|--------------|--------|--------------|--------|--------------|----------------|
|                                  | (µg/L)             |              |       |              |        |              |        |              |                |
|                                  | 10                 |              |       |              |        |              |        |              |                |
|                                  | 0.05               |              |       |              |        |              |        |              |                |
| MCL/SMCL<br>WA WQ Std<br>Well ID | BXS-4              | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2  | BXS-2<br>Dup | BXS-1  | BXS-1<br>Dup | Field<br>Blank |
| 3/17/2018                        |                    |              | 96    |              | 5.0    | 5.0          | 5.0    |              |                |
| 6/16/2018                        |                    |              |       |              | 5.0    |              |        |              |                |
| 9/29/2018                        | ND U               |              | 54    | 51           | 6.0    |              |        | 5.0 U        |                |
| 11/17/2018                       |                    |              | 82    |              |        |              |        |              |                |
| 3/16/2019                        | 5.0 U              |              | 66    |              | 5.0 U  |              | 5.0 U  |              |                |
| 6/1/2019                         |                    |              | 41    | 48           |        |              |        |              |                |
| 10/12/2019                       | 5.0 U              |              | 23    | 24.0         | 5.0    |              | 5.0 U  |              |                |
| 12/22/2019                       |                    |              | 102   |              |        |              |        |              | 5.0 U          |
| 4/1/2020                         | 5.0 U              |              | 66    | 72           | 5.0 U  |              | 5.0 U  |              | 5.0 U          |
| 6/26/2020                        |                    |              | 41    |              |        |              |        |              |                |
| 9/22/2020                        | 5.0 U              |              |       |              | 5.0 U  | 5.0 U        | 5.0 U  |              | 5.0 U          |
| 9/25/2020                        |                    |              | 105   |              |        |              |        |              |                |
| 12/29/2020                       |                    |              | 86    |              |        |              |        |              |                |
| 3/11/2021                        | 5.0 U              |              | 92    | 73           | 5.0 U  |              | 5.0 U  |              |                |
| 6/16/2021                        |                    |              | 79    |              |        |              |        |              |                |
| 9/30/2021                        | 5.0 U              |              | 90    | 118          | 6.0    |              | 5.0 U  |              | 5.0 U          |
| 12/23/2021                       |                    |              | 5.0 U |              |        |              |        |              |                |
| 3/11/2022                        | 20.0 U             |              | 20 U  | 20 U         | 20.0 U |              | 20.0 U |              | 20.0 U         |
| 6/30/2022                        |                    |              | 81    |              |        |              |        |              |                |
| 9/21/2022                        | 20.0 U             |              | 36 J  | 20 U         | 20.0 U |              | 20.0 U |              |                |
| 12/19/2022                       |                    |              | 60    | 62           |        |              |        |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Barium, dissolved<br>(µg/L)<br>2,000<br>1,000 |           |       |           |       |           |        |           |             |       |
|--------------------------------------------------|-----------------------------------------------|-----------|-------|-----------|-------|-----------|--------|-----------|-------------|-------|
|                                                  | BXS-4                                         | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank |       |
|                                                  | 2/1/2007                                      | 29        | 29    | 101       |       | 47        |        | 19.1      |             | 5.0 U |
|                                                  | 4/18/2007                                     | 26        | 26    | 74        |       | 40        |        | 25        |             | 3.0 B |
| 7/18/2007                                        | 33                                            |           | 81    |           | 50    |           | 25     | 23        | 5.0 U       |       |
| 10/9/2007                                        | 29                                            | 29        | 83    |           | 48    |           | 27     |           | 5.0 U       |       |
| 1/9/2008                                         | 27                                            |           | 65    |           | 42    |           | 18.3   | 19.0      | 0.6 U       |       |
| 4/30/2008                                        | 28                                            |           | 111   |           | 42    |           | 22     | 23        | 0.6 U       |       |
| 7/30/2008                                        | 30                                            |           | 122   |           | 50    | 51        | 32     |           | 0.5 U       |       |
| 10/22/2008                                       | 27                                            |           | 72    |           | 42    | 43        | 25     |           |             |       |
| 2/1/2009                                         | 30                                            |           | 125   |           | 50    |           | 23     | 23        | 5.0 U       |       |
| 5/1/2009                                         | 27                                            |           | 111   |           | 45    |           | 16.7   | 16.8      | 5.0 U       |       |
| 8/1/2009                                         | 229                                           |           | 15.6  | 23        | 40    |           | 230    |           | 5.0 U       |       |
| 11/1/2009                                        | 27                                            |           | 115   |           | 46    |           | 13.9   | 13.1      | 5.0 U       |       |
| 2/10/2010                                        | 28                                            |           | 132   |           | 50    | 52        | 14.3   |           | 5.0 U       |       |
| 5/26/2010                                        | 28                                            |           | 134   |           | 54    |           | 14.5   | 14.6      | 5.0 U       |       |
| 8/18/2010                                        | 26                                            |           | 119   |           | 48    |           | 14.9   | 14.3      | 1.5 J       |       |
| 11/18/2010                                       | 25                                            |           | 132   |           | 45    |           | 15.7   | 15.7      | 5.0 U       |       |
| 2/9/2011                                         | 29                                            |           | 142   |           | 54    |           | 16.9   | 16.6      | 5.0 U       |       |
| 5/17/2011                                        | 25                                            |           | 123   |           | 53    |           | 15.3   | 15.5      | 5.0 U       |       |
| 8/24/2011                                        | 24                                            |           | 120   |           | 47    |           | 15.8   | 15.3      | 5.0 U       |       |
| 11/3/2011                                        | 25                                            |           | 121   |           | 45    |           | 15.0   | 15.2      | 5.0 U       |       |
| 2/14/2012                                        | 27                                            |           | 136   |           | 48    |           | 16.7   | 16.3      | 0.6 J       |       |
| 5/2/2012                                         | 29                                            |           | 116   |           | 54    |           | 16.4   | 15.9      | 5.0 U       |       |
| 8/21/2012                                        | 28                                            |           | 114   |           | 53    |           | 15.3   | 15.5      | 5.0 U       |       |
| 11/13/2012                                       | 28                                            |           | 137   |           | 51    |           | 15.7   | 15.8      | 5.0 U       |       |
| 2/12/2013                                        | 26                                            |           | 90    |           | 55    |           | 13.9   | 14.2      | 5.0 U       |       |
| 6/4/2013                                         | 26                                            |           | 86    |           | 53    |           | 13.3   | 13.3      | 4.0 U       |       |
| 8/27/2013                                        | 28                                            |           | 115   |           | 54    |           | 16.1   | 15.2      | 4.0 U       |       |
| 12/2/2013                                        | 26                                            |           | 124   |           | 47    |           | 15.1   | 15.6      | 4.0 U       |       |
| 3/17/2014                                        | 27                                            |           | 140   |           | 50    |           | 15.4   | 15.5      | 4.0 U       |       |
| 6/2/2014                                         | 28                                            |           | 127   |           | 53    |           | 15.2   | 15        | 4.0 U       |       |
| 9/29/2014                                        | 28                                            |           | 135   |           | 50    |           | 14.9   | 15        | 4.0 U       |       |
| 11/17/2014                                       | 28                                            |           | 130   |           | 50    |           | 15.3   | 14.7      | 0.6 J       |       |
| 2/23/2015                                        | 28                                            |           | 127   |           | 47    |           | 13.1   | 13.3      | 0.1 J       |       |
| 9/14/2015                                        | 30                                            |           | 152   |           | 47    |           | 14.4   | 15.2      | 4.0 U       |       |
| 12/7/2015                                        | 28                                            |           | 162   |           | 44    |           | 13.2   | 13.4      |             |       |
| 2/29/2016                                        | 29                                            |           | 115   |           | 48    |           | 14.5   | 14.6      | 4.0 U       |       |
| 6/16/2016                                        | 31                                            |           | 109   |           | 44    |           | 18.8   | 19.1      | 0.9 J       |       |
| 9/26/2016                                        | 31                                            |           | 128   |           | 32    |           | 17.7   | 18        | 4.0 U       |       |
| 3/8/2017                                         | 28.9                                          |           | 128   |           | 40.1  |           | 23     | 21.7      |             |       |
| 6/10/2017                                        |                                               |           |       |           | 20.3  |           |        |           |             |       |
| 9/16/2017                                        | 30                                            |           | 129   |           | 40.5  |           | 18.9 J | 29.4 J    | ND U        |       |
| 12/14/2017                                       |                                               |           |       |           |       |           | 35.2   |           |             |       |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Barium, dissolved |           |       |           |       |           |       |           |             |
|-----------------------|-------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|                       | (µg/L)            |           |       |           |       |           |       |           |             |
|                       | 2,000             |           |       |           |       |           |       |           |             |
|                       | 1,000             |           |       |           |       |           |       |           |             |
| MCL/SMCL<br>WA WQ Std |                   |           |       |           |       |           |       |           |             |
| Well ID               | BXS-4             | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
| 3/17/2018             | 36                |           | 49.7  |           | 38    | 37.6      | 16.4  |           |             |
| 6/16/2018             |                   |           |       |           | 35.7  |           |       |           |             |
| 9/29/2018             | 32                |           | 29.5  | 30.4      | 34.6  |           | 16.1  |           |             |
| 11/17/2018            |                   |           | 26    |           |       |           |       |           |             |
| 3/16/2019             | 26                |           | 34    |           | 40    |           | 16    |           |             |
| 6/1/2019              |                   |           | 29.0  | 28.8      |       |           |       |           |             |
| 10/12/2019            | 28                |           | 57.7  | 57.3      | 41.1  |           | 14.3  |           |             |
| 12/22/2019            |                   |           | 41.5  |           |       |           |       |           | 0.5 U       |
| 4/1/2020              | 24                |           | 41.9  | 44.6      | 38    |           | 14.4  |           | 5.0 U       |
| 6/26/2020             |                   |           | 31.6  |           |       |           |       |           |             |
| 9/22/2020             | 24.1              |           |       |           | 37.6  | 38.8      | 18.2  |           | 5.0 U       |
| 9/25/2020             |                   |           | 57.8  |           |       |           |       |           |             |
| 12/29/2020            |                   |           | 47.0  |           |       |           |       |           |             |
| 3/11/2021             | 16.2              |           | 25.0  | 22.2      | 32    |           | 16.2  |           |             |
| 6/16/2021             |                   |           | 24.5  |           |       |           |       |           |             |
| 9/30/2021             | 27.1              |           | 33.1  | 20.6 J    | 35.8  |           | 23.8  |           | 5 U         |
| 12/23/2021            |                   |           | 16.7  |           |       |           |       |           |             |
| 3/11/2022             | 5.0 U             |           | 24.6  | 24.3      | 28.8  |           | 21.1  |           | 5 U         |
| 6/30/2022             |                   |           | 30.8  |           |       |           |       |           |             |
| 9/21/2022             | 18.9              |           | 18.2  | 18.3      | 27.7  |           | 18.7  |           |             |
| 12/19/2022            |                   |           | 17.3  | 18.1      |       |           |       |           |             |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Iron, dissolved<br>(µg/L)<br>300<br>300 |              |         |           |       |           |        |              |             |
|--------------------------------------------------|-----------------------------------------|--------------|---------|-----------|-------|-----------|--------|--------------|-------------|
|                                                  | BXS-4                                   | BXS-4<br>Dup | BXS-3   | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1  | BXS-1<br>Dup | Field Blank |
|                                                  | 2/1/2007                                | 39           | 37      | 110,000   |       | 846       |        | 20 U         | 20 U        |
|                                                  | 4/18/2007                               | 43           | 36      | 90,500    |       | 771       |        | 10.1 B       | 4.7 B       |
| 7/18/2007                                        | 38                                      |              | 88,100  |           | 699   |           | 20 U   | 20 U         | 20 U        |
| 10/9/2007                                        | 36                                      | 36           | 62,700  |           | 656   |           | 20 U   |              | 20 U        |
| 1/9/2008                                         | 41                                      |              | 35,500  |           | 608   |           | 7.8 J  | 8.2 J        | 3 U         |
| 4/30/2008                                        | 42                                      |              | 102,000 |           | 624   |           | 8.8 J  | 8.3 J        | 3 U         |
| 7/30/2008                                        | 35                                      |              | 96,800  |           | 593   | 591       | 20 U   |              | 4 U         |
| 10/22/2008                                       | 75                                      |              | 53,800  |           | 560   | 571       | 8.8 J  |              |             |
| 2/1/2009                                         | 55                                      |              | 109,000 |           | 542   |           | 4.6 J  | 20 U         | 4.5 J       |
| 5/1/2009                                         | 52                                      |              | 102,000 |           | 473   |           | 6.1 J  | 4.9 J        | 20 U        |
| 8/1/2009                                         | 91                                      |              | 11.6 J  | 2,280     | 1,340 |           | 91     |              | 0.8 J       |
| 11/1/2009                                        | 44                                      |              | 59,700  |           | 480   |           | 4.7 J  | 4.2 J        | 20 U        |
| 2/10/2010                                        | 34                                      |              | 94,700  |           | 465   | 493       | 20 U   |              | 20 U        |
| 5/26/2010                                        | 44                                      |              | 104,000 |           | 451   |           | 3.5 J  | 8.9 J        | 20 U        |
| 8/18/2010                                        | 39                                      |              | 104,000 |           | 482   |           | 3.7 J  | 1.6 J        | 20 U        |
| 11/18/2010                                       | 20 U                                    |              | 116,000 |           | 420   |           | 8.7 J  | 6 J          | 20 U        |
| 2/9/2011                                         | 47                                      |              | 109,000 |           | 466   |           | 20 U   | 20 U         | 20 U        |
| 5/17/2011                                        | 56                                      |              | 110,000 |           | 470   |           | 11.7 J | 13 J         | 6.8 J       |
| 8/24/2011                                        | 35                                      |              | 107,000 |           | 412   |           | 20 U   | 1 J          | 20 U        |
| 11/3/2011                                        | 42                                      |              | 100,000 |           | 388   |           | 7.7 J  | 7.6 J        | 20 U        |
| 2/14/2012                                        | 43                                      |              | 97,800  |           | 375   |           | 20 U   | 20 U         | 20 U        |
| 5/2/2012                                         | 55                                      |              | 97,900  |           | 430   |           | 20 UJ  | 20 UJ        | 20 U        |
| 8/21/2012                                        | 43                                      |              | 99,200  |           | 417   |           | 20 U   | 20 U         | 20 U        |
| 11/13/2012                                       | 78                                      |              | 98,100  |           | 395   |           | 20 U   | 20 U         | 20 U        |
| 2/12/2013                                        | 60                                      |              | 91,600  |           | 450   |           | 4.4 J  | 4.6 J        | 20 U        |
| 6/4/2013                                         | 58                                      |              | 93,500  |           | 416   |           | 3.7 J  | 5.9 J        | 4.1 J       |
| 8/27/2013                                        | 65                                      |              | 109,000 |           | 416   |           | 20 U   | 5.8 J        | 20 U        |
| 12/2/2013                                        | 56                                      |              | 107,000 |           | 400   |           | 20 U   | 3 J          | 20 U        |
| 3/17/2014                                        | 69                                      |              | 127,000 |           | 424   |           | 20 U   | 8.5 J        | 20 U        |
| 6/2/2014                                         | 52                                      |              | 118,000 |           | 421   |           | 20 U   | 20 U         | 20 U        |
| 9/29/2014                                        | 73                                      |              | 111,000 |           | 409   |           | 20 U   | 20 U         | 8.3 J       |
| 11/17/2014                                       | 70                                      |              | 120,000 |           | 421   |           | 20 U   | 20 U         | 40 U        |
| 2/23/2015                                        | 73                                      |              | 114,000 |           | 375   |           | 0.1 U  | 10.2 J       | 28 U        |
| 9/14/2015                                        | 54                                      |              | 122,000 |           | 358   |           | 6.4 J  | 3.9 J        | 20 U        |
| 12/7/2015                                        | 56                                      |              | 126,000 |           | 361   |           | 9 J    | 20 U         |             |
| 2/29/2016                                        | 95                                      |              | 106,000 |           | 398   |           | 20 U   | 20 U         | 4.0 J       |
| 6/16/2016                                        | 55                                      |              | 108,000 |           | 359   |           | 3 J    | 3.8 J        | 20.0 U      |
| 9/26/2016                                        | 68                                      |              | 107,000 |           | 268   |           | 20 J   | 20 U         | 3.0 J       |
| 3/8/2017                                         | 498                                     |              | 112,000 |           | 279   |           | 71 J   | 37.0 J       |             |
| 6/10/2017                                        |                                         |              |         |           | 8 J   |           |        |              |             |
| 9/16/2017                                        | 839                                     |              | 108,000 |           | 328   |           | 11 J   | 65.0 J       | ND U        |
| 12/14/2017                                       |                                         |              |         |           |       |           | 198    |              |             |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                  | Iron, dissolved |              |       |           |        |           |       |              |             |       |
|-----------------------|-----------------|--------------|-------|-----------|--------|-----------|-------|--------------|-------------|-------|
|                       | (µg/L)          |              |       |           |        |           |       |              |             |       |
|                       | 300             |              |       |           |        |           |       |              |             |       |
|                       | 300             |              |       |           |        |           |       |              |             |       |
| MCL/SMCL<br>WA WQ Std | Well ID         | BXS-4<br>Dup | BXS-3 | BXS-3 Dup | BXS-2  | BXS-2 Dup | BXS-1 | BXS-1<br>Dup | Field Blank |       |
|                       |                 |              |       |           |        |           |       |              |             |       |
|                       | 3/17/2018       | 825          |       | 95,400    |        | 139       | 184   | 10           |             |       |
|                       | 6/16/2018       |              |       |           |        | 206       |       |              |             |       |
|                       | 9/29/2018       | 886          |       | 71,100    | 69,600 | 105       |       | 10 U         |             |       |
|                       | 11/17/2018      |              |       | 81,800    |        |           |       |              |             |       |
|                       | 3/16/2019       | 131          |       | 98,000    |        | 117       |       | 10 U         |             |       |
|                       | 6/1/2019        |              |       | 76,500    | 79,600 |           |       |              |             |       |
|                       | 10/12/2019      | 45           |       | 83,800    | 85,400 | 62        |       | 10 U         |             |       |
|                       | 12/22/2019      |              |       | 99,600    |        |           |       |              |             | 16.0  |
|                       | 4/1/2020        | 101          |       | 80,400    | 83,000 | 256       |       | 50 U         |             | 50 U  |
|                       | 6/26/2020       |              |       | 79,400    |        |           |       |              |             |       |
|                       | 9/22/2020       | 50 U         |       |           |        | 50 U      | 50 U  | 50 U         |             | 1,200 |
|                       | 9/25/2020       |              |       | 85,900    |        |           |       |              |             |       |
|                       | 12/29/2020      |              |       | 67,100    |        |           |       |              |             |       |
|                       | 3/11/2021       | 20 U         |       | 76,800    | 71,300 | 104       |       | 20 U         |             |       |
|                       | 6/16/2021       |              |       | 60,100    |        |           |       |              |             |       |
|                       | 9/30/2021       | 232          |       | 99,400    | 77,200 | 186       |       | 20 U         |             | 20 U  |
|                       | 12/23/2021      |              |       | 20 U      |        |           |       |              |             |       |
|                       | 3/11/2022       | 117          |       | 37,500    | 42,500 | 30 U      |       | 30 U         |             | 62    |
|                       | 6/30/2022       |              |       | 75,900    |        |           |       |              |             |       |
|                       | 9/21/2022       | 99           |       | 50,900    | 39,700 | 30 U      |       | 30 U         |             |       |
|                       | 12/19/2022      |              |       | 65,600    | 68,100 |           |       |              |             |       |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                             | Manganese, dissolved |              |        |           |       |              |       |              |                |
|----------------------------------|----------------------|--------------|--------|-----------|-------|--------------|-------|--------------|----------------|
|                                  | (µg/L)               |              |        |           |       |              |       |              |                |
|                                  | 50                   |              |        |           |       |              |       |              |                |
|                                  | 50                   |              |        |           |       |              |       |              |                |
| MCL/SMCL<br>WA WQ Std<br>Well ID | BXS-4                | BXS-4<br>Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
| 2/1/2007                         | 112                  | 114          | 13,500 |           | 1,350 |              | 90    |              | 5 U            |
| 4/18/2007                        | 107                  | 106          | 13,500 |           | 1,330 |              | 123   |              | 1.6 B          |
| 7/18/2007                        | 118                  |              | 14,000 |           | 1,330 |              | 268   | 268          | 5 U            |
| 10/9/2007                        | 121                  | 120          | 14,700 |           | 1,280 |              | 353   |              | 2.7 B          |
| 1/9/2008                         | 125                  |              | 17,900 |           | 1,270 |              | 422   | 428          | 1.6 B          |
| 4/30/2008                        | 110                  |              | 12,600 |           | 1,150 |              | 240   | 234          | 0.3 B          |
| 7/30/2008                        | 111                  |              | 13,100 |           | 1,190 | 1,210        | 309   |              | 0.2 U          |
| 10/22/2008                       | 111                  |              | 15,400 |           | 1,290 | 1,300        | 297   |              |                |
| 2/1/2009                         | 120                  |              | 11,800 |           | 1,250 |              | 175   | 174          | 0.2 J          |
| 5/1/2009                         | 108                  |              | 11,300 |           | 1,230 |              | 114   | 116          | 0.4 J          |
| 8/1/2009                         | 4,220                |              | 7,870  | 2,540     | 2,500 |              | 4,180 |              | 0.2 J          |
| 11/1/2009                        | 110                  |              | 13,400 |           | 1,300 |              | 204   | 204          | 0.7 J          |
| 2/10/2010                        | 116                  |              | 11,200 |           | 1,260 | 1,330        | 36    |              | 5 U            |
| 5/26/2010                        | 115                  |              | 9,380  |           | 1,340 |              | 78    | 78           | 5 U            |
| 8/18/2010                        | 108                  |              | 9,670  |           | 1,310 |              | 48    | 47           | 5 U            |
| 11/18/2010                       | 112                  |              | 7,880  |           | 1,340 |              | 93    | 95           | 5 U            |
| 2/9/2011                         | 125                  |              | 9,610  |           | 1,400 |              | 159   | 160          | 0.2 J          |
| 5/17/2011                        | 100                  |              | 13,600 |           | 1,460 |              | 122   | 116          | 5 U            |
| 8/24/2011                        | 97                   |              | 14,000 |           | 1,340 |              | 144   | 136          | 5 U            |
| 11/3/2011                        | 105                  |              |        |           | 1,300 |              | 149   | 150          | 0.5 J          |
| 2/14/2012                        | 114                  |              | 8,650  |           | 1,510 |              | 252   | 242          | 0.3 J          |
| 5/2/2012                         | 116                  |              | 12,900 |           | 1,570 |              | 254   | 252          | 5 U            |
| 8/21/2012                        | 113                  |              | 14,000 |           | 1,510 |              | 201   | 200          | 5 U            |
| 11/13/2012                       | 119                  |              | 9,650  |           | 1,550 |              | 242   | 244          | 5 U            |
| 2/12/2013                        | 110                  |              | 10,700 |           | 1,610 |              | 220   | 220          | 5 U            |
| 6/4/2013                         | 118                  |              | 14,800 |           | 1,680 |              | 212   | 209          | 6.2            |
| 8/27/2013                        | 119                  |              | 14,200 |           | 1,700 |              | 224   | 219          | 0.5 J          |
| 12/2/2013                        | 111                  |              |        |           | 1,580 |              | 217   | 221          | 0.1 J          |
| 3/17/2014                        | 119                  |              | 10,400 |           | 1,640 |              | 287   | 282          | 0.3 J          |
| 6/2/2014                         | 116                  |              | 12,300 |           | 1,680 |              | 253   | 250          | 1 U            |
| 9/29/2014                        | 118                  |              | 7,310  |           | 1,650 |              | 240   | 241          | 0.6 J          |
| 11/17/2014                       | 115                  |              | 8,620  |           | 1,680 |              | 265   | 267          | 0.2 J          |
| 2/23/2015                        | 120                  |              | 10,100 |           | 1,580 |              | 311   | 301          | 0.958 J        |
| 9/14/2015                        | 114                  |              | 5,290  |           | 1,570 |              | 238   | 268          | 1 U            |
| 12/7/2015                        | 110                  |              | 5,990  |           | 1,500 |              | 321   | 330          |                |
| 2/29/2016                        | 105                  |              | 11,800 |           | 1,600 |              | 150   | 151          | 0.8 J          |
| 6/16/2016                        | 118                  |              | 13,900 |           | 1,580 |              | 249   | 272          | 1.0 U          |
| 9/26/2016                        | 124                  |              | 7,620  |           | 1,200 |              | 290   | 282          | 0.3 J          |
| 3/8/2017                         | 74.3                 |              | 8,730  |           | 1,540 |              | 667   | 501          |                |
| 6/10/2017                        |                      |              |        |           | 324   |              |       |              |                |
| 9/16/2017                        | 845                  |              | 6,460  |           | 1,490 |              | 301 J | 130 J        | 0.09 J         |
| 12/14/2017                       |                      |              |        |           |       |              | 1,417 |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date                             | Manganese, dissolved |              |       |           |       |              |       |              |                |
|----------------------------------|----------------------|--------------|-------|-----------|-------|--------------|-------|--------------|----------------|
|                                  | (µg/L)               |              |       |           |       |              |       |              |                |
|                                  | 50                   |              |       |           |       |              |       |              |                |
|                                  | 50                   |              |       |           |       |              |       |              |                |
| MCL/SMCL<br>WA WQ Std<br>Well ID | BXS-4                | BXS-4<br>Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
| 3/17/2018                        | 115                  |              | 8,179 |           | 1,575 | 1,578        | 198   |              |                |
| 6/16/2018                        |                      |              |       |           | 1,475 |              |       |              |                |
| 9/29/2018                        | 143                  |              | 5,654 | 5,711     | 1,416 |              | 250   |              |                |
| 11/17/2018                       |                      |              | 4,890 |           |       |              |       |              |                |
| 3/16/2019                        | 137                  |              | 4,136 |           | 1,664 |              | 262   |              |                |
| 6/1/2019                         |                      |              | 3,555 | 3,573     |       |              |       |              |                |
| 10/12/2019                       | 145                  |              | 5,290 | 5,310     | 1,670 |              | 193   |              |                |
| 12/22/2019                       |                      |              | 5,550 |           |       |              |       |              | 5.0 U          |
| 4/1/2020                         | 138                  |              | 6,270 | 6,440     | 1,520 |              | 32    |              | 5.0 U          |
| 6/26/2020                        |                      |              | 4,620 |           |       |              |       |              |                |
| 9/22/2020                        | 169                  |              |       |           | 1,590 | 1,620        | 38    |              | 225            |
| 9/25/2020                        |                      |              | 6,830 |           |       |              |       |              |                |
| 12/29/2020                       |                      |              | 8,300 |           |       |              |       |              |                |
| 3/11/2021                        | 148                  |              | 5,820 | 5,680     | 1,390 |              | 8     |              |                |
| 6/16/2021                        |                      |              | 5,340 |           |       |              |       |              |                |
| 9/30/2021                        | 176                  |              | 4,000 | 2,990     | 1,590 |              | 14    |              | 5 U            |
| 12/23/2021                       |                      |              | 5,720 |           |       |              |       |              |                |
| 3/11/2022                        | 119                  |              | 8,880 | 8,790     | 1,360 |              | 80    |              | 13             |
| 6/30/2022                        |                      |              | 8,680 |           |       |              |       |              |                |
| 9/21/2022                        | 125                  |              | 6,140 | 6,250     | 1,330 |              | 302   |              |                |
| 12/19/2022                       |                      |              | 3,570 | 3,940     |       |              |       |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Cadmium, dissolved<br>(µg/L)<br>5<br>10 |              |       |              |       |           |       |              |                |
|--------------------------------------------------|-----------------------------------------|--------------|-------|--------------|-------|-----------|-------|--------------|----------------|
|                                                  | BXS-4                                   | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 2/1/2007                                | 5.0 U        | 5.0 U | 5.0 U        |       | 5.0 U     |       | 5.0 U        | 5.0 U          |
|                                                  | 4/18/2007                               | 5.0 U        | 5.0 U | 2.9 B        |       | 0.7 B     |       | 1.9 B        | 5.0 U          |
| 7/18/2007                                        | 5.0 U                                   |              | 5.0 U |              | 5.0 U |           | 5.0 U | 5.0 U        |                |
| 10/9/2007                                        | 5.0 U                                   | 5.0 U        | 5.0 U |              | 5.0 U |           | 5.0 U |              |                |
| 1/9/2008                                         | 5.0 U                                   |              | 1.8 J |              | 1.4 J |           | 5.0 U | 1.3 J        |                |
| 4/30/2008                                        | 5.0 U                                   |              | 5.0 U |              | 1.1 J |           | 5.0 U | 0.7 J        |                |
| 7/30/2008                                        | 5.0 U                                   |              | 4.3 J |              | 5.0 U | 5.0 U     | 0.2 J |              |                |
| 10/22/2008                                       | 5.0 U                                   |              | 5.0 U |              | 5.0 U | 5.0 U     | 5.0 U |              |                |
| 2/1/2009                                         | 5.0 U                                   |              | 1.2 J |              | 5.0 U |           | 0.2 J | 0.3 J        | 0.2 J          |
| 5/1/2009                                         | 5.0 U                                   |              | 2.1 J |              | 5.0 U |           | 5.0 U | 5.0 U        | 5.0 U          |
| 8/1/2009                                         | 5.0 U                                   |              | 5.0 U | 5.0 U        | 5.0 U |           | 5.0 U |              | 5.0 U          |
| 11/1/2009                                        | 5.0 U                                   |              | 5.0 U |              | 5.0 U |           | 5.0 U | 5.0 U        | 5.0 U          |
| 2/10/2010                                        | 5.0 U                                   |              | 5.0 U |              | 5.0 U | 5.0 U     | 5.0 U |              | 5.0 U          |
| 5/26/2010                                        | 5.0 U                                   |              | 5.0 U |              | 5.0 U |           | 5.0 U | 5.0 U        | 5.0 U          |
| 8/18/2010                                        | 5.0 U                                   |              | 3.0 J |              | 5.0 U |           | 5.0 U | 5.0 U        | 5.0 U          |
| 11/18/2010                                       | 5.0 U                                   |              | 4.5 J |              | 5.0 U |           | 5.0 U | 5.0 U        | 5.0 U          |
| 2/9/2011                                         |                                         |              |       |              |       |           |       |              | 5.0 U          |
| 5/17/2011                                        |                                         |              |       |              |       |           |       |              | 5.0 U          |
| 8/24/2011                                        |                                         |              |       |              |       |           |       |              | 5.0 U          |
| 11/3/2011                                        | 5.0 U                                   |              | 2.9 J |              | 2.6 J |           | 5.0 U |              | 5.0 U          |
| 2/14/2012                                        | 5.0 U                                   |              | 5.0 U |              | 5.0 U |           | 5.0 U | 5.0 U        | 5.0 U          |
| 5/2/2012                                         | 5.0 U                                   |              | 5.0 U |              | 0.6 J |           | 5.0 U | 5.0 U        | 5.0 U          |
| 8/21/2012                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 11/13/2012                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 2/12/2013                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/4/2013                                         | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 8/27/2013                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/2/2013                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 3/17/2014                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/2/2014                                         | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/29/2014                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 11/17/2014                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 2/23/2015                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/14/2015                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/7/2015                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 2/29/2016                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/16/2016                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/26/2016                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 3/8/2017                                         | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/10/2017                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/16/2017                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/14/2017                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Cadmium, dissolved<br>(µg/L)<br>5<br>10 |              |       |              |       |           |       |              |                |
|--------------------------------------------------|-----------------------------------------|--------------|-------|--------------|-------|-----------|-------|--------------|----------------|
|                                                  | BXS-4                                   | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 3/17/2018                               | NT           | NT    | NT           | NT    | NT        | NT    | NT           | NT             |
|                                                  | 6/16/2018                               | NT           | NT    | NT           | NT    | NT        | NT    | NT           | NT             |
| 9/29/2018                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 11/17/2018                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 3/16/2019                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/1/2019                                         | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 10/12/2019                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/22/2019                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 4/1/2020                                         | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/26/2020                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/22/2020                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/25/2020                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/29/2020                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 3/11/2021                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/16/2021                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/30/2021                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/23/2021                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 3/11/2022                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 6/30/2022                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 9/21/2022                                        | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |
| 12/19/2022                                       | NT                                      |              | NT    |              | NT    |           | NT    |              | NT             |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Copper, dissolved<br>(µg/L)<br>1,300<br>1,000 |              |        |              |        |              |        |              |                |
|--------------------------------------------------|-----------------------------------------------|--------------|--------|--------------|--------|--------------|--------|--------------|----------------|
|                                                  | BXS-4                                         | BXS-4<br>Dup | BXS-3  | BXS-3<br>Dup | BXS-2  | BXS-2<br>Dup | BXS-1  | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 2/1/2007                                      | 10.0 U       | 10.0 U | 10.0 U       |        | 10.0 U       |        | 3.0 B        | 10.0 U         |
|                                                  | 4/18/2007                                     | 10.0 U       | 10.0 U | 10.0 U       |        | 10.0 U       |        | 10.0 U       | 10.0 U         |
| 7/18/2007                                        | 10.0 U                                        |              | 4.4 B  |              | 5.4 B  |              | 4.2 B  | 6.0 B        | 10.0 U         |
| 10/9/2007                                        | 10.0 U                                        | 10.0 U       | 10.0 U |              | 10.0 U |              | 10.0 U |              | 10.0 U         |
| 1/9/2008                                         | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 10.0 U       | 7.0 U          |
| 4/30/2008                                        | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 10.0 U       | 7.0 U          |
| 7/30/2008                                        | 10.0 U                                        |              | 10.0 U |              | 1.4 J  | 1.4 J        | 3.3 J  |              | 1.4 B          |
| 10/22/2008                                       | 10.0 U                                        |              | 10.0 U |              | 10.0 U | 10.0 U       | 10.0 U |              |                |
| 2/1/2009                                         | 10.0 U                                        |              | 10.0 U |              | 2.1 J  |              | 1.6 J  | 2.6 J        | 10.0 U         |
| 5/1/2009                                         | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 10.0 U       | 5.8 J          |
| 8/1/2009                                         | 22                                            |              | 10.0 U | 10.0 U       | 10.0 U |              | 21     |              | 10.0 U         |
| 11/1/2009                                        | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 10.0 U       | 10.0 U         |
| 2/10/2010                                        | 1.3 J                                         |              | 2.0 J  |              | 3.8 J  | 4.1 J        | 3.9 J  |              | 10.0 U         |
| 5/26/2010                                        | 10.0 U                                        |              | 10.0 U |              | 1.6 J  |              | 2.0 J  | 2.3 J        | 10.0 U         |
| 8/18/2010                                        | 4.2 J                                         |              | 6.9 J  |              | 4.4 J  |              | 4.0 J  | 6.8 J        | 10.0 U         |
| 11/18/2010                                       | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 10.0 U       | 5.8 J          |
| 2/9/2011                                         | 10.0 U                                        |              | 3.3 J  |              | 10.0 U |              | 2.0 J  | 2.0 J        | 10.0 U         |
| 5/17/2011                                        | 10.0 U                                        |              | 10.0 U |              | 2.8 J  |              | 10.0 U | 10.0 U       | 2.2 J          |
| 8/24/2011                                        | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 10.0 U       | 10.0 U         |
| 11/3/2011                                        | 10.0 U                                        |              | 10.0 U |              | 10.0 U |              | 10.0 U | 2.3 J        | 10.0 U         |
| 2/14/2012                                        | 10.0 U                                        |              | 5.2 J  |              | 1.7 J  |              | 1.7 J  | 2.9          | 10.0 U         |
| 5/2/2012                                         | 0.6 J                                         |              | 10.0 U |              | 1.7 J  |              | 2.1 J  | 2.2          | 10.0 U         |
| 8/21/2012                                        | 10.0 U                                        |              | 10.0 U |              | 1.5 J  |              | 2.1 J  | 1.9          | 10.0 U         |
| 11/13/2012                                       | 10.0 U                                        |              | 10.0 U |              | 3.4 J  |              | 10.0 U | 10.0 U       | 10.0 U         |
| 2/12/2013                                        | 10.0 U                                        |              | 10.0 U |              | 1.5 J  |              | 1.4 J  | 1.7 J        | 10.0 U         |
| 6/4/2013                                         | 4.0 U                                         |              | 4.0 U  |              | 2.8 J  |              | 2.1 J  | 2.0 J        | 4.0 U          |
| 8/27/2013                                        | 4.0 U                                         |              | 4.0 U  |              | 2.3 J  |              | 2.0 J  | 1.6 J        | 4.0 U          |
| 12/2/2013                                        | 4.0 U                                         |              | 4.0 U  |              | 3.6 J  |              | 2.6 J  | 2.9 J        | 4.0 U          |
| 3/17/2014                                        | 4.0 U                                         |              | 4.0 U  |              | 4.0 U  |              | 4.0 U  | 4.0 U        | 4.0 U          |
| 6/2/2014                                         | 4.0 U                                         |              | 4.0 U  |              | 2.6 J  |              | 2.0 J  | 2.1 J        | 4.0 U          |
| 9/29/2014                                        | 4.0 U                                         |              | 4.0 U  |              | 4.0 U  |              | 4.0 U  | 4.0 U        | 1.2 J          |
| 11/17/2014                                       | 4.0 U                                         |              | 4.0 U  |              | 4.0 U  |              | 4.0 U  | 4.0 U        | 1.0 J          |
| 2/23/2015                                        | 0.1 U                                         |              | 0.3    |              | 2.3    |              | 1.8    | 1.8          | 0.0 J          |
| 9/14/2015                                        | 4.0 U                                         |              | 4.0 U  |              | 2.1 J  |              | 13.6   | 10.1         | 4.0 U          |
| 12/7/2015                                        | 4.0 U                                         |              | 1.3 J  |              | 3.4 J  |              | 3.4 J  | 2.2 J        |                |
| 2/29/2016                                        | 4.0 U                                         |              | 4.0 U  |              | 2.4 J  |              | 2.2 J  | 4.4          | 4.0 U          |
| 6/16/2016                                        | 4.0 U                                         |              | 4.0 U  |              | 4.0 U  |              | 8.3 U  | 4.0 U        | 2.2 J          |
| 9/26/2016                                        | 4.0 U                                         |              | 4.0 U  |              | 4.0 U  |              | 4.0 U  | 4.0 U        | 0.9 J          |
| 3/8/2017                                         | NT                                            |              | NT     |              | NT     |              | NT     | NT           | NT             |
| 6/10/2017                                        |                                               |              |        |              | 1.8 J  |              |        |              |                |
| 9/16/2017                                        | ND U                                          |              | ND U   |              | ND U   |              | ND U   | ND U         | ND U           |
| 12/14/2017                                       | NT                                            |              | NT     |              | NT     |              | NT     |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Copper, dissolved<br>(µg/L)<br>1,300<br>1,000 |              |       |              |       |              |       |              |                |
|--------------------------------------------------|-----------------------------------------------|--------------|-------|--------------|-------|--------------|-------|--------------|----------------|
|                                                  | BXS-4                                         | BXS-4<br>Dup | BXS-3 | BXS-3<br>Dup | BXS-2 | BXS-2<br>Dup | BXS-1 | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 3/17/2018                                     | 1.4 J        | NT    |              | NT    |              | NT    |              |                |
|                                                  | 6/16/2018                                     | NT           | NT    |              | NT    |              | NT    |              |                |
| 9/29/2018                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 11/17/2018                                       | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 3/16/2019                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 6/1/2019                                         | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 10/12/2019                                       | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 12/22/2019                                       | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 4/1/2020                                         | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 6/26/2020                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 9/22/2020                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 9/25/2020                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 12/29/2020                                       | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 3/11/2021                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 6/16/2021                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 9/30/2021                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 12/23/2021                                       | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 3/11/2022                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 6/30/2022                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 9/21/2022                                        | NT                                            |              | NT    |              | NT    |              | NT    |              |                |
| 12/19/2022                                       | NT                                            |              | NT    |              | NT    |              | NT    |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Nickel, dissolved<br>(µg/L)<br>100<br>-- |              |        |           |       |              |        |              |                |
|--------------------------------------------------|------------------------------------------|--------------|--------|-----------|-------|--------------|--------|--------------|----------------|
|                                                  | BXS-4                                    | BXS-4<br>Dup | BXS-3  | BXS-3 Dup | BXS-2 | BXS-2<br>Dup | BXS-1  | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 2/1/2007                                 | 20.0 U       | 20.0 U | 20.0 U    |       | 38           |        | 20.0 U       | 20.0 U         |
|                                                  | 4/18/2007                                | 20.0 U       | 20.0 U | 18.2 B    |       | 34           |        | 10.4 B       | 20.0 U         |
| 7/18/2007                                        | 20.0 U                                   |              | 20.4   |           | 30    |              | 20.0 U | 20.0 U       | 20.0 U         |
| 10/9/2007                                        | 20.0 U                                   | 20.0 U       | 20.0 U |           | 31    |              | 20.0 U |              | 20.0 U         |
| 1/9/2008                                         | 20.0 U                                   |              | 17.0 J |           | 31    |              | 16.0 J | 15.5 J       | 2.0 U          |
| 4/30/2008                                        | 20.0 U                                   |              | 20.2   |           | 32    |              | 11.1 J | 11.8 J       | 2.0 U          |
| 7/30/2008                                        | 20.0 U                                   |              | 4.5 J  |           | 25    | 25           | 10.2 J |              | 0.5 U          |
| 10/22/2008                                       | 20.0 U                                   |              | 23     |           | 32    | 32           | 15.5 J |              |                |
| 2/1/2009                                         | 20.0 U                                   |              | 20.6   |           | 32    |              | 10.7 J | 10.5 J       | 20.0 U         |
| 5/1/2009                                         | 20.0 U                                   |              | 17.7 J |           | 31    |              | 7.0 J  | 7.9 J        | 20.0 U         |
| 8/1/2009                                         | 104                                      |              | 49     | 27        | 134   |              | 109    |              | 20.0 U         |
| 11/1/2009                                        | 20.0 U                                   |              | 13.2 J |           | 31    |              | 11.1 J | 10.1 J       | 20.0 U         |
| 2/10/2010                                        | 20.0 U                                   |              | 23     |           | 32    | 34           | 5.9 J  |              | 20.0 U         |
| 5/26/2010                                        | 20.0 U                                   |              | 19.5 J |           | 33    |              | 6.5 J  | 6.7 J        | 20.0 U         |
| 8/18/2010                                        | 20.0 U                                   |              | 12.5 J |           | 30    |              | 6.8 J  | 5.5 J        | 20.0 U         |
| 11/18/2010                                       | 20.0 U                                   |              | 17.5 J |           | 33    |              | 5.8 J  | 5.2 J        | 20.0 U         |
| 2/9/2011                                         | 20.0 U                                   |              | 20.8   |           | 34    |              | 10.0 J | 9.6 J        | 20.0 U         |
| 5/17/2011                                        | 20.0 U                                   |              | 15.3 J |           | 39    |              | 8.7 J  | 7.0 J        | 20.0 U         |
| 8/24/2011                                        | 20.0 U                                   |              | 16.2 J |           | 32    |              | 8.5 J  | 9.2 J        | 20.0 U         |
| 11/3/2011                                        | 20.0 U                                   |              | 11.2 J |           | 31    |              | 10.6 J | 10.1 J       | 20.0 U         |
| 2/14/2012                                        | 20.0 U                                   |              | 23     |           | 30    |              | 9.4 J  | 9.3 J        | 20.0 U         |
| 5/2/2012                                         | 20.0 U                                   |              | 13.0 J |           | 34    |              | 9.2 J  | 8.9 J        | 20.0 U         |
| 8/21/2012                                        | 0.7 J                                    |              | 15.8 J |           | 34    |              | 8.9 J  | 9.1 J        | 20.0 U         |
| 11/13/2012                                       | 20.0 U                                   |              | 13.6 J |           | 32    |              | 8.8 J  | 9.7 J        | 20.0 U         |
| 2/12/2013                                        | 20.0 U                                   |              | 18.2 J |           | 36    |              | 9.2 J  | 9.4 J        | 20.0 U         |
| 6/4/2013                                         | 0.4 J                                    |              | 18.4   |           | 37    |              | 8.5    | 8.4          | 4.0 U          |
| 8/27/2013                                        | 2.2 J                                    |              | 22     |           | 38    |              | 11.2   | 10.8         | 4.0 U          |
| 12/2/2013                                        | 5.4                                      |              | 25     |           | 38    |              | 12.8   | 13.5         | 4.0 U          |
| 3/17/2014                                        | 4.0 U                                    |              | 11.2   |           | 31    |              | 7.4    | 7.6          | 4.0 U          |
| 6/2/2014                                         | 2.2 J                                    |              | 21     |           | 39    |              | 10.9   | 10.4         | 4.0 U          |
| 9/29/2014                                        | 4.0 U                                    |              | 16.1   |           | 34    |              | 8.8    | 9.0          | 0.4 J          |
| 11/17/2014                                       | 1.1 J                                    |              | 19.7   |           | 36    |              | 10.0   | 10.1         | 4.0 U          |
| 2/23/2015                                        | 0.4 U                                    |              | 18.9   |           | 34    |              | 9.3    | 9.3          | 0.1 J          |
| 9/14/2015                                        | 4.0 U                                    |              | 18.0   |           | 31    |              | 7.7    | 8.3          | 0.4 J          |
| 12/7/2015                                        | 4.0 U                                    |              | 20.6   |           | 29    |              | 6.6    | 6.9          |                |
| 2/29/2016                                        | 4.0 U                                    |              | 18.4   |           | 33    |              | 6.6    | 6.7          | 4.0 U          |
| 6/16/2016                                        | 0.4 U                                    |              | 20.8   |           | 32    |              | 9.2    | 9.8          | 4.0 U          |
| 9/26/2016                                        | 4.0 U                                    |              | 14.8   |           | 22    |              | 8.4    | 8.4          | 4.0 U          |
| 3/8/2017                                         | 3.5 J                                    |              | 15.3   |           | 30.2  |              | 17.4   | 14.0         |                |
| 6/10/2017                                        |                                          |              |        |           | 10.2  |              |        |              |                |
| 9/16/2017                                        | 2.7 J                                    |              | 21.0   |           | 31    |              | 12.0   | 8.6          | ND U           |
| 12/14/2017                                       |                                          |              |        |           |       |              |        |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Nickel, dissolved<br>(µg/L)<br>100<br>-- |              |       |           |       |              |        |              |                |
|--------------------------------------------------|------------------------------------------|--------------|-------|-----------|-------|--------------|--------|--------------|----------------|
|                                                  | BXS-4                                    | BXS-4<br>Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2<br>Dup | BXS-1  | BXS-1<br>Dup | Field<br>Blank |
|                                                  | 3/17/2018                                | 1.9 J        | 5.0   |           | 18.0  | 18.0         | 5.0    |              |                |
|                                                  | 6/16/2018                                |              |       |           | 5.0   |              |        |              |                |
| 9/29/2018                                        | ND U                                     |              | 26.0  | 26.0      | 32    |              | 12.0   |              |                |
| 11/17/2018                                       |                                          |              | 43.0  |           |       |              |        |              |                |
| 3/16/2019                                        | 5                                        |              | 27.0  |           | 38.0  |              | 12.0   |              |                |
| 6/1/2019                                         |                                          |              | 28.0  | 29.0      |       |              |        |              |                |
| 10/12/2019                                       | 8                                        |              | 35.0  | 36.0      | 39.0  |              | 12.0   |              |                |
| 12/22/2019                                       |                                          |              | 28.0  |           |       |              |        |              | 10 U           |
| 4/1/2020                                         | 10 U                                     |              | 27.0  | 32.0      | 36.0  |              | 10.0 U |              | 10 U           |
| 6/26/2020                                        |                                          |              | 30.0  |           |       |              |        |              |                |
| 9/22/2020                                        | 10 U                                     |              |       |           | 34.0  | 34.0         | 11.0   |              | 10 U           |
| 9/25/2020                                        |                                          |              | 30.0  |           |       |              |        |              |                |
| 12/29/2020                                       |                                          |              | 29.0  |           |       |              |        |              |                |
| 3/11/2021                                        | 15                                       |              | 48.0  | 47.0      | 41.0  |              | 15.0   |              |                |
| 6/16/2021                                        |                                          |              | 38.0  |           |       |              |        |              |                |
| 9/30/2021                                        | 10 U                                     |              | 32.0  | 26.0      | 35.0  |              | 15.0   |              | 10 U           |
| 12/23/2021                                       |                                          |              | 27.0  |           |       |              |        |              |                |
| 3/11/2022                                        | 10 U                                     |              | 46.0  | 46.0      | 34.0  |              | 14.0   |              | 10 U           |
| 6/30/2022                                        |                                          |              | 39.0  |           |       |              |        |              |                |
| 9/21/2022                                        | 10 U                                     |              | 24.0  | 24.0      | 16.0  |              | 28.0   |              |                |
| 12/19/2022                                       |                                          |              | 26.0  | 30.0      |       |              |        |              |                |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Zinc, dissolved<br>(µg/L)<br>5,000<br>5,000 |           |        |           |        |           |        |           |             |
|--------------------------------------------------|---------------------------------------------|-----------|--------|-----------|--------|-----------|--------|-----------|-------------|
|                                                  | BXS-4                                       | BXS-4 Dup | BXS-3  | BXS-3 Dup | BXS-2  | BXS-2 Dup | BXS-1  | BXS-1 Dup | Field Blank |
|                                                  |                                             |           |        |           |        |           |        |           |             |
|                                                  |                                             |           |        |           |        |           |        |           |             |
| 2/1/2007                                         | 2.4 B                                       | 10.0 U    | 12.9   |           | 5.8 B  |           | 4.0 B  |           | 10.0 U      |
| 4/18/2007                                        | 10.0 U                                      | 10.0 U    | 8.5 B  |           | 30     |           | 10.0 U |           | 10.0 U      |
| 7/18/2007                                        | 10.0 U                                      |           | 12.4   |           | 11.1   |           | 8.0 B  | 6.5 B     | 10.0 U      |
| 10/9/2007                                        | 10.0 U                                      | 12.9      | 15.9   |           | 22     |           | 7.9 B  |           | 10.0 U      |
| 1/9/2008                                         | 8.3 J                                       |           | 10.0 U |           | 14.8   |           | 10.0 U | 8.0 J     | 7.0 U       |
| 4/30/2008                                        | 10.0 U                                      |           | 10.0 U |           | 10.0 U |           | 10.0 U | 10.0 U    | 7.0 U       |
| 7/30/2008                                        | 1.0 J                                       |           | 4.8 J  |           | 4.4 J  | 4.2 J     | 9.1 J  |           | 1.5 B       |
| 10/22/2008                                       | 10.0 U                                      |           | 3.9 J  |           | 6.2 J  | 7.1 J     | 12.1   |           |             |
| 2/1/2009                                         | 1.5 J                                       |           | 2.1 J  |           | 6.5 J  |           | 3.6 J  | 3.5 J     | 1.6 J       |
| 5/1/2009                                         | 10.0 U                                      |           | 3.9 J  |           | 3.7 J  |           | 1.5 J  | 2.2 J     | 5.0 J       |
| 8/1/2009                                         | 3.8 J                                       |           | 2.6 J  | 2.4 J     | 10.0 U |           | 3.4 J  |           | 2.4 J       |
| 11/1/2009                                        | 10.0 U                                      |           | 1.5 J  |           | 2.8 J  |           | 1.5 J  | 10.0 U    | 10.0 U      |
| 2/10/2010                                        | 10.0 U                                      |           | 1.6 J  |           | 5.3 J  | 5.8 J     | 1.7 J  |           | 10.0 U      |
| 5/26/2010                                        | 10.0 U                                      |           | 10.0 U |           | 3.5 J  |           | 2.1 J  | 2.5 J     | 10.0 U      |
| 8/18/2010                                        | 10.0 U                                      |           | 10.0 U |           | 1.7 J  |           | 10.0 U | 10.0 U    | 1.9 J       |
| 11/18/2010                                       | 10.0 U                                      |           | 2.3 J  |           | 4.8 J  |           | 10.0 U | 1.9 J     | 10.0 U      |
| 2/9/2011                                         | 0.4 J                                       |           | 20.0 U |           | 4.9 J  |           | 3.1 J  | 2.5 J     | 0.3 J       |
| 5/17/2011                                        |                                             |           |        |           |        |           |        |           |             |
| 8/24/2011                                        | 10.0 U                                      |           | 4.2 J  |           | 4.7 J  |           | 1.7 J  | 3.1 J     | 10.0 U      |
| 11/3/2011                                        | 10.0 U                                      |           | 3.0 J  |           | 4.0 J  |           | 1.0 J  | 1.3 J     | 10.0 U      |
| 2/14/2012                                        | 0.7 J                                       |           | 6.8 J  |           | 5.5 J  |           | 3.0 J  | 3.2 J     | 0.7 J       |
| 5/2/2012                                         | 0.4 J                                       |           | 10.0 U |           | 4.3 J  |           | 2.5 J  | 2.3 J     | 10.0 U      |
| 8/21/2012                                        | 10.0 U                                      |           | 0.8 J  |           | 2.3 J  |           | 2.6 J  | 2.5 J     | 10.0 U      |
| 11/13/2012                                       | 10.0 U                                      |           | 0.8 J  |           | 3.8 J  |           | 2.7 J  | 2.3 J     | 10.0 U      |
| 2/12/2013                                        | 10.0 U                                      |           | 0.9 J  |           | 3.2 J  |           | 2.4 J  | 2.1 J     | 10.0 U      |
| 6/4/2013                                         | 4.0 U                                       |           | 2.7 J  |           | 3.8 J  |           | 2.4 J  | 2.5       | 4.0 U       |
| 8/27/2013                                        | 4.0 U                                       |           | 2.9 J  |           | 3.6 J  |           | 2.7 J  | 2.5 J     | 4.0 U       |
| 12/2/2013                                        | 4.0 U                                       |           | 1.9 J  |           | 3.7 J  |           | 3.1 J  | 3.1 J     | 4.0 U       |
| 3/17/2014                                        | 4.0 U                                       |           | 0.8 J  |           | 4.4    |           | 2.8 J  | 2.8 J     | 4.0 U       |
| 6/2/2014                                         | 4.0 U                                       |           | 1.3 J  |           | 3.4 J  |           | 2.2 J  | 2.2 J     | 4.0 U       |
| 9/29/2014                                        | 0.5 J                                       |           | 1.7 J  |           | 5.6    |           | 3.2 J  | 2.4 J     | 4.0 U       |
| 11/17/2014                                       | 5.0 U                                       |           | 2.3 J  |           | 4.4 J  |           | 2.1 J  | 2.6 J     | 5.0 U       |
| 2/23/2015                                        | 0.4 J                                       |           | 2.1    |           | 6.5    |           | 2.9    | 2.9       | 0.5 U       |
| 9/14/2015                                        | 4.0 U                                       |           | 2.0 J  |           | 3.1 J  |           | 362    | 268       | 4.0 U       |
| 12/7/2015                                        | 3.2 J                                       |           | 0.5 J  |           | 4.4    |           | 13.7 J | 6.7 J     |             |
| 2/29/2016                                        | 2.1 J                                       |           | 4.1    |           | 7.9    |           | 8.5    | 32        | 4.0 U       |
| 6/16/2016                                        | 4.3 U                                       |           | 4.0 U  |           | 4.0 U  |           | 13.0   | 6.6       | 1.0 J       |
| 9/26/2016                                        | 4.0 U                                       |           | 2.1 J  |           | 2.1 J  |           | 1.2 J  | 1.1 J     | 4.0 U       |
| 3/8/2017                                         | NT                                          |           | NT     |           | NT     |           | NT     | NT        |             |
| 6/10/2017                                        |                                             |           |        |           | 1.9 J  |           |        |           |             |
| 9/16/2017                                        | 0.8 J                                       |           | 1.5 J  |           | 1.8 J  |           | 1.8 J  | 5.1 J     | 2.2 J       |
| 12/14/2017                                       | NT                                          |           | NT     |           | NT     |           | NT     |           |             |

**Table 3C. Summary of Groundwater Metals: 2007 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Date<br><br>MCL/SMCL<br>WA WQ Std<br><br>Well ID | Zinc, dissolved<br>(µg/L)<br>5,000<br>5,000 |           |       |           |       |           |       |           |             |
|--------------------------------------------------|---------------------------------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------------|
|                                                  | BXS-4                                       | BXS-4 Dup | BXS-3 | BXS-3 Dup | BXS-2 | BXS-2 Dup | BXS-1 | BXS-1 Dup | Field Blank |
|                                                  | 3/17/2018                                   | 4.2       |       | NT        |       |           | NT    |           |             |
|                                                  | 6/16/2018                                   | NT        |       | NT        |       | NT        | NT    |           |             |
| 9/29/2018                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 11/17/2018                                       | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 3/16/2019                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 6/1/2019                                         | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 10/12/2019                                       | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 12/22/2019                                       | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 4/1/2020                                         | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 6/26/2020                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 9/22/2020                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 9/25/2020                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 12/29/2020                                       | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 3/11/2021                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 6/16/2021                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 9/30/2021                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 12/23/2021                                       | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 3/11/2022                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 6/30/2022                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 9/21/2022                                        | NT                                          |           | NT    |           | NT    |           | NT    |           |             |
| 12/19/2022                                       | NT                                          |           | NT    |           | NT    |           | NT    |           |             |

**Notes**

µg/L = microgram per liter.

B = detected in laboratory blank. J = estimated concentration that is less than the method reporting limit but greater than or = to the method detection limit.

J\* = estimated concentration because of lab imprecision. NT = not tested. R = rejected value.

U = analyte was not detected above the reported sample quantification limit.

MCL = Federal maximum contaminant levels for drinking water.

SMCL = Federal secondary maximum contaminant levels for drinking water.

WA WQ Std = State of Washington's water quality standards for groundwater (WAC 173-200).

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|-------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Conventionals | Ammonia as Nitrogen    | 2001              | mg/L |                                        |       | 0.10  | 0.50                               |
| Conventionals | Ammonia as Nitrogen    | 2007              | mg/L |                                        |       | 0.84  | 0.50                               |
| Conventionals | Ammonia as Nitrogen    | 2009              | mg/L |                                        |       | 1.08  | 0.54                               |
| Conventionals | Ammonia as Nitrogen    | 2010              | mg/L |                                        |       | 1.11  | 0.53                               |
| Conventionals | Ammonia as Nitrogen    | 2013              | mg/L |                                        |       | 0.82  | 0.53                               |
| Conventionals | Ammonia as Nitrogen    | 2014              | mg/L |                                        |       | 1.11  | 0.55                               |
| Conventionals | Ammonia as Nitrogen    | 2015              | mg/L |                                        |       | 1.03  | 0.53                               |
| Conventionals | Ammonia as Nitrogen    | 2016              | mg/L |                                        |       | 1.05  | 0.51                               |
| Conventionals | Carbon, Total Organic  | 1992              | mg/L | 3.6                                    | 5.0   | 18.7  | 1.5                                |
| Conventionals | Carbon, Total Organic  | 1993              | mg/L |                                        | 7.3   | 20.0  | 2.0                                |
| Conventionals | Carbon, Total Organic  | 1994              | mg/L |                                        | 8.6   | 22    | 2.3                                |
| Conventionals | Carbon, Total Organic  | 1995              | mg/L |                                        | 10.7  | 31    | 3.4                                |
| Conventionals | Carbon, Total Organic  | 1996              | mg/L | 4.9                                    | 12.7  | 39    | 2.3                                |
| Conventionals | Carbon, Total Organic  | 1997              | mg/L |                                        | 15.0  |       | 3.8                                |
| Conventionals | Carbon, Total Organic  | 1998              | mg/L |                                        |       | 32    | 10.8                               |
| Conventionals | Carbon, Total Organic  | 1999              | mg/L |                                        | 15.8  | 32    | 6.6                                |
| Conventionals | Carbon, Total Organic  | 2000              | mg/L | 8.1                                    | 15.2  |       | 1.0                                |
| Conventionals | Carbon, Total Organic  | 2001              | mg/L | 7.5                                    | 14.6  | 25    | 3.1                                |
| Conventionals | Carbon, Total Organic  | 2002              | mg/L | 6.4                                    | 13.8  | 22    | 2.0                                |
| Conventionals | Carbon, Total Organic  | 2003              | mg/L |                                        | 14.0  | 22    | 0.7                                |
| Conventionals | Carbon, Total Organic  | 2004              | mg/L | 5.1                                    | 14.7  | 23    | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2005              | mg/L | 5.7                                    | 15.8  | 25    | 1.1                                |
| Conventionals | Carbon, Total Organic  | 2006              | mg/L | 5.1                                    | 14.5  | 28    | 1.0                                |
| Conventionals | Carbon, Total Organic  | 2007              | mg/L | 5.2                                    | 15.8  | 28    | 1.0                                |
| Conventionals | Carbon, Total Organic  | 2008              | mg/L | 6.7                                    | 16.2  | 26    | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2009              | mg/L | 5.1                                    | 16.5  | 24    | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2010              | mg/L | 4.8                                    | 17.0  | 24    | 1.3                                |
| Conventionals | Carbon, Total Organic  | 2011              | mg/L | 3.4                                    | 15.6  | 17.6  | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2012              | mg/L | 2.8                                    | 15.0  | 19.7  | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2013              | mg/L | 2.5                                    | 15    | 18    | 0.8                                |
| Conventionals | Carbon, Total Organic  | 2014              | mg/L | 2.3                                    | 13.9  | 19.4  | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2015              | mg/L | 2.6                                    | 13.5  | 18.9  | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2016              | mg/L | 3.0                                    | 13    | 19    | 0.9                                |
| Conventionals | Carbon, Total Organic  | 2017              | mg/L |                                        | 10.9  | 20.2  | 2.0                                |
| Conventionals | Carbon, Total Organic  | 2018              | mg/L |                                        | 26    |       | 1.6                                |
| Conventionals | Carbon, Total Organic  | 2019              | mg/L | 2.8                                    | 12.5  | 26    | 1.9                                |
| Conventionals | Carbon, Total Organic  | 2020              | mg/L |                                        | 12.8  | 17.2  | 5.3                                |
| Conventionals | Carbon, Total Organic  | 2021              | mg/L |                                        | 16.5  | 23    | 5.7                                |
| Conventionals | Carbon, Total Organic  | 2022              | mg/L |                                        |       | 39    | 2.9                                |
| Conventionals | Chemical Oxygen Demand | 1990              | mg/L | 28                                     | 41    | 98    | 2.2                                |
| Conventionals | Chemical Oxygen Demand | 1993              | mg/L |                                        |       | 106   | 31                                 |
| Conventionals | Chemical Oxygen Demand | 1994              | mg/L |                                        | 30    | 83    | 22                                 |
| Conventionals | Chemical Oxygen Demand | 1995              | mg/L |                                        |       | 90    | 32                                 |
| Conventionals | Chemical Oxygen Demand | 1996              | mg/L |                                        | 41    | 98    | 16.0                               |
| Conventionals | Chemical Oxygen Demand | 1997              | mg/L |                                        | 43    | 87    | 19.0                               |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|-------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Conventionals | Chemical Oxygen Demand | 1998              | mg/L |                                        | 51    | 98    | 20.1                               |
| Conventionals | Chemical Oxygen Demand | 1999              | mg/L |                                        |       | 92    | 41                                 |
| Conventionals | Chemical Oxygen Demand | 2000              | mg/L |                                        | 44    | 71    | 13.6                               |
| Conventionals | Chemical Oxygen Demand | 2001              | mg/L | 22                                     | 43    | 70    | 17.3                               |
| Conventionals | Chemical Oxygen Demand | 2002              | mg/L | 19.0                                   | 38    | 60    | 18.0                               |
| Conventionals | Chemical Oxygen Demand | 2003              | mg/L |                                        | 37    | 56    | 2.9                                |
| Conventionals | Chemical Oxygen Demand | 2004              | mg/L |                                        | 38    | 59    | 2.9                                |
| Conventionals | Chemical Oxygen Demand | 2005              | mg/L |                                        | 43    | 70    | 8.4                                |
| Conventionals | Chemical Oxygen Demand | 2006              | mg/L | 12.5                                   | 36    | 72    | 2.9                                |
| Conventionals | Chemical Oxygen Demand | 2007              | mg/L | 9.9                                    | 35    | 73    | 3.4                                |
| Conventionals | Chemical Oxygen Demand | 2008              | mg/L | 16.3                                   | 38    | 69    | 4.4                                |
| Conventionals | Chemical Oxygen Demand | 2009              | mg/L | 13.7                                   | 41    | 78    | 7.5                                |
| Conventionals | Chemical Oxygen Demand | 2010              | mg/L | 9.8                                    | 40    | 71    | 3.5                                |
| Conventionals | Chemical Oxygen Demand | 2011              | mg/L | 8.0                                    | 42    | 75    | 4.6                                |
| Conventionals | Chemical Oxygen Demand | 2012              | mg/L |                                        | 42    | 68    | 3.7                                |
| Conventionals | Chemical Oxygen Demand | 2013              | mg/L | 6.6                                    | 40    | 63    | 4.5                                |
| Conventionals | Chemical Oxygen Demand | 2014              | mg/L | 6.4                                    | 38    | 69    | ND                                 |
| Conventionals | Chemical Oxygen Demand | 2015              | mg/L | 7.0                                    | 37    | 72    | ND                                 |
| Conventionals | Chemical Oxygen Demand | 2016              | mg/L | 9.5                                    | 40    | 74    | 3.8                                |
| Conventionals | Chemical Oxygen Demand | 2017              | mg/L | 7.5                                    | 18    | 71    | 6.7                                |
| Conventionals | Chemical Oxygen Demand | 2019              | mg/L |                                        |       | 47    | 11.0                               |
| Conventionals | Chemical Oxygen Demand | 2022              | mg/L |                                        | 21    | 41    | 5.0                                |
| Conventionals | Chloride               | 1989              | mg/L | 45                                     | 61    | 17.0  | 6.6                                |
| Conventionals | Chloride               | 1990              | mg/L | 23                                     | 14.5  | 6.8   | 2.2                                |
| Conventionals | Chloride               | 1992              | mg/L | 16.7                                   | 6.7   | 7.7   | 2.2                                |
| Conventionals | Chloride               | 1993              | mg/L | 12.1                                   | 6.6   | 12.8  | 2.3                                |
| Conventionals | Chloride               | 1994              | mg/L | 13.0                                   | 7.4   | 7.4   | 2.1                                |
| Conventionals | Chloride               | 1995              | mg/L | 14.0                                   | 10.0  | 9.6   | 1.9                                |
| Conventionals | Chloride               | 1996              | mg/L | 14.6                                   | 17.3  | 9.1   | 2.0                                |
| Conventionals | Chloride               | 1997              | mg/L | 12.6                                   | 14.8  | 35    | 2.0                                |
| Conventionals | Chloride               | 1998              | mg/L | 11.6                                   | 11.0  | 6.3   | 2.1                                |
| Conventionals | Chloride               | 1999              | mg/L | 10.0                                   |       | 6.1   | 2.2                                |
| Conventionals | Chloride               | 2000              | mg/L | 7.8                                    | 8.3   | 5.0   | 2.1                                |
| Conventionals | Chloride               | 2001              | mg/L | 5.9                                    | 7.4   | 4.7   | 2.1                                |
| Conventionals | Chloride               | 2002              | mg/L | 5.3                                    | 6.5   | 3.8   | 2.0                                |
| Conventionals | Chloride               | 2003              | mg/L | 4.6                                    | 5.5   |       | 2.0                                |
| Conventionals | Chloride               | 2004              | mg/L |                                        | 4.3   | 2.3   | 1.8                                |
| Conventionals | Chloride               | 2005              | mg/L | 4.5                                    | 4.4   | 3.7   | 1.8                                |
| Conventionals | Chloride               | 2006              | mg/L | 4.0                                    | 3.5   | 2.8   | 1.7                                |
| Conventionals | Chloride               | 2007              | mg/L | 5.5                                    | 4.4   | 2.7   | 1.7                                |
| Conventionals | Chloride               | 2008              | mg/L | 5.1                                    | 4.5   | 3.0   | 1.9                                |
| Conventionals | Chloride               | 2009              | mg/L | 6.8                                    | 4.8   | 3.6   | 1.9                                |
| Conventionals | Chloride               | 2010              | mg/L | 5.6                                    | 3.7   | 3.0   | 1.8                                |
| Conventionals | Chloride               | 2011              | mg/L | 6.2                                    | 3.2   |       | 1.8                                |
| Conventionals | Chloride               | 2012              | mg/L |                                        | 3.0   |       | 1.7                                |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup>        | Monitoring Period | Unit  | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|-------------------------------|-------------------|-------|----------------------------------------|-------|-------|------------------------------------|
|               |                               |                   |       | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Conventionals | Chloride                      | 2013              | mg/L  | 4.2                                    | 3.0   | 1.9   | 1.7                                |
| Conventionals | Chloride                      | 2014              | mg/L  | 5.2                                    | 2.8   | 1.9   | 1.8                                |
| Conventionals | Chloride                      | 2015              | mg/L  | 4.9                                    | 2.5   |       | 1.8                                |
| Conventionals | Chloride                      | 2016              | mg/L  | 4.1                                    | 2.5   |       | 1.8                                |
| Conventionals | Chloride                      | 2017              | mg/L  | 3.2                                    |       |       | 2.0                                |
| Conventionals | Chloride                      | 2019              | mg/L  | 5.5                                    |       |       | 2.7                                |
| Conventionals | Coliform, total               | 2010              | mg/L  |                                        | 2.0   |       | 0.6                                |
| Conventionals | Coliform, total               | 2015              | mg/L  | 2.4                                    |       |       | ND                                 |
| Conventionals | Conductivity                  | 1989              | µS/cm | 351                                    | 607   | 514   | 180                                |
| Conventionals | Conductivity                  | 1990              | µS/cm | 366                                    | 624   | 500   | 214                                |
| Conventionals | Conductivity                  | 1992              | µS/cm | 292                                    | 586   | 533   | 189                                |
| Conventionals | Conductivity                  | 1993              | µS/cm |                                        | 487   | 526   | 173                                |
| Conventionals | Conductivity                  | 1994              | µS/cm | 214                                    | 479   | 602   | 169                                |
| Conventionals | Conductivity                  | 1995              | µS/cm | 333                                    | 623   |       | 149                                |
| Conventionals | Conductivity                  | 1996              | µS/cm | 290                                    | 602   | 787   | 161                                |
| Conventionals | Conductivity                  | 1997              | µS/cm | 326                                    |       | 765   | 169                                |
| Conventionals | Conductivity                  | 1998              | µS/cm | 393                                    | 678   | 738   | 177                                |
| Conventionals | Conductivity                  | 1999              | µS/cm | 406                                    | 786   | 748   | 177                                |
| Conventionals | Conductivity                  | 2000              | µS/cm | 417                                    | 762   | 651   | 166                                |
| Conventionals | Conductivity                  | 2001              | µS/cm | 493                                    | 878   | 886   | 193                                |
| Conventionals | Conductivity                  | 2002              | µS/cm | 470                                    | 849   | 825   | 187                                |
| Conventionals | Conductivity                  | 2004              | µS/cm |                                        | 821   | 853   | 198                                |
| Conventionals | Conductivity                  | 2005              | µS/cm | 393                                    | 788   | 750   | 192                                |
| Conventionals | Conductivity                  | 2006              | µS/cm | 414                                    | 773   | 785   | 191                                |
| Conventionals | Conductivity                  | 2007              | µS/cm | 397                                    | 799   | 804   | 191                                |
| Conventionals | Conductivity                  | 2008              | µS/cm | 465                                    | 758   | 771   | 189                                |
| Conventionals | Conductivity                  | 2009              | µS/cm | 340                                    | 793   | 730   | 185                                |
| Conventionals | Conductivity                  | 2010              | µS/cm | 304                                    | 825   | 707   | 196                                |
| Conventionals | Conductivity                  | 2011              | µS/cm | 334                                    | 839   | 464   | 193                                |
| Conventionals | Conductivity                  | 2012              | µS/cm | 330                                    | 891   | 444   | 187                                |
| Conventionals | Conductivity                  | 2013              | µS/cm | 290                                    | 879   | 643   | 191                                |
| Conventionals | Conductivity                  | 2014              | µS/cm | 292                                    | 824   | 1,500 | 186                                |
| Conventionals | Conductivity                  | 2015              | µS/cm | 292                                    | 822   | 395   | 202                                |
| Conventionals | Conductivity                  | 2016              | µS/cm | 352                                    | 817   | 427   | 210                                |
| Conventionals | Conductivity                  | 2017              | µS/cm | 377                                    | 503   | 605   | 172                                |
| Conventionals | Nitrate + Nitrite as Nitrogen | 1990              | mg/L  | 0.72                                   |       |       | 0.10                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 1993              | mg/L  | 0.79                                   |       |       | 0.18                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 1994              | mg/L  | 0.50                                   |       |       | ND                                 |
| Conventionals | Nitrate + Nitrite as Nitrogen | 1996              | mg/L  | 1.65                                   |       |       | ND                                 |
| Conventionals | Nitrate + Nitrite as Nitrogen | 1997              | mg/L  | 0.75                                   |       |       | ND                                 |
| Conventionals | Nitrate + Nitrite as Nitrogen | 1999              | mg/L  | 0.43                                   |       |       | ND                                 |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2000              | mg/L  | 0.33                                   |       |       | 0.10                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2002              | mg/L  | 0.50                                   |       |       | 0.20                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2004              | mg/L  | 0.85                                   |       |       | 0.06                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2005              | mg/L  | 0.75                                   |       |       | 0.06                               |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup>        | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|-------------------------------|-------------------|------|----------------------------------------|-------|-------|------------------------------------|
|               |                               |                   |      | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2006              | mg/L | 0.71                                   |       |       | 0.04                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2007              | mg/L | 0.69                                   |       |       | 0.14                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2008              | mg/L | 0.83                                   |       |       | 0.04                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2009              | mg/L | 0.31                                   |       | 0.15  | 0.02                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2010              | mg/L | 0.09                                   |       | 0.16  | 0.03                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2011              | mg/L | 48                                     |       |       | 0.02                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2012              | mg/L | 0.05                                   |       | 0.09  | 0.02                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2013              | mg/L | 0.08                                   |       | 0.10  | 0.03                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2014              | mg/L | 0.09                                   |       | 0.08  | 0.05                               |
| Conventionals | Nitrate + Nitrite as Nitrogen | 2016              | mg/L | 0.30                                   |       |       | 0.04                               |
| Conventionals | pH                            | 1992              | --   | 6.1                                    | 6.3   | 6.4   | 7.9                                |
| Conventionals | pH                            | 2000              | --   | 6.1                                    | 6.4   | 6.5   | 7.9                                |
| Conventionals | pH                            | 2001              | --   | 6.1                                    | 6.4   | 6.7   | 7.9                                |
| Conventionals | Solids, Total Dissolved       | 1990              | mg/L |                                        | 397   | 436   | 228                                |
| Conventionals | Solids, Total Dissolved       | 1992              | mg/L |                                        | 352   | 351   | 147                                |
| Conventionals | Solids, Total Dissolved       | 1993              | mg/L |                                        | 330   |       | 141                                |
| Conventionals | Solids, Total Dissolved       | 1994              | mg/L | 161                                    | 330   | 418   | 134                                |
| Conventionals | Solids, Total Dissolved       | 1995              | mg/L | 188                                    | 361   | 492   | 141                                |
| Conventionals | Solids, Total Dissolved       | 1996              | mg/L | 224                                    | 423   | 604   | 153                                |
| Conventionals | Solids, Total Dissolved       | 1997              | mg/L | 236                                    | 456   | 613   | 150                                |
| Conventionals | Solids, Total Dissolved       | 1998              | mg/L | 273                                    | 473   | 562   | 137                                |
| Conventionals | Solids, Total Dissolved       | 1999              | mg/L | 256                                    | 524   | 517   | 156                                |
| Conventionals | Solids, Total Dissolved       | 2000              | mg/L | 297                                    | 544   | 527   | 140                                |
| Conventionals | Solids, Total Dissolved       | 2001              | mg/L | 261                                    | 299   | 346   | 135                                |
| Conventionals | Solids, Total Dissolved       | 2002              | mg/L | 298                                    | 466   | 518   | 145                                |
| Conventionals | Solids, Total Dissolved       | 2003              | mg/L | 291                                    | 525   | 572   | 132                                |
| Conventionals | Solids, Total Dissolved       | 2004              | mg/L | 228                                    | 439   | 493   | 127                                |
| Conventionals | Solids, Total Dissolved       | 2005              | mg/L | 255                                    | 516   | 449   | 135                                |
| Conventionals | Solids, Total Dissolved       | 2006              | mg/L | 259                                    | 507   | 526   | 145                                |
| Conventionals | Solids, Total Dissolved       | 2007              | mg/L | 254                                    | 471   | 476   | 152                                |
| Conventionals | Solids, Total Dissolved       | 2008              | mg/L | 298                                    | 481   | 489   | 142                                |
| Conventionals | Solids, Total Dissolved       | 2009              | mg/L | 215                                    | 500   | 438   | 127                                |
| Conventionals | Solids, Total Dissolved       | 2010              | mg/L | 189                                    | 513   | 368   | 145                                |
| Conventionals | Solids, Total Dissolved       | 2011              | mg/L | 206                                    | 538   | 375   | 134                                |
| Conventionals | Solids, Total Dissolved       | 2012              | mg/L | 205                                    | 543   | 347   | 128                                |
| Conventionals | Solids, Total Dissolved       | 2013              | mg/L | 191                                    | 549   | 333   | 103                                |
| Conventionals | Solids, Total Dissolved       | 2014              | mg/L | 173                                    | 509   | 322   | 134                                |
| Conventionals | Solids, Total Dissolved       | 2015              | mg/L | 153                                    | 462   | 297   | 119                                |
| Conventionals | Solids, Total Dissolved       | 2016              | mg/L |                                        |       | 296   | 119                                |
| Conventionals | Solids, Total Dissolved       | 2017              | mg/L | 208                                    | 373   | 216   | 134                                |
| Conventionals | Solids, Total Dissolved       | 2018              | mg/L |                                        | 435   |       | 146                                |
| Conventionals | Solids, Total Dissolved       | 2019              | mg/L | 180                                    | 375   | 298   | 130                                |
| Conventionals | Solids, Total Dissolved       | 2020              | mg/L |                                        | 360   | 301   | 225                                |
| Conventionals | Solids, Total Dissolved       | 2021              | mg/L | 215                                    | 375   |       | 155                                |
| Conventionals | Solids, Total Dissolved       | 2022              | mg/L | 225                                    | 335   | 339   | 145                                |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

*Arlington, Washington*

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|-------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Conventionals | Sulfate                | 1989              | mg/L | 5.9                                    |       |       | 2.3                                |
| Conventionals | Sulfate                | 1990              | mg/L | 6.6                                    |       |       | 1.9                                |
| Conventionals | Sulfate                | 1992              | mg/L | 9.1                                    |       |       | 2.0                                |
| Conventionals | Sulfate                | 1993              | mg/L | 10.0                                   |       |       | 2.0                                |
| Conventionals | Sulfate                | 1994              | mg/L | 11.8                                   |       |       | 1.9                                |
| Conventionals | Sulfate                | 1995              | mg/L | 12.0                                   |       |       | 1.8                                |
| Conventionals | Sulfate                | 1996              | mg/L | 10.7                                   |       |       | 1.7                                |
| Conventionals | Sulfate                | 1997              | mg/L | 11.8                                   |       |       | 1.6                                |
| Conventionals | Sulfate                | 1998              | mg/L | 9.5                                    |       |       | 1.3                                |
| Conventionals | Sulfate                | 1999              | mg/L | 7.8                                    |       |       | 1.4                                |
| Conventionals | Sulfate                | 2001              | mg/L | 7.5                                    |       |       | 1.4                                |
| Conventionals | Sulfate                | 2002              | mg/L | 7.3                                    |       |       | 1.4                                |
| Conventionals | Sulfate                | 2005              | mg/L | 10.1                                   |       |       | 1.3                                |
| Conventionals | Sulfate                | 2006              | mg/L | 11.3                                   |       |       | 1.4                                |
| Conventionals | Sulfate                | 2007              | mg/L | 12.4                                   |       |       | 1.4                                |
| Conventionals | Sulfate                | 2008              | mg/L | 9.1                                    |       |       | 1.1                                |
| Conventionals | Sulfate                | 2009              | mg/L | 10.5                                   |       |       | 1.9                                |
| Conventionals | Sulfate                | 2010              | mg/L | 15.3                                   |       |       | 1.4                                |
| Conventionals | Sulfate                | 2011              | mg/L | 15.8                                   |       |       | 1.1                                |
| Conventionals | Sulfate                | 2012              | mg/L | 15.3                                   |       |       | 0.8                                |
| Conventionals | Sulfate                | 2013              | mg/L | 13                                     |       |       | 0.8                                |
| Conventionals | Sulfate                | 2014              | mg/L | 10                                     |       |       | 1.1                                |
| Conventionals | Sulfate                | 2015              | mg/L | 9                                      |       |       | 1.2                                |
| Conventionals | Sulfate                | 2016              | mg/L | 8                                      |       |       | 1.1                                |
| Conventionals | Sulfate                | 2016              | mg/L | 5                                      |       |       | 2.0                                |
| Conventionals | Sulfate                | 2018              | mg/L | 10                                     |       |       | 1.2                                |
| Conventionals | Sulfate                | 2019              | mg/L | 15                                     |       |       | 1.6                                |
| Conventionals | Sulfate                | 2020              | mg/L | 16                                     |       |       | 0.5                                |
| Conventionals | Sulfate                | 2022              | mg/L | 13                                     |       |       | 1.2                                |
| Conventionals | Tannin and Lignin      | 1990              | mg/L |                                        |       | 3.1   | 1.4                                |
| Conventionals | Tannin and Lignin      | 1993              | mg/L |                                        | 0.5   |       | 0.3                                |
| Conventionals | Tannin and Lignin      | 1994              | mg/L |                                        | 0.5   | 1.0   | 0.2                                |
| Conventionals | Tannin and Lignin      | 1995              | mg/L |                                        |       | 3.1   | 0.6                                |
| Conventionals | Tannin and Lignin      | 1996              | mg/L |                                        | 0.7   | 5.6   | 0.3                                |
| Conventionals | Tannin and Lignin      | 1998              | mg/L |                                        |       | 8.1   | 0.7                                |
| Conventionals | Tannin and Lignin      | 1999              | mg/L |                                        |       | 12.2  | 0.5                                |
| Conventionals | Tannin and Lignin      | 2000              | mg/L |                                        | 9.1   | 9.2   | 0.4                                |
| Conventionals | Tannin and Lignin      | 2002              | mg/L |                                        | 1.6   | 11.1  | 0.4                                |
| Conventionals | Tannin and Lignin      | 2003              | mg/L |                                        |       | 6.3   | 0.4                                |
| Conventionals | Tannin and Lignin      | 2004              | mg/L |                                        | 1.4   |       | 0.5                                |
| Conventionals | Tannin and Lignin      | 2005              | mg/L |                                        |       | 8.1   | 0.4                                |
| Conventionals | Tannin and Lignin      | 2006              | mg/L |                                        |       | 11.5  | 0.4                                |
| Conventionals | Tannin and Lignin      | 2007              | mg/L |                                        | 1.2   | 8.5   | 0.3                                |
| Conventionals | Tannin and Lignin      | 2008              | mg/L |                                        | 1.2   | 11.1  | 0.3                                |
| Conventionals | Tannin and Lignin      | 2009              | mg/L |                                        | 1.1   | 9.4   | 0.3                                |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|-------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Conventionals | Tannin and Lignin      | 2010              | mg/L |                                        | 1.4   | 14.9  | 0.3                                |
| Conventionals | Tannin and Lignin      | 2011              | mg/L |                                        | 1.2   | 15.0  | 0.3                                |
| Conventionals | Tannin and Lignin      | 2012              | mg/L |                                        | 1.7   | 27    | 0.4                                |
| Conventionals | Tannin and Lignin      | 2013              | mg/L |                                        | 1.3   | 10    | 0.3                                |
| Conventionals | Tannin and Lignin      | 2014              | mg/L |                                        | 1.3   | 23    | 0.3                                |
| Conventionals | Tannin and Lignin      | 2015              | mg/L |                                        | 1.3   | 12    | 0.3                                |
| Conventionals | Tannin and Lignin      | 2016              | mg/L |                                        | 1.2   | 5     | 0.2                                |
| Conventionals | Tannin and Lignin      | 2017              | mg/L |                                        | 1.6   |       | 0.2                                |
| Conventionals | Tannin and Lignin      | 2018              | mg/L |                                        | 1.6   |       | 0.4                                |
| Conventionals | Tannin and Lignin      | 2019              | mg/L |                                        | 2.7   | 139   | 0.7                                |
| Conventionals | Tannin and Lignin      | 2020              | mg/L |                                        |       | 65    | 3.1                                |
| Conventionals | Tannin and Lignin      | 2021              | mg/L |                                        |       | 43    | 1.8                                |
| Conventionals | Tannin and Lignin      | 2022              | mg/L |                                        |       | 39    | 2.8                                |
| Organics      | PCP                    | 2017              | µg/L |                                        | 1.2   |       | 0.18                               |
| Organics      | PCP                    | 2017              | µg/L |                                        | 1.6   |       | 0.18                               |
| Metals        | Arsenic                | 1996              | µg/L |                                        |       | 9.0   | 4.0                                |
| Metals        | Arsenic                | 1997              | µg/L |                                        |       | 15.0  | 5.0                                |
| Metals        | Arsenic                | 1998              | µg/L |                                        |       | 20.0  | 4.6                                |
| Metals        | Arsenic                | 1999              | µg/L |                                        |       | 34    | 5.8                                |
| Metals        | Arsenic                | 2002              | µg/L |                                        |       | 10.4  | 3.8                                |
| Metals        | Arsenic                | 2007              | µg/L |                                        |       | 110   | 5.9                                |
| Metals        | Arsenic                | 2008              | µg/L |                                        |       | 79    | 5.9                                |
| Metals        | Arsenic                | 2009              | µg/L |                                        |       | 75    | 6.9                                |
| Metals        | Arsenic                | 2010              | µg/L |                                        |       | 152   | 5.9                                |
| Metals        | Arsenic                | 2011              | µg/L |                                        |       | 142   | 6.1                                |
| Metals        | Arsenic                | 2012              | µg/L |                                        |       | 149   | 5.5                                |
| Metals        | Arsenic                | 2013              | µg/L |                                        |       | 140   | 6.4                                |
| Metals        | Arsenic                | 2014              | µg/L |                                        |       | 174   | 5.9                                |
| Metals        | Arsenic                | 2015              | µg/L |                                        |       | 174   | 6.0                                |
| Metals        | Arsenic                | 2016              | µg/L |                                        |       | 163   | 6.3                                |
| Metals        | Arsenic                | 2017              | µg/L |                                        |       | 171   | 9.3                                |
| Metals        | Arsenic                | 2019              | µg/L |                                        |       | 60    | 5.0                                |
| Metals        | Arsenic                | 2020              | µg/L |                                        |       | 75    | 5.0                                |
| Metals        | Arsenic                | 2021              | µg/L |                                        |       | 68    | 5.0                                |
| Metals        | Barium                 | 1993              | µg/L |                                        |       | 38    | 28                                 |
| Metals        | Barium                 | 1994              | µg/L |                                        | 38    | 51    | 25                                 |
| Metals        | Barium                 | 1995              | µg/L |                                        | 45    | 58    | 27                                 |
| Metals        | Barium                 | 1996              | µg/L |                                        | 48    | 74    | 26                                 |
| Metals        | Barium                 | 1997              | µg/L |                                        | 50    | 58    | 21                                 |
| Metals        | Barium                 | 1998              | µg/L |                                        | 51    | 65    | 26                                 |
| Metals        | Barium                 | 1999              | µg/L |                                        | 51    | 58    | 27                                 |
| Metals        | Barium                 | 2000              | µg/L |                                        |       | 88    | 27                                 |
| Metals        | Barium                 | 2001              | µg/L | 28                                     | 51    | 60    | 27                                 |
| Metals        | Barium                 | 2002              | µg/L |                                        | 50    | 78    | 28                                 |
| Metals        | Barium                 | 2003              | µg/L |                                        | 46    | 55    | 29                                 |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |         | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|---------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3   | BXS-4                              |
| Metals        | Barium                 | 2004              | µg/L |                                        | 48    | 71      | 23                                 |
| Metals        | Barium                 | 2005              | µg/L |                                        | 44    | 88      | 29                                 |
| Metals        | Barium                 | 2006              | µg/L |                                        | 46    | 95      | 31                                 |
| Metals        | Barium                 | 2007              | µg/L |                                        | 46    | 85      | 29                                 |
| Metals        | Barium                 | 2008              | µg/L |                                        | 44    | 93      | 28                                 |
| Metals        | Barium                 | 2009              | µg/L |                                        | 45    | 92      | 78                                 |
| Metals        | Barium                 | 2011              | µg/L |                                        | 50    | 127     | 26                                 |
| Metals        | Barium                 | 2012              | µg/L |                                        | 51    | 126     | 28                                 |
| Metals        | Barium                 | 2013              | µg/L |                                        | 52    | 104     | 26                                 |
| Metals        | Barium                 | 2014              | µg/L |                                        | 51    | 133     | 28                                 |
| Metals        | Barium                 | 2015              | µg/L |                                        | 47    | 143     | 28                                 |
| Metals        | Barium                 | 2016              | µg/L |                                        | 42    | 129     | 30                                 |
| Metals        | Barium                 | 2017              | µg/L |                                        | 37    | 129     | 29                                 |
| Metals        | Barium                 | 2019              | µg/L |                                        | 41    |         | 27                                 |
| Metals        | Barium                 | 2020              | µg/L |                                        | 38    | 45      | 24                                 |
| Metals        | Cadmium                | 2002              | µg/L |                                        | 1.1   | 1.1     | ND                                 |
| Metals        | Copper                 | 1993              | µg/L |                                        |       | 8       | 5                                  |
| Metals        | Copper                 | 2015              | µg/L |                                        | 2     |         | 2                                  |
| Metals        | Iron                   | 1990              | µg/L |                                        | 140   | 1,950   | 48                                 |
| Metals        | Iron                   | 1994              | µg/L |                                        | 748   | 1,950   | 45                                 |
| Metals        | Iron                   | 1995              | µg/L |                                        | 1,120 | 341     | 50                                 |
| Metals        | Iron                   | 1996              | µg/L |                                        | 1,520 | 9,490   | 46                                 |
| Metals        | Iron                   | 1997              | µg/L |                                        | 1,220 | 17,800  | 50                                 |
| Metals        | Iron                   | 1998              | µg/L |                                        | 1,130 | 20,700  | 56                                 |
| Metals        | Iron                   | 1999              | µg/L |                                        | 950   | 34,500  | 30                                 |
| Metals        | Iron                   | 2000              | µg/L |                                        | 665   | 37,740  | 48                                 |
| Metals        | Iron                   | 2001              | µg/L |                                        | 715   | 6,538   | 43                                 |
| Metals        | Iron                   | 2002              | µg/L |                                        | 729   | 10,474  | 42                                 |
| Metals        | Iron                   | 2003              | µg/L |                                        | 814   |         | 42                                 |
| Metals        | Iron                   | 2004              | µg/L |                                        | 784   |         | 38                                 |
| Metals        | Iron                   | 2005              | µg/L |                                        | 758   | 10,013  | 43                                 |
| Metals        | Iron                   | 2006              | µg/L |                                        | 813   | 47,648  | 40                                 |
| Metals        | Iron                   | 2007              | µg/L |                                        | 743   | 87,825  | 39                                 |
| Metals        | Iron                   | 2008              | µg/L |                                        | 596   | 72,025  | 48                                 |
| Metals        | Iron                   | 2009              | µg/L |                                        | 709   | 67,678  | 60                                 |
| Metals        | Iron                   | 2010              | µg/L |                                        | 455   | 104,675 | 31                                 |
| Metals        | Iron                   | 2011              | µg/L |                                        | 434   | 106,500 | 45                                 |
| Metals        | Iron                   | 2012              | µg/L |                                        | 404   | 98,250  | 55                                 |
| Metals        | Iron                   | 2013              | µg/L |                                        | 421   | 100,275 | 60                                 |
| Metals        | Iron                   | 2014              | µg/L |                                        | 419   | 119,000 | 66                                 |
| Metals        | Iron                   | 2015              | µg/L |                                        | 379   | 120,500 | 63                                 |
| Metals        | Iron                   | 2016              | µg/L |                                        | 379   | 111,750 | 69                                 |
| Metals        | Iron                   | 2017              | µg/L |                                        |       | 110,000 | 669                                |
| Metals        | Iron                   | 2018              | µg/L |                                        |       | 82,517  | 856                                |
| Metals        | Iron                   | 2019              | µg/L |                                        |       | 90,650  | 88                                 |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |        | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|--------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3  | BXS-4                              |
| Metals        | Iron                   | 2020              | µg/L |                                        |       | 78,525 | 76                                 |
| Metals        | Iron                   | 2021              | µg/L |                                        |       | 55,618 | 126                                |
| Metals        | Iron                   | 2022              | µg/L |                                        |       | 57,013 | 108                                |
| Metals        | Lead                   | 1993              | µg/L |                                        |       | 2      | 1                                  |
| Metals        | Manganese              | 1989              | µg/L | 210                                    | 580   | 1,100  | 120                                |
| Metals        | Manganese              | 1990              | µg/L |                                        | 650   | 1,820  | 99                                 |
| Metals        | Manganese              | 1993              | µg/L |                                        | 570   |        | 110                                |
| Metals        | Manganese              | 1994              | µg/L |                                        | 670   | 1,110  | 120                                |
| Metals        | Manganese              | 1995              | µg/L |                                        | 834   | 3,780  | 122                                |
| Metals        | Manganese              | 1996              | µg/L |                                        | 1,120 | 10,800 | 121                                |
| Metals        | Manganese              | 1997              | µg/L |                                        | 1,510 | 13,000 | 90                                 |
| Metals        | Manganese              | 1998              | µg/L | 175                                    | 1,650 | 13,800 | 126                                |
| Metals        | Manganese              | 1999              | µg/L | 200                                    | 1,420 | 14,800 | 116                                |
| Metals        | Manganese              | 2000              | µg/L | 331                                    | 1,450 | 15,025 | 124                                |
| Metals        | Manganese              | 2001              | µg/L | 426                                    | 1,513 | 15,350 | 119                                |
| Metals        | Manganese              | 2002              | µg/L | 430                                    | 1,502 | 15,763 | 119                                |
| Metals        | Manganese              | 2003              | µg/L |                                        | 1,523 | 15,750 | 113                                |
| Metals        | Manganese              | 2004              | µg/L |                                        | 1,420 | 16,625 | 103                                |
| Metals        | Manganese              | 2005              | µg/L |                                        | 1,305 | 13,503 | 112                                |
| Metals        | Manganese              | 2006              | µg/L |                                        | 1,330 | 15,275 | 113                                |
| Metals        | Manganese              | 2007              | µg/L |                                        | 1,323 | 13,925 | 114                                |
| Metals        | Manganese              | 2008              | µg/L | 317                                    | 1,225 | 14,750 | 114                                |
| Metals        | Manganese              | 2009              | µg/L |                                        | 1,570 | 11,093 | 1,140                              |
| Metals        | Manganese              | 2010              | µg/L |                                        |       | 9,533  | 113                                |
| Metals        | Manganese              | 2011              | µg/L | 144                                    | 1,375 | 12,403 | 107                                |
| Metals        | Manganese              | 2012              | µg/L | 237                                    | 1,535 | 11,300 | 116                                |
| Metals        | Manganese              | 2013              | µg/L | 218                                    | 1,643 | 13,233 | 115                                |
| Metals        | Manganese              | 2014              | µg/L | 261                                    | 1,663 | 9,658  | 117                                |
| Metals        | Manganese              | 2015              | µg/L | 284                                    | 1,583 | 7,500  | 115                                |
| Metals        | Manganese              | 2016              | µg/L | 253                                    | 1,470 | 9,078  | 114                                |
| Metals        | Manganese              | 2017              | µg/L |                                        |       | 7,595  | 110                                |
| Metals        | Manganese              | 2018              | µg/L |                                        | 1,489 | 6,251  | 129                                |
| Metals        | Manganese              | 2019              | µg/L | 228                                    | 1,667 | 4,642  | 141                                |
| Metals        | Manganese              | 2020              | µg/L |                                        | 1,563 | 6,526  | 154                                |
| Metals        | Manganese              | 2021              | µg/L |                                        | 1,490 | 5,076  | 162                                |
| Metals        | Manganese              | 2022              | µg/L |                                        | 1,345 | 6,866  | 122                                |
| Metals        | Nickel                 | 1993              | µg/L |                                        | 18.0  |        | 1.0                                |
| Metals        | Nickel                 | 1994              | µg/L |                                        | 18.0  |        | ND                                 |
| Metals        | Nickel                 | 1995              | µg/L |                                        | 21.0  | 30     | ND                                 |
| Metals        | Nickel                 | 1996              | µg/L |                                        |       | 25     | ND                                 |
| Metals        | Nickel                 | 1997              | µg/L |                                        | 34    | 20.0   | ND                                 |
| Metals        | Nickel                 | 1998              | µg/L |                                        | 43    | 29     | ND                                 |
| Metals        | Nickel                 | 1999              | µg/L |                                        | 36    | 22     | ND                                 |
| Metals        | Nickel                 | 2000              | µg/L |                                        | 37    |        | ND                                 |
| Metals        | Nickel                 | 2001              | µg/L | 20.3                                   | 38    | 17.5   | 10.0                               |

**Table 4. Parameters Statistically Higher than Background: 1989 through 2022**

Former J.H. Baxter South Woodwaste Landfill

Arlington, Washington

| Analyte Group | Parameter <sup>1</sup> | Monitoring Period | Unit | Mean Value Downgradient <sup>2,3</sup> |       |       | Mean Value Upgradient <sup>2</sup> |
|---------------|------------------------|-------------------|------|----------------------------------------|-------|-------|------------------------------------|
|               |                        |                   |      | BXS-1                                  | BXS-2 | BXS-3 | BXS-4                              |
| Metals        | Nickel                 | 2002              | µg/L | 21                                     | 39    | 24    | 5.5                                |
| Metals        | Nickel                 | 2003              | µg/L |                                        | 37    |       | 10.0                               |
| Metals        | Nickel                 | 2004              | µg/L |                                        | 41    |       | 10.0                               |
| Metals        | Nickel                 | 2005              | µg/L |                                        | 36    |       | 10.0                               |
| Metals        | Nickel                 | 2006              | µg/L |                                        | 34    |       | 10.0                               |
| Metals        | Nickel                 | 2007              | µg/L |                                        | 33    |       | 10.0                               |
| Metals        | Nickel                 | 2008              | µg/L |                                        | 30    | 16.1  | 10.0                               |
| Metals        | Nickel                 | 2009              | µg/L |                                        | 57    |       | 34                                 |
| Metals        | Nickel                 | 2011              | µg/L |                                        | 31    |       | 12.5                               |
| Metals        | Nickel                 | 2012              | µg/L |                                        | 32    | 16.3  | 7.7                                |
| Metals        | Nickel                 | 2013              | µg/L | 10                                     | 37    | 21    | 7                                  |
| Metals        | Nickel                 | 2014              | µg/L | 9                                      | 35    | 17    | 3                                  |
| Metals        | Nickel                 | 2015              | µg/L | 8                                      | 32    | 19    | 1                                  |
| Metals        | Nickel                 | 2016              | µg/L | 19                                     | 29    | 8     | 2                                  |
| Metals        | Nickel                 | 2017              | µg/L | 13                                     | 24    | 18    | 3                                  |
| Metals        | Nickel                 | 2019              | µg/L |                                        | 39    | 30    | 7                                  |
| Metals        | Nickel                 | 2020              | µg/L |                                        | 35    | 30    | 10                                 |
| Metals        | Nickel                 | 2021              | µg/L |                                        | 38    | 36    | 13                                 |
| Metals        | Nickel                 | 2022              | µg/L | 21                                     | 25    | 34    | 5                                  |
| Metals        | Zinc                   | 2002              | µg/L | 8.0                                    | 6.8   |       | ND                                 |
| Metals        | Zinc                   | 2005              | µg/L | 10.0                                   |       |       | 5.0                                |
| Metals        | Zinc                   | 2007              | µg/L | 6.2                                    | 17.3  | 12.4  | 4.4                                |
| Metals        | Zinc                   | 2008              | µg/L |                                        | 7.6   |       | 4.8                                |
| Metals        | Zinc                   | 2014              | µg/L |                                        | 4.5   | 6.1   | 3.4                                |
| Metals        | Zinc                   | 2015              | µg/L |                                        | 4.6   | 6.1   | 2.0                                |
| Metals        | Zinc                   | 2016              | µg/L |                                        | 4.4   |       | 2.9                                |

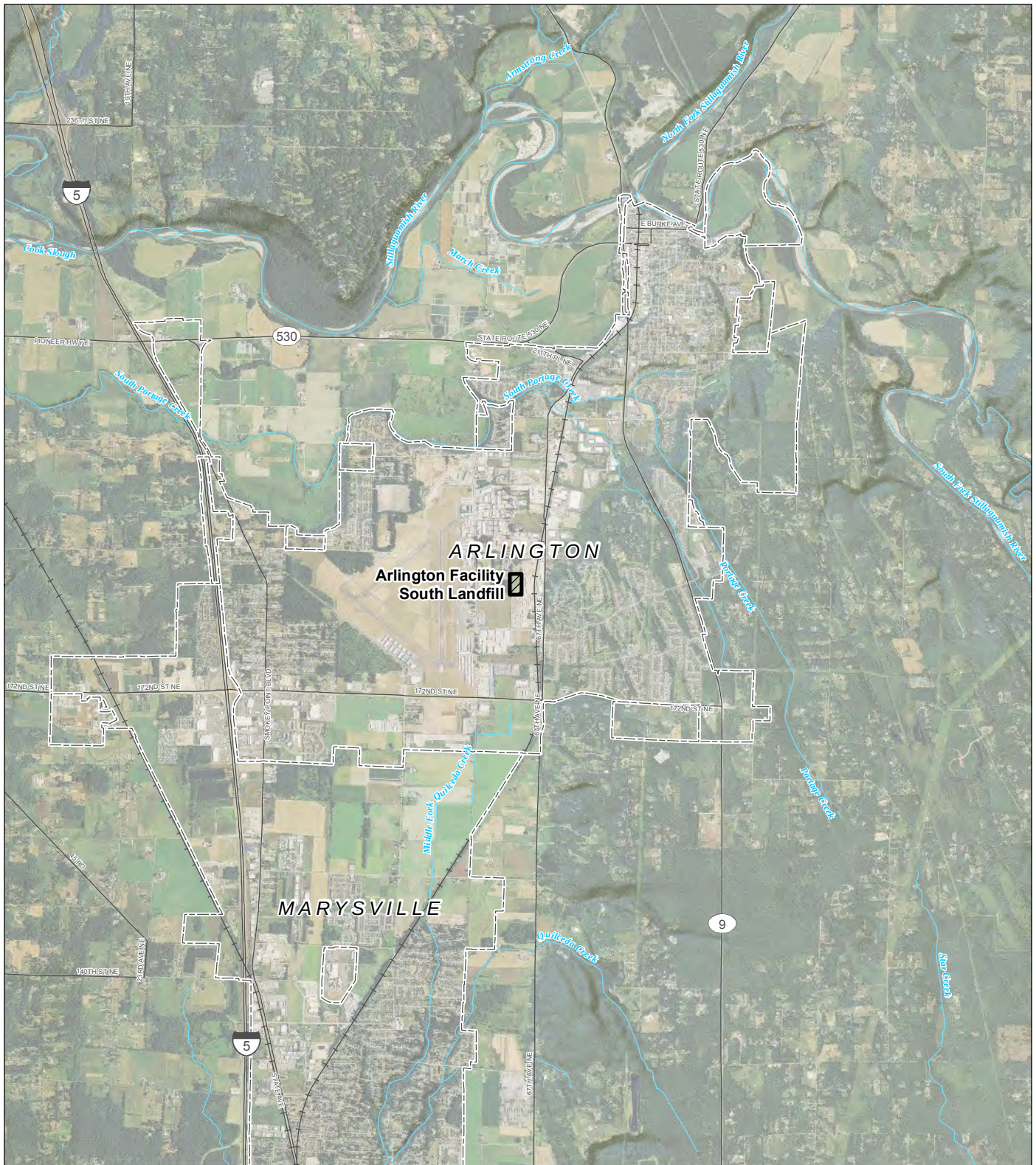
**Notes**

µg/L = micrograms per liter. µS/cm = microSiemens per centimeter. mg/L = milligrams per liter

ND = not detected.

<sup>1</sup> Parameters listed only when at least one downgradient well has a higher mean value than the upgradient well.<sup>2</sup> Mean values are yearly averages.<sup>3</sup> Mean values in downgradient wells shown when exceeding the mean value of the upgradient well. Value in downgradient wells not shown if the mean value does not exceed the upgradient well's mean value.

## Figures



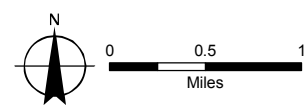
- LEGEND**
- Cities
  - Railroads
  - Major Roads
  - Watercourses

**MAP NOTES:**  
 Date: March 31, 2015  
 Data Sources: Air photo taken on July 15, 2013 by the USDA

## FIGURE 1

### Site Vicinity Map

Former J.H. Baxter South Woodwaste Landfill  
 Arlington, Washington

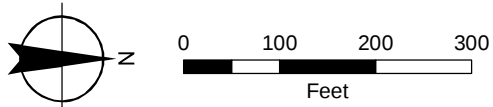




**FIGURE 2**  
Groundwater Elevation Contour Map:  
First Quarter 2016  
Former J.H. Baxter South Woodwaste Landfill  
Arlington, Washington

- LEGEND**
- Groundwater Elevation Contours  
(dashed where inferred)
  - Monitoring Well  
(February 2016 Groundwater Elevation)
  - Direction of Groundwater Flow

**NOTES:**  
1. All elevations exist in NAVD88.



**MAP NOTES:**  
Date: 3/23/2017  
Data Sources: AMEC, ESRI, Air photo taken on  
July 15, 2013 by the USDA

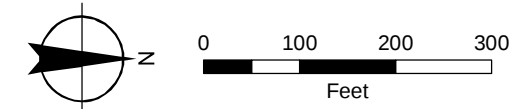




**FIGURE 3**  
Groundwater Elevation Contour Map:  
Third Quarter 2016  
Former J.H. Baxter South Woodwaste Landfill  
Arlington, Washington

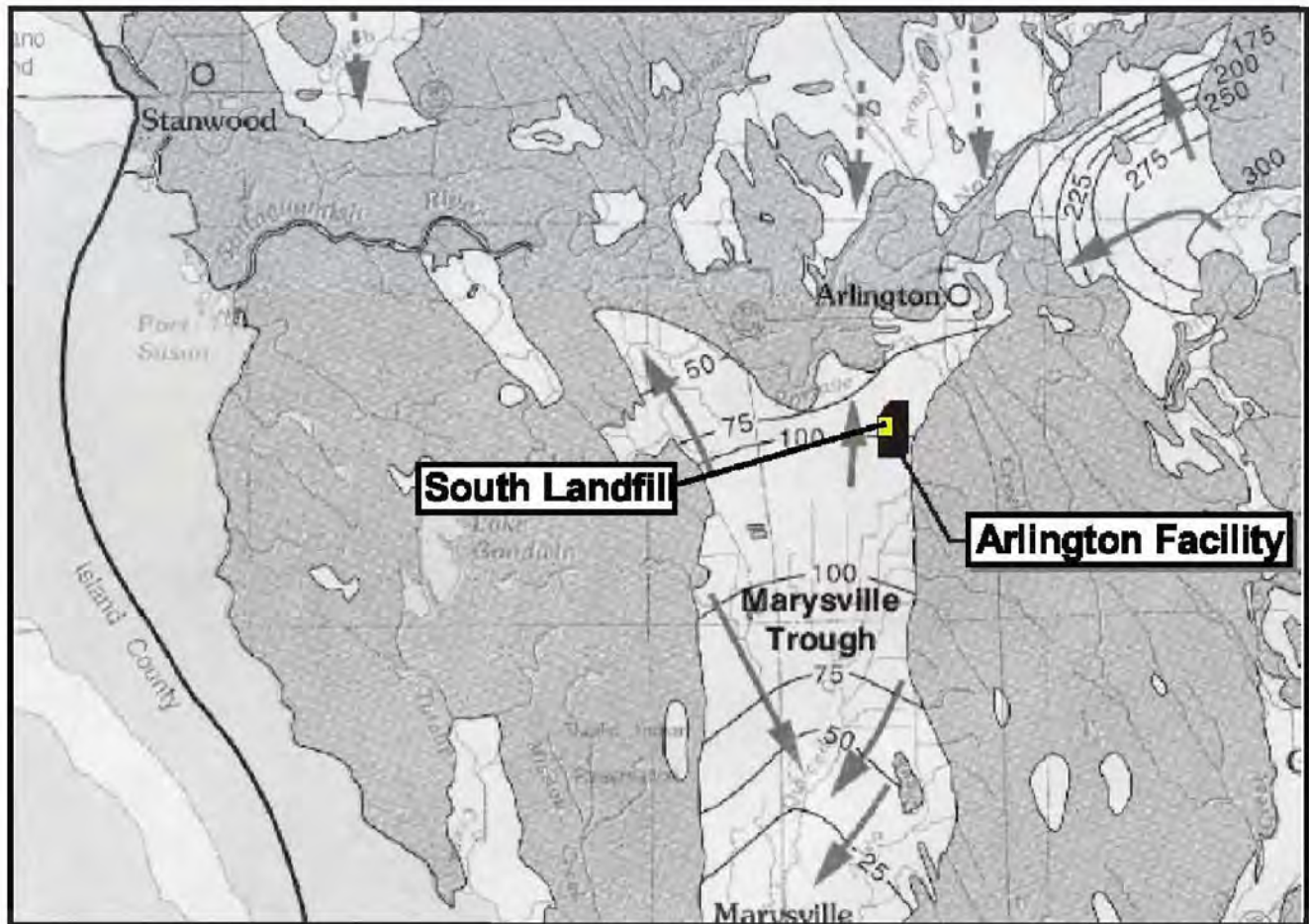
- LEGEND**
- Groundwater Elevation Contours  
(dashed where inferred)
  - Monitoring Well  
(September 2016 Groundwater Elevation)
  - Direction of Groundwater Flow

**NOTES:**  
1. All elevations exist in NAVD88.



**MAP NOTES:**  
Date: 3/23/2017  
Data Sources: AMEC, ESRI, Air photo taken on  
July 15, 2013 by the USDA



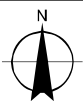


**Note:**  
 Map created by base map by B.E. Thomas, J.M. Wilkinson,  
 and S.S. Embrey, entitled "Plate 6. Areal Recharge From  
 Precipitation and Potentiometric Surfaces of Principal  
 Aquifers, Western Snohomish County, Washington,"  
 dated 1997

0 4 8 Miles

#### LEGEND

- 50 Groundwater Elevation
- Groundwater Elevation Contour
- Inferred Groundwater Flow Direction



#### FIGURE 4

**Regional Groundwater Flow**  
 Former J.H. Baxter South Woodwaste Landfill  
 Arlington, Washington



Figure 5  
Ammonia Trend  
South Wells

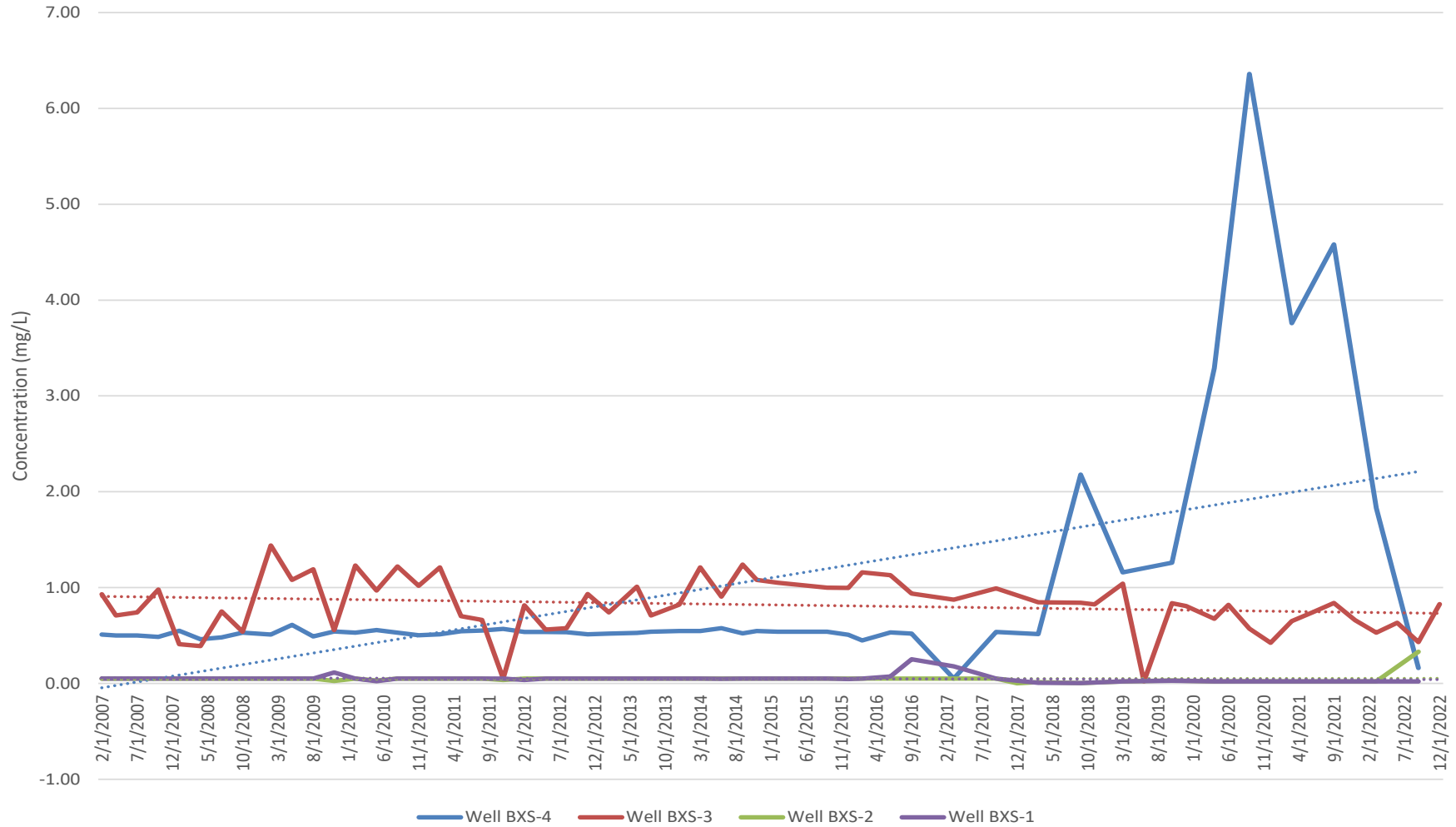


Figure 6  
Arsenic Trend  
South Wells

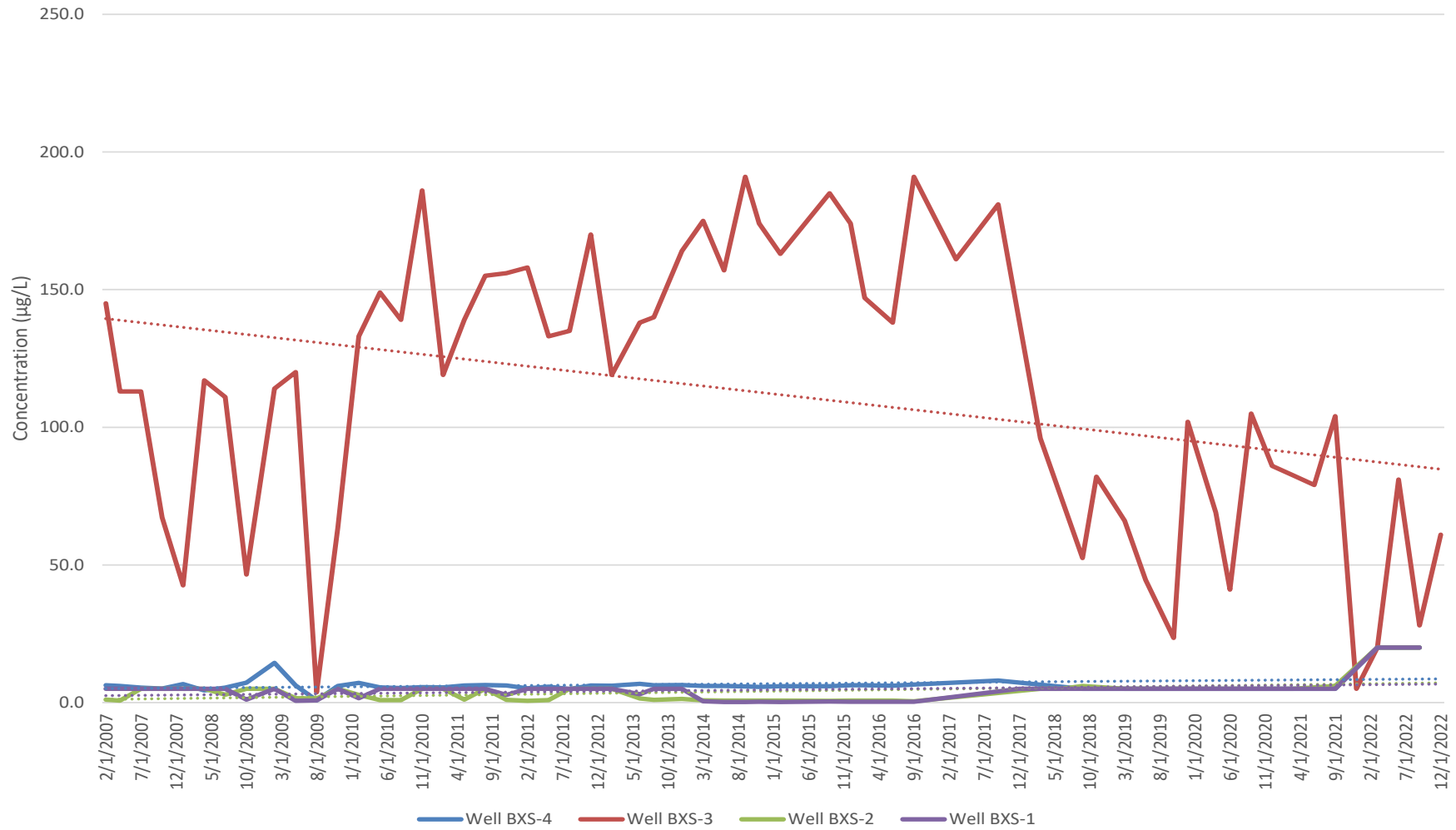


Figure 7  
Barium Trend  
South Wells

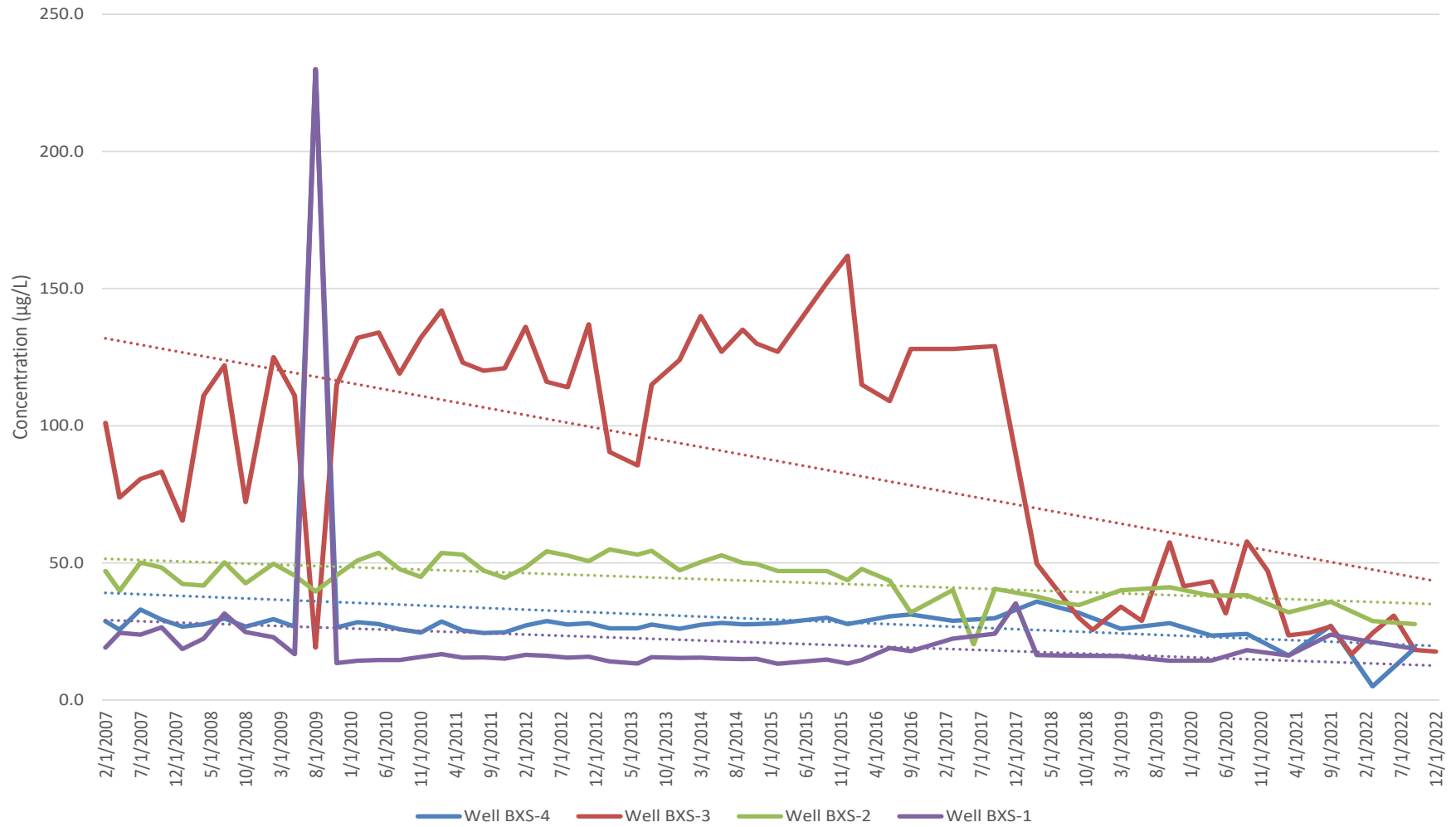


Figure 8  
Chemical Oxygen Demand Trend  
South Wells

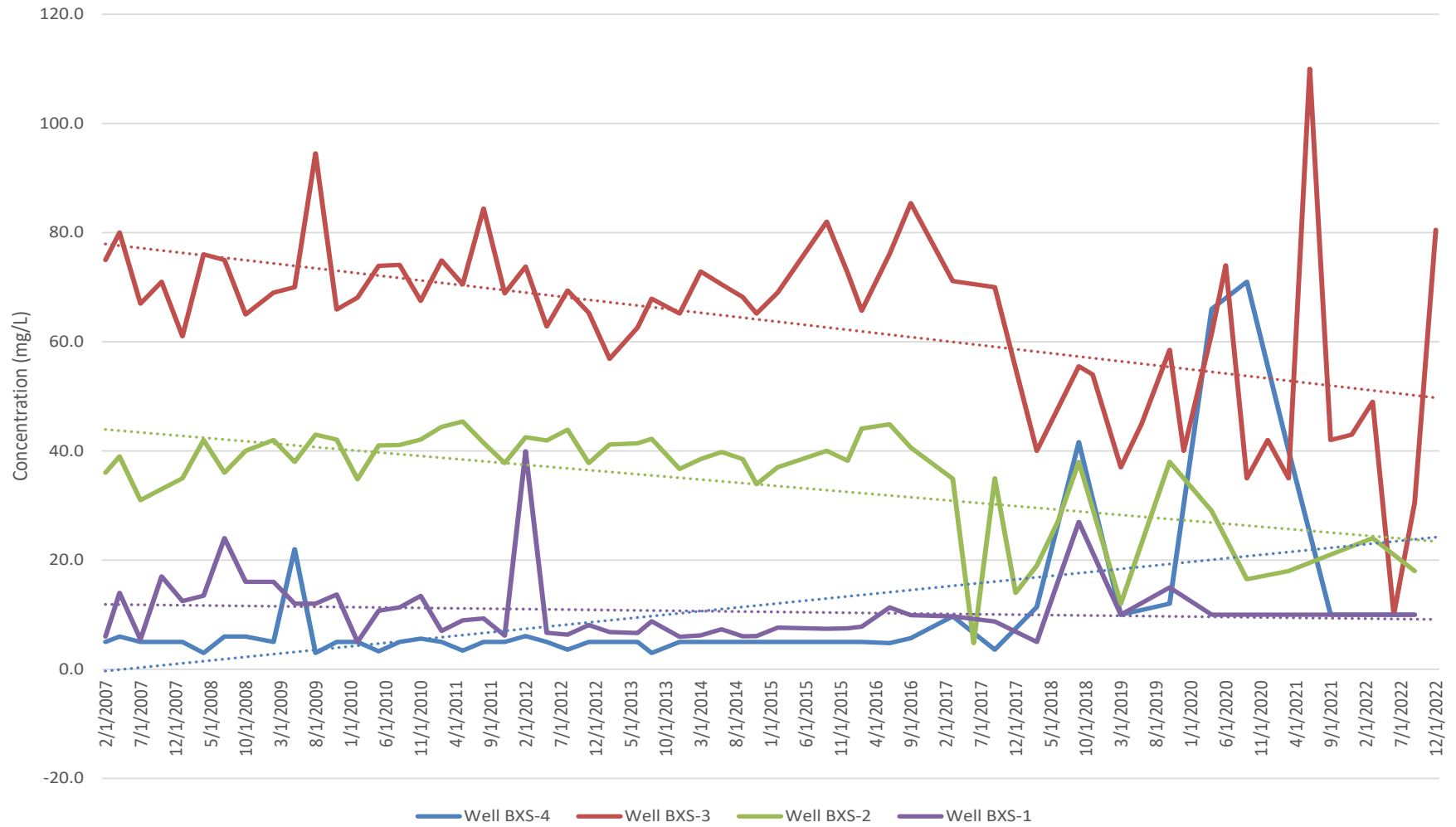


Figure 9  
Iron Trend  
South Wells

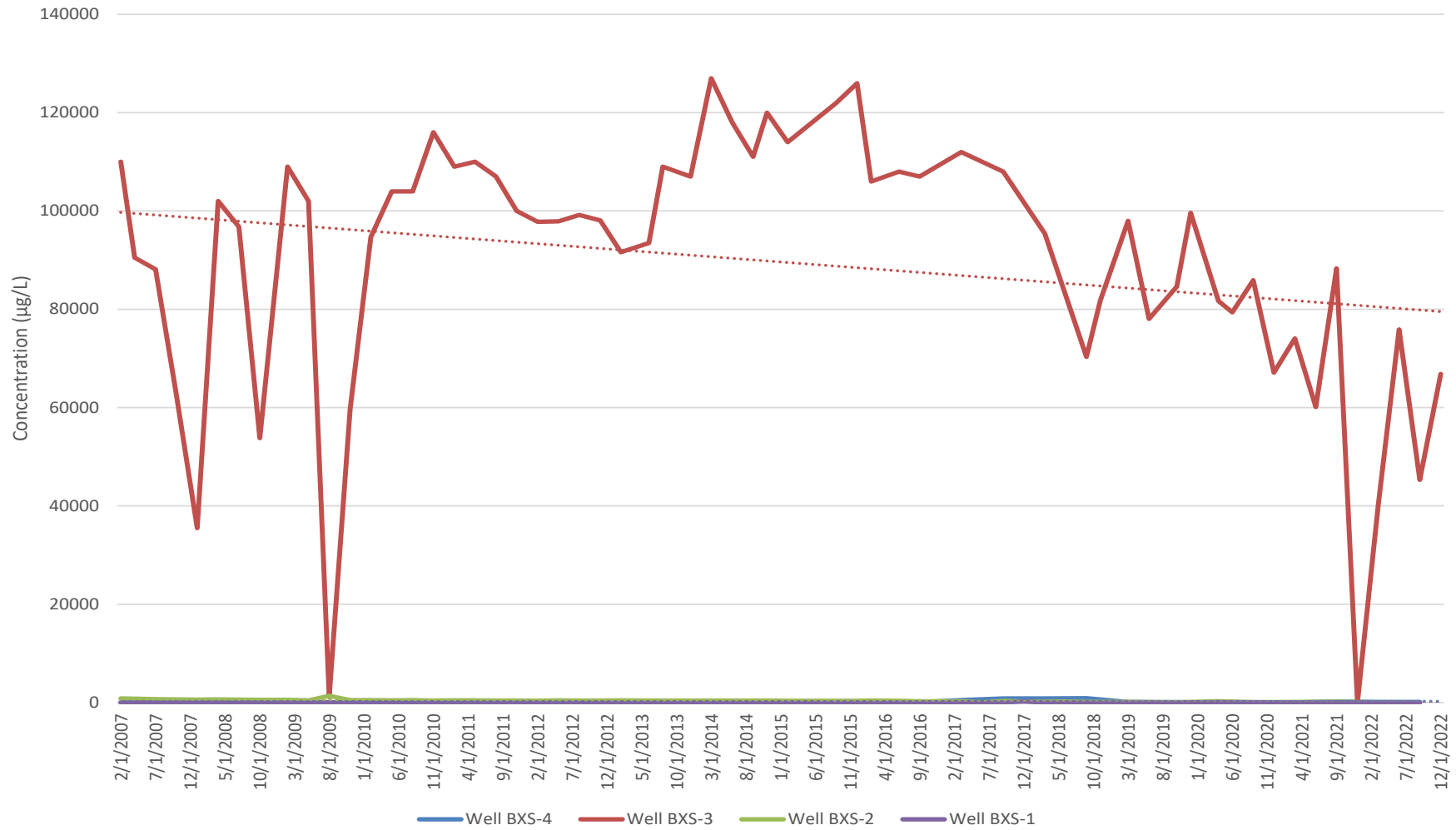


Figure 10  
Manganese Trend  
South Wells

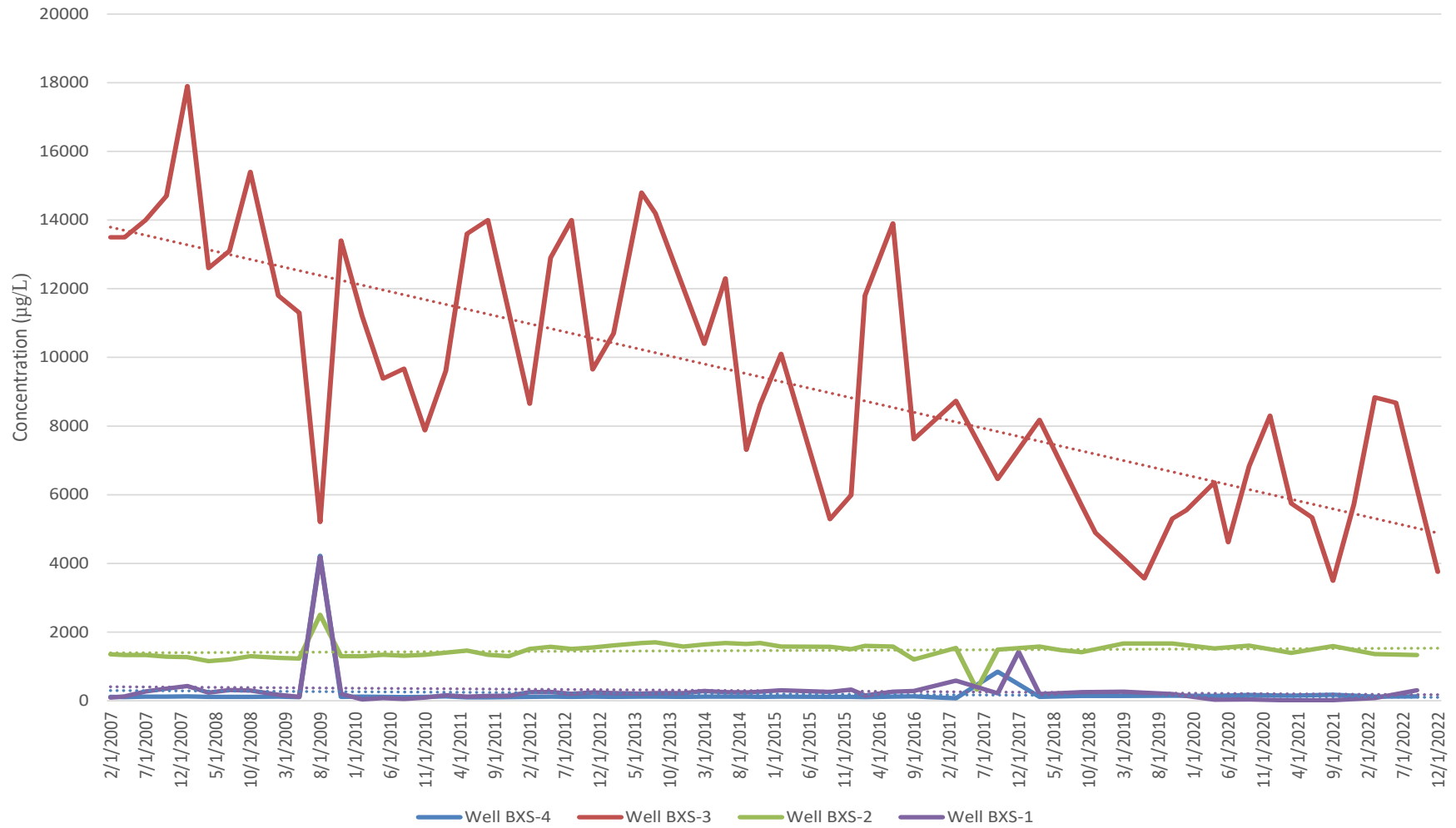


Figure 11  
Nickel Trend  
South Wells

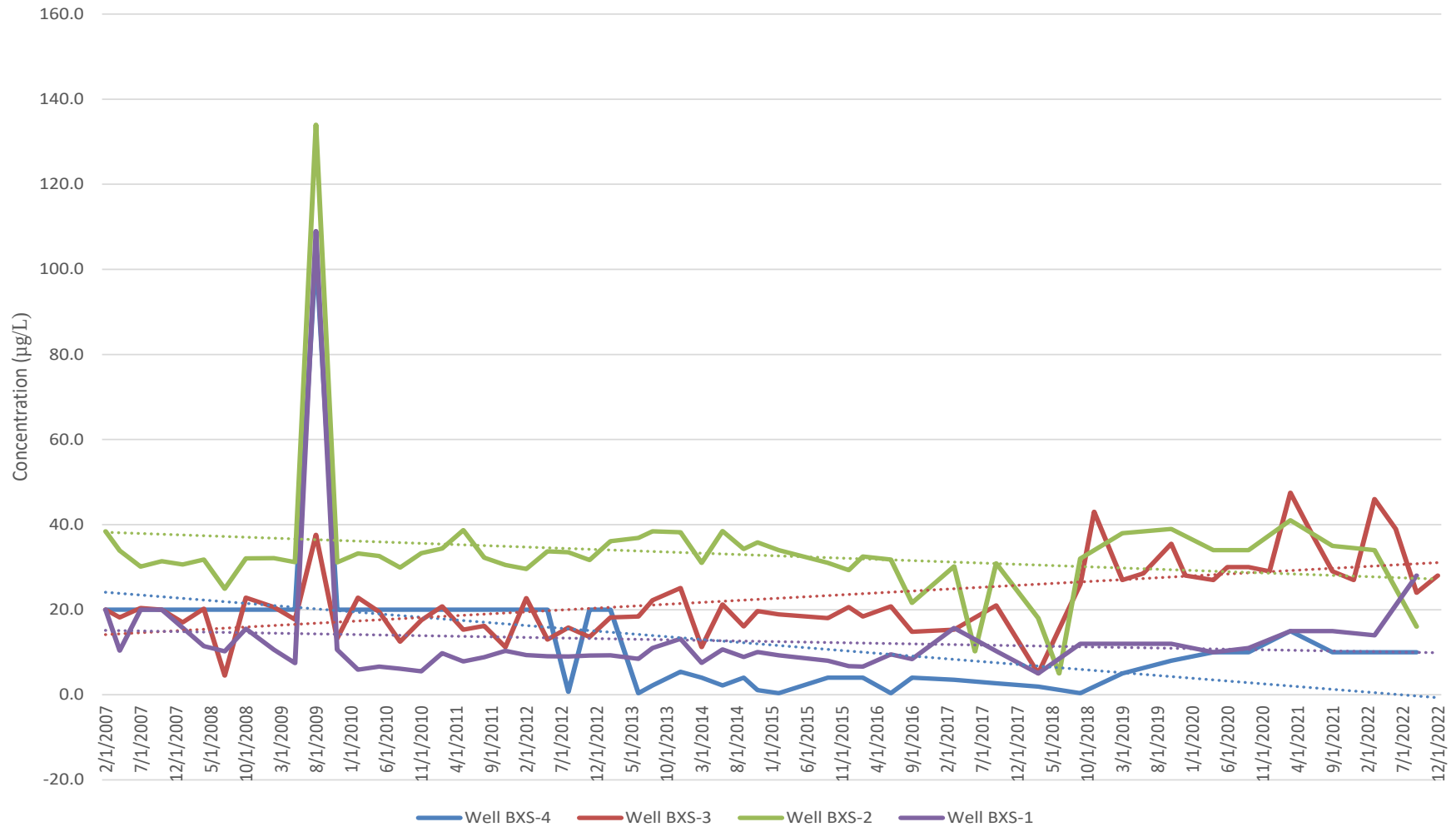


Figure 12  
pH Trend  
South Wells

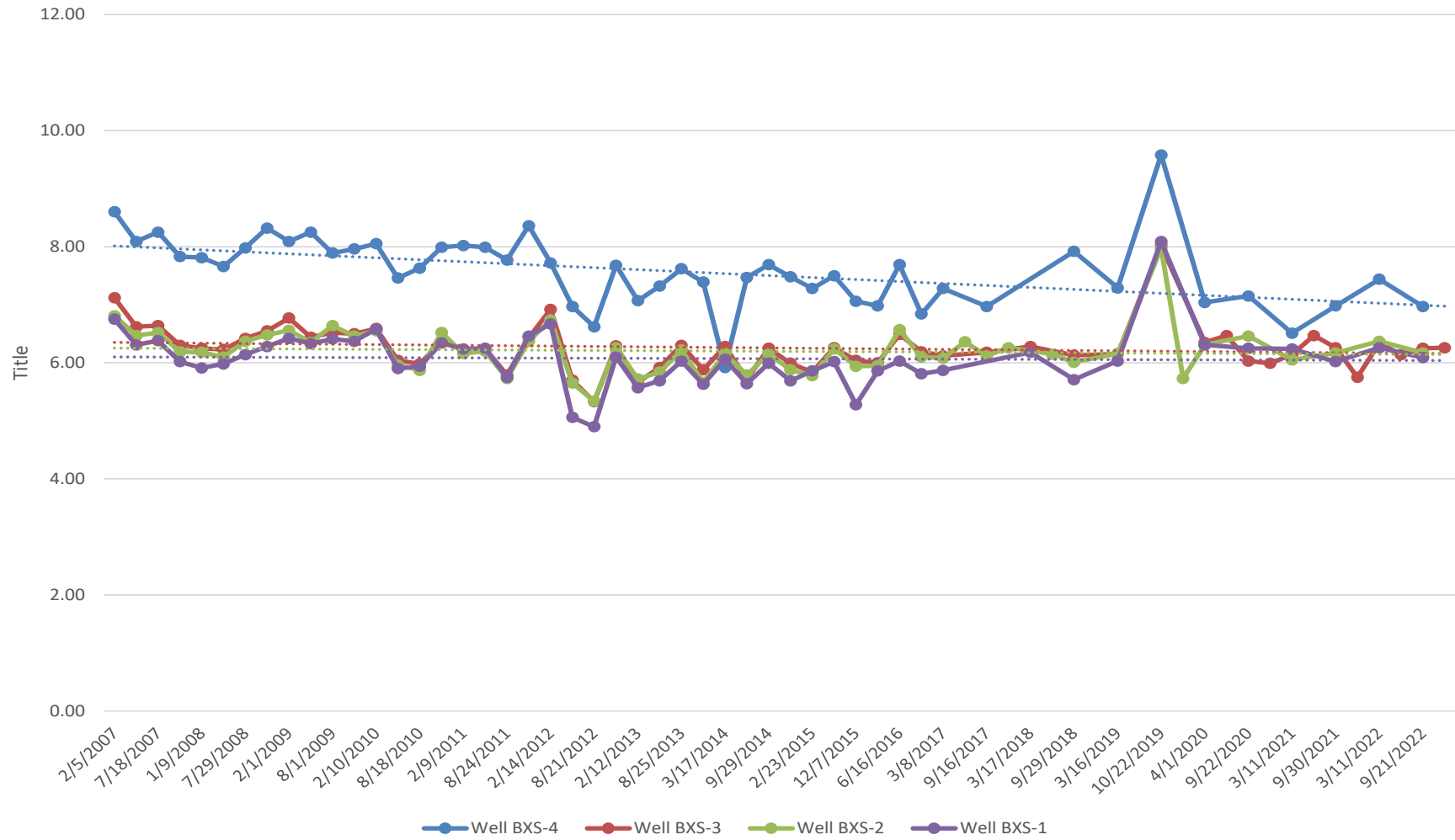


Figure 13  
Sulfate Trend  
South Wells

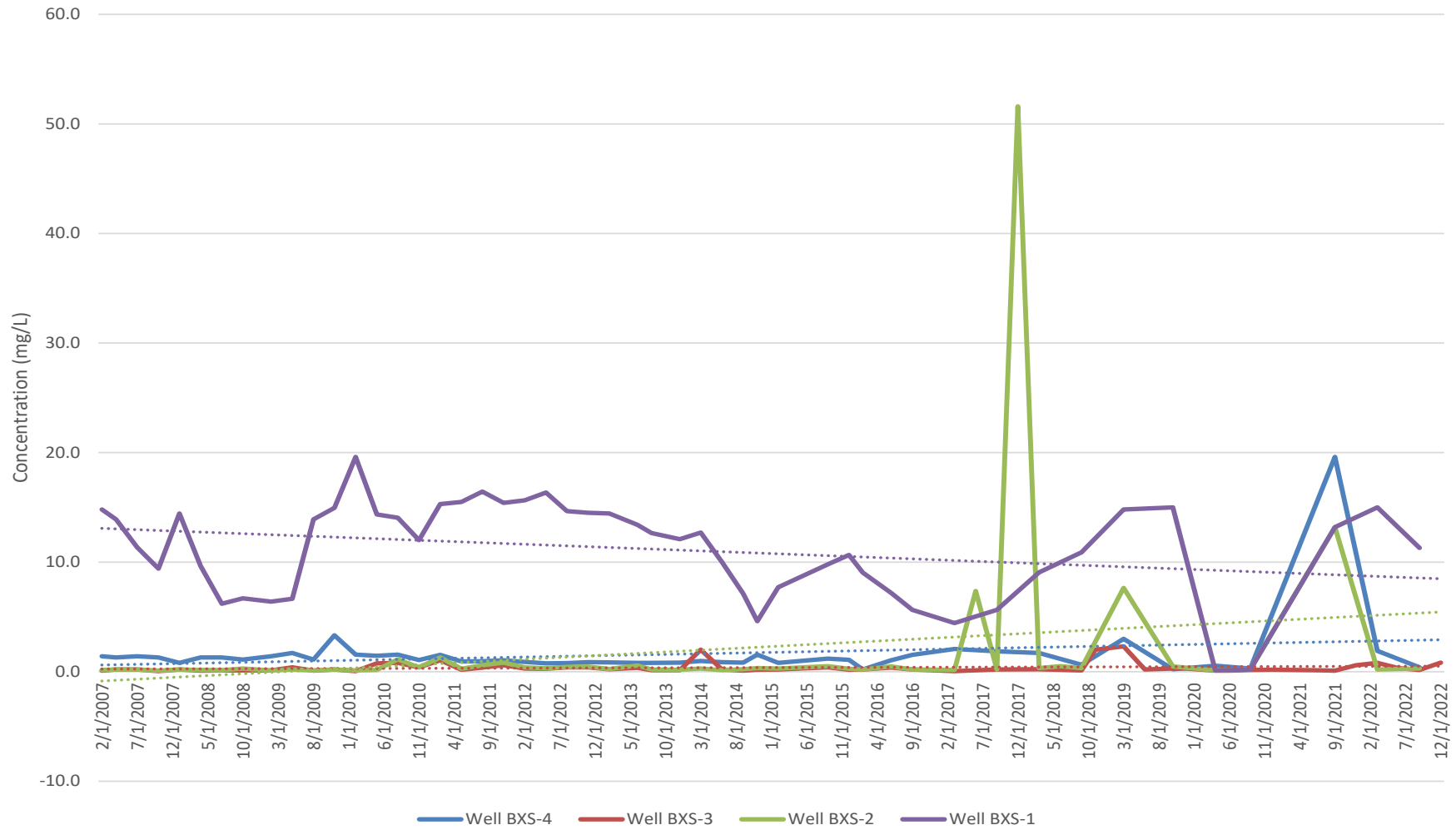


Figure 14  
Tannin and Lignin Trend  
South Wells

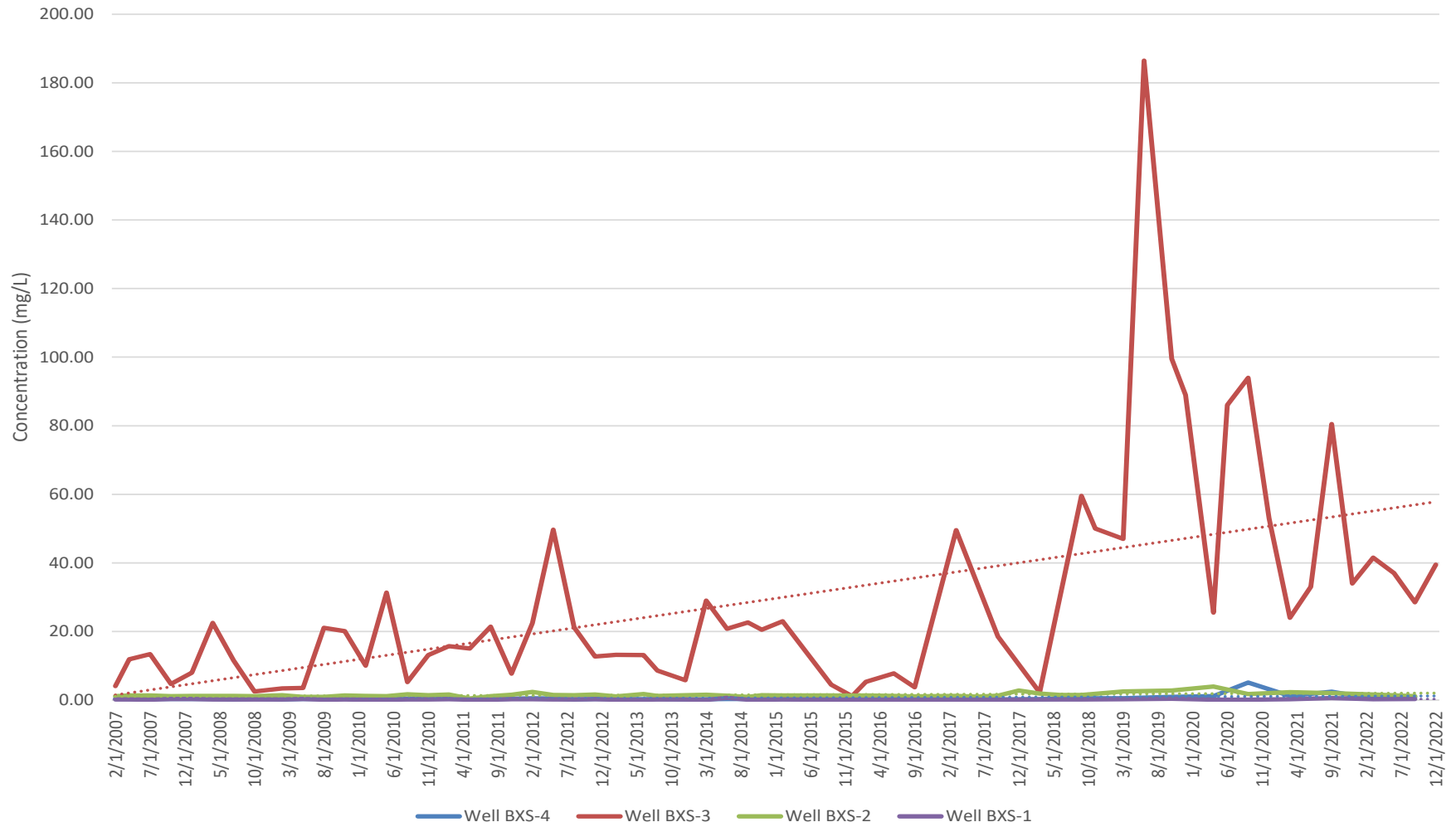


Figure 15  
Total Dissolved Solids Trend  
South Wells

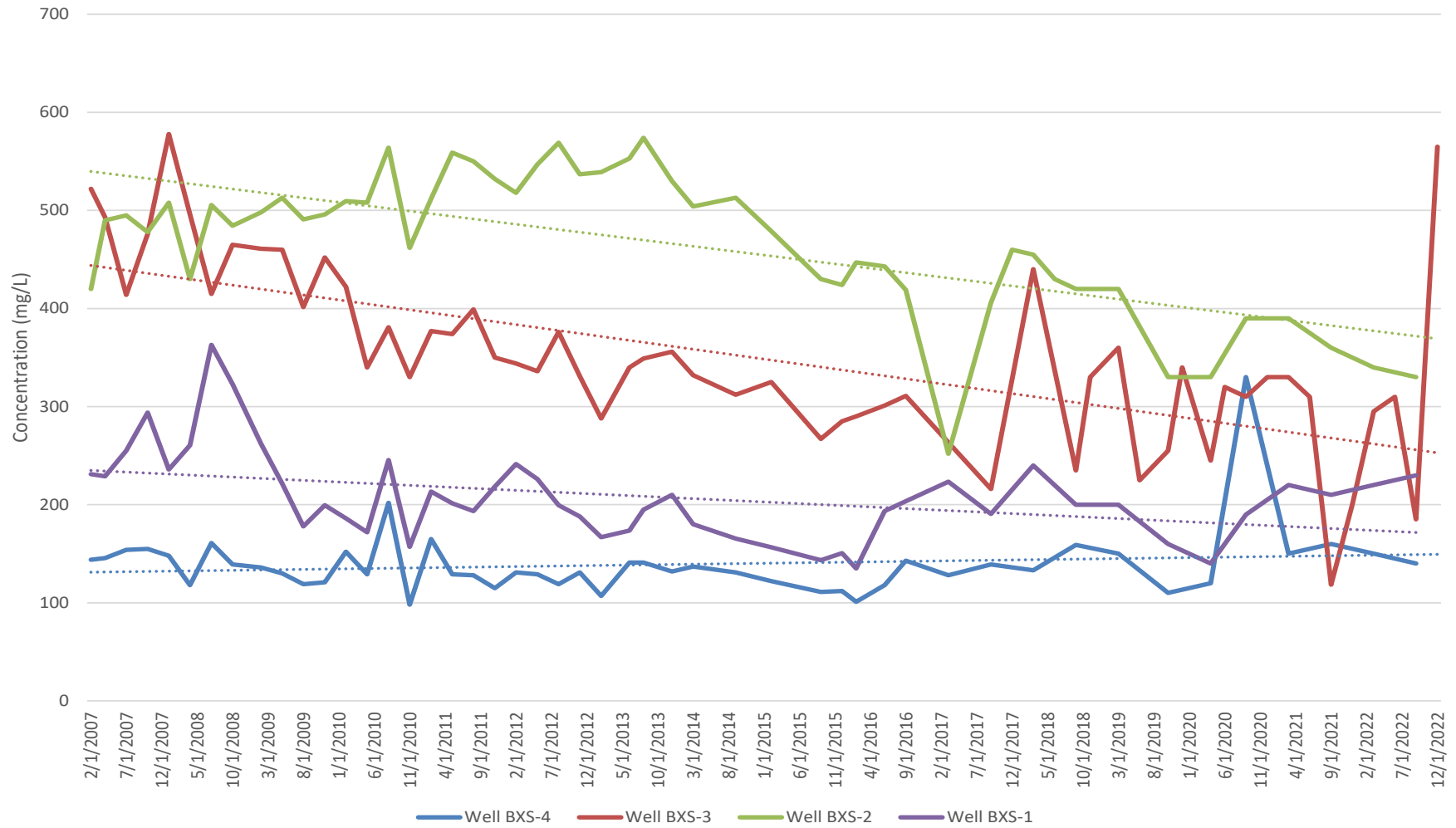
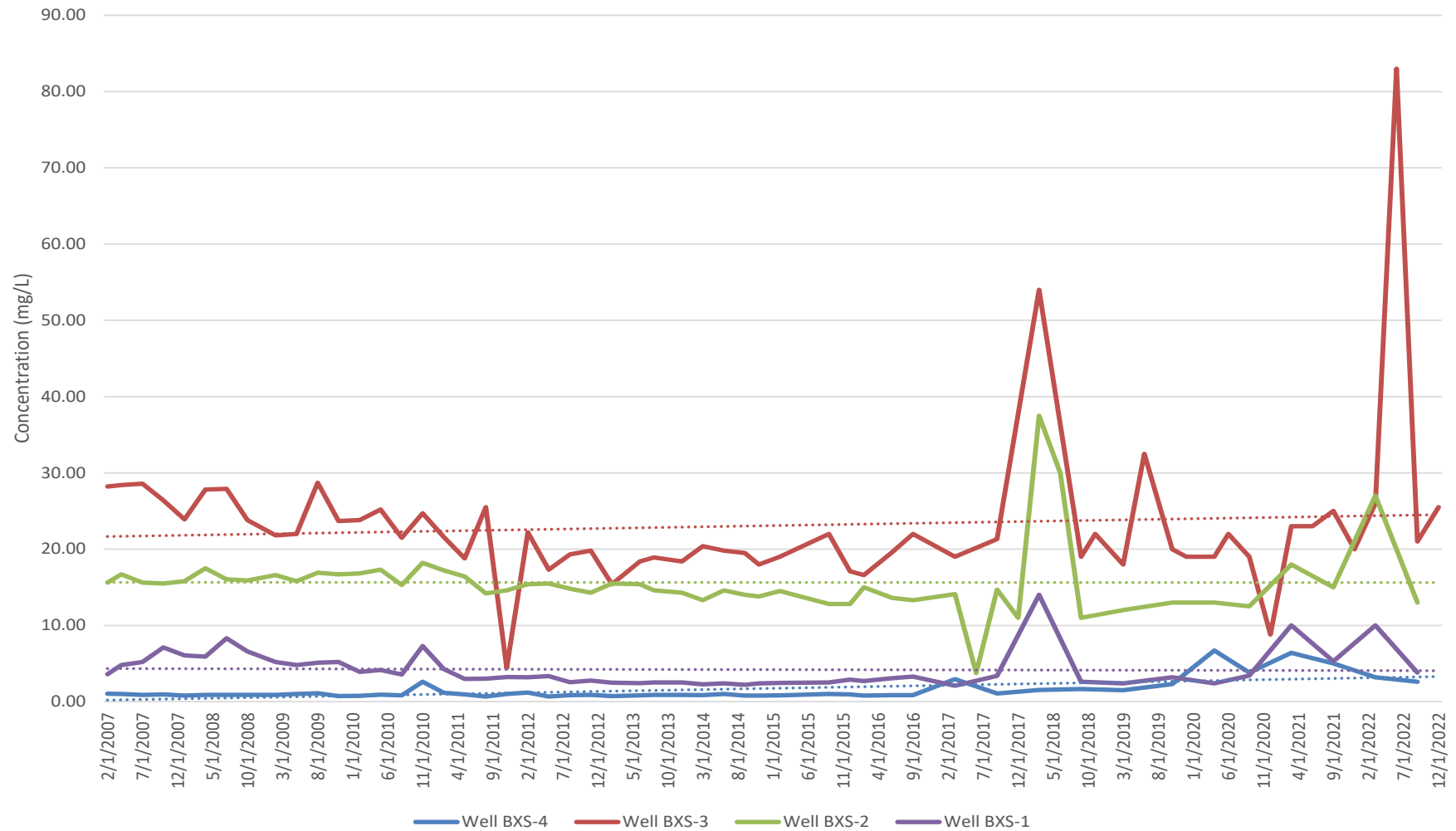


Figure 16  
Total Organic Carbon Trend  
South Wells





**FIGURE 17**

**Arsenic Isopleth Map:  
2022**

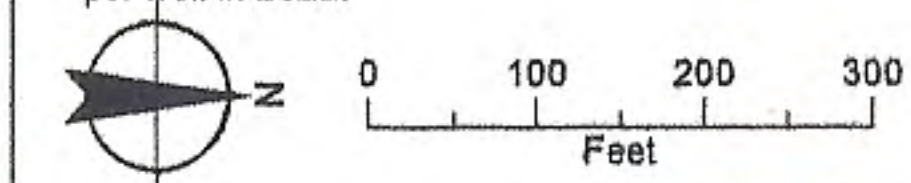
Former J.H. Baxter  
South Woodwaste Landfill  
Arlington, Washington

**LEGEND**

- Monitoring Well  
(Peak 2022 Arsenic Concentration)
- Arsenic Contours  
(dashed where inferred)
- ▨ Modeled Source Area
- Direction of Groundwater Flow

**NOTES:**

1. All elevations exist in NAVD88.
2. J = estimated
3. U = undetected
4. Arsenic contouring estimated using Quick Domenico approximately.
5. Concentrations in µg/L.
6. Data from peak arsenic detections per well in 2022.



Date: April 15, 2023  
Data Sources: AMEC, ESRI, Air photo taken on  
July 15, 2013 by the USDA



Appendix A

2022

Groundwater Monitoring Field Forms

## Woodwaste Landfill Monitoring

Date: 3-11-22 Well ID: BXS-1

Tech: KVGM

Depth to Water: 30.39 Depth to Bottom: 47.90 Well Size: 2"

Purge type: (Low-Flow)/Standard

Well type: Flush mount (Standpipe)

### Sample Analysis:

Flow Rate:

Start time: 1109

[illegible]

All Parameters Stable at: 1136

Total Volume Removed:

Sample time: 113.8

Signature: Bruce Kotan

Date: 3-11-22 Time: 1140

\* - Water quality measured at Horiba U-52 using flow-thru cell  
BXS-1 equipped w/ dedicated tubing & ss. Hummer Pro Pump/ Controller

16.0 v  $\phi$  pump

## Woodwaste Landfill Monitoring

Date: 3-11-22

Well ID: BX5-2

Tech: Kvam

Depth to Water: 28.33

Depth to Bottom:

45.40

Well Size: 2"

Purge type: Low-Flow/Standard

Well type: Flush mount/Standpipe

**Sample Analysis:**

Flow Rate:

Start time: 12:00

[illegible]

All Parameters Stable at: 123

**Total Volume Removed:**

Sample time: 1232

Signature:

Bruce Kraan

Date: 3-11-22

Time: 12.34

\* Water quality measured at Horiba U-52 using flow-thru cell

10.1 V to pump

## Woodwaste Landfill Monitoring

Date: 3-11-22 Well ID: BXS-3

Tech: KVM

Depth to Water: 23.45 Depth to Bottom: 44.15 Well Size: 2"

Purge type: (Low-Flow)/Standard

Well type: Flush mount/Standpipe

### Sample Analysis:

Flow Rate:

Start time: 1304

[illegible]

All Parameters Stable at: 1325

Total Volume Removed:

Sample time: 1327

Signature:

Date: 3-11-22

Time: 1329

\* - water quality measured w/ Hanna U-52 using flow thru cell  
BX5-163 samples collected = 1335

10.5 V to pump

## Woodwaste Landfill Monitoring

Date: 3-11-22

Well ID: BXS-4

Tech: Kvam

Depth to Water: 10.56

Depth to Bottom:

47.40

Well Size: 2"

Purge type: Low-Flow/Standard

Well type: Flush mount/Standpipe

### Sample Analysis:

Flow Rate:

Start time: 2948

[illegible]

All Parameters Stable at: 103

Total Volume Removed:

Sample time: 1032

Signature: Bruce Kra

Date: 3-11-22 Time: 1034

\* Water quality measured at Florida V-52 using flow-thru cell

13.9 V  $\approx$  power

## Woodwaste Landfill Monitoring

Date: 6/30/22 Well ID: BXS-3 Tech: Khan

Depth to Water: 24.25 Depth to Bottom: 44.15 Well Size: 2"

Purge type: Low-Flow/Standard

Well type: Flush mount/Standpipe

### Sample Analysis:

Flow Rate:

Start time: 12:39

[illegible]

All Parameters Stable at: 12.04

**Total Volume Removed:**

Sample time: 1163

Signature: Bruno Kwan Date: 6-30-22 Time: 1307

\* Water quality measured w/ YSI Pro-DSS using flow-time cell

## Woodwaste Landfill Monitoring

Date: 9-21-22 Well ID: BXS-1 Tech: Kvam

Depth to Water: 33.87 Depth to Bottom: 47.90 Well Size: 2<sup>h</sup>

Purge type: Low-Flow/Standard Well type: Flush mount/Standpipe

### Sample Analysis:

Flow Rate:

Start time: 1117

[illegible]

All Parameters Stable at: 1138

Total Volume Removed: 8.40 gallons

Sample time: 1139

Signature: Bruce Kwan

Date: 9-21-22 Time: 1141

\* using YSI 536 MPS w/ flow-thru cell

W. J. H. J.

Tech: Kyam

Purge type: Low-Flow/Standard

Well type: Flush mount/Standpipe (damaged)

Flow Rate:

Start time: 12:49

[illegible]

All Parameters Stable at: 1230

Total Volume Removed: 7.0 gallons

Sample time: 1231

Signature:

Bruce Kraan

Date: 9-21-22

Time: 1233

Standpipe knocked sideways - can not snake water level cable past bend in pipe,  $\therefore$  no water elevation measured.

\* using YSI 556 w/ flow-thru cell

## Woodwaste Landfill Monitoring

Date: 9-21-22 Well ID: BXS-3

Tech: *Kvam*

Depth to Water: 27.68 Depth to Bottom: 44.15 Well Size: 2"

Purge type: Low-Flow/Standard

Well type: Flush mount/Standpipe

**Sample Analysis:**

Flow Rate:

Start time: 1258

[illegible]

All Parameters Stable at: 1314

Total Volume Removed: ~~8.6~~ 9.1 gallons

Sample time: 1315

Signature: Bruce Kogan

Date: 9-21-22 Time: 1322

BXS-103 samples collected & 1320  
 same without 5 BXS-3 TOC sample  
 & using YSI 556 w/ flow-thru cell

## Woodwaste Landfill Monitoring

Date: 9-21-22 Well ID: BXS-4

Tech: Kvam

Depth to Water: 13.50 Depth to Bottom: 47.40 Well Size: 2"

Purge type: Low-Flow/Standard Well type: Flush mount/Standpipe

### Sample Analysis:

Flow Rate:

Start time: 0957

[illegible]

All Parameters Stable at: 1623

Total Volume Removed: 245 gallons

Sample time: 1024

Signature: Brian Krause

Date: 9-21-22 Time: 1026

\* using YSI 556 w/flow-thru cell

## Woodwaste Landfill Monitoring

Date: 12-19-22 Well ID: BXS-3

Tech: Kyan

Depth to Water: 29.68' Depth to Bottom: 44.15' Well Size: 2"

Purge type: Low-Flow/Standard

Well type: Flush mount/Standpipe

**Sample Analysis:**

Flow Rate:

Start time: 1258

[illegible]

All Parameters Stable at: 13/5

Total Volume Removed: 5.15

Sample time: 1316

Signature: Bruce Kwan

Date: 12-19-22 Time: 1328

BVS-103 Sample collected at 1326

sampled - 1 submersible pump (Monsoon in)

4 - At time of sampling, groundwater has no obvious turbidity or color.

\* Using YSI 556 w/ flow-through cell

Appendix C  
2022  
Statistical Analysis  
of Groundwater Data

**Table C-1. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Ammonia**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\bar{x} - m_0$$

Critical Statistic:

$$t_c = 2.447$$

$$v=6$$

$$t_c = 2.571$$

$$v=5$$

$$t_c = 2.776$$

$$v=4$$

$$t_c = 3.182$$

$$v=3$$

$$t_c = 4.303$$

$$v=2$$

$$t_c = 12.706$$

$$v=1$$

| BXS-4 (Upgradient Well) |                                    |                       |                                         |                                   |
|-------------------------|------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Ammonia Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 0.55                               | --                    | --                                      | --                                |
| 2/23/2015               | 0.54                               | --                    | --                                      | --                                |
| 9/14/2015               | 0.54                               | --                    | --                                      | --                                |
| 12/7/2015               | 0.51                               | 4                     | 0.53                                    | 0.00028                           |
| 2/29/2016               | 0.45                               | 4                     | 0.51                                    | 0.00161                           |
| 6/16/2016               | 0.53                               | 4                     | 0.51                                    | 0.00152                           |
| 9/26/2016               | 0.52                               | 4                     | 0.50                                    | 0.00128                           |
| 3/8/2017                | 0.03                               | 4                     | 0.38                                    | 0.05767                           |
| 6/10/2017               | --                                 | 3                     | 0.36                                    | 0.08336                           |
| 9/16/2017               | 0.54                               | 3                     | 0.36                                    | 0.08511                           |
| 12/14/2017              | --                                 | 2                     | 0.28                                    | 0.13261                           |
| 3/17/2018               | 0.515                              | 2                     | 0.53                                    | 0.00031                           |
| 6/16/2018               | --                                 | 2                     | 0.53                                    | 0.00031                           |
| 9/29/2018               | 2.18                               | 2                     | 1.35                                    | 1.38611                           |
| 11/17/2018              | --                                 | 2                     | 1.35                                    | 1.38611                           |
| 3/16/2019               | 1.16                               | 2                     | 1.67                                    | 0.52020                           |
| 6/1/2019                | --                                 | 2                     | 1.67                                    | 0.52020                           |
| 10/12/2019              | 1.26                               | 2                     | 1.21                                    | 0.00500                           |
| 12/22/2019              | --                                 | 2                     | 1.21                                    | 0.00500                           |
| 4/1/2020                | 3.29                               | 2                     | 2.28                                    | 2.06045                           |
| 6/26/2020               | --                                 | 2                     | 2.28                                    | 2.06045                           |
| 9/22/2020               | 6.36                               | 2                     | 4.83                                    | 4.71245                           |
| 12/29/2020              | --                                 | 2                     | 4.83                                    | 4.71245                           |
| 3/11/2021               | 3.76                               | 2                     | 5.06                                    | 3.38000                           |
| 6/16/2021               | --                                 | 2                     | 5.06                                    | 3.38000                           |
| 9/30/2021               | 4.58                               | 2                     | 4.17                                    | 0.33620                           |
| 12/23/2021              | --                                 | 2                     | 4.17                                    | 0.33620                           |
| 3/11/2022               | 1.83                               | 2                     | 3.21                                    | 3.78125                           |
| 6/30/2022               | --                                 | 2                     | 3.21                                    | 3.78125                           |
| 9/21/2022               | 0.16                               | 2                     | 1.00                                    | 1.39445                           |
| 12/19/2022              | --                                 | 2                     | 1.00                                    | 1.39445                           |

| BXS-3 (Downgradient Well) |                                    |                       |                           |                                   |                               |                                             |
|---------------------------|------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Ammonia Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 1.08                               | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 1.05                               | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 1.00                               | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 1.00                               | 4                     | 1.03                      | 0.002                             | 0.04                          | <b>23.05</b>                                |
| 2/29/2016                 | 1.16                               | 4                     | 1.05                      | 0.006                             | 0.08                          | <b>12.70</b>                                |
| 6/16/2016                 | 1.13                               | 4                     | 1.07                      | 0.007                             | 0.09                          | <b>12.09</b>                                |
| 9/26/2016                 | 0.94                               | 4                     | 1.06                      | 0.011                             | 0.11                          | <b>10.00</b>                                |
| 3/8/2017                  | 0.88                               | 4                     | 1.03                      | 0.019                             | 0.14                          | <b>4.66</b>                                 |
| 6/10/2017                 | --                                 | 3                     | 0.98                      | 0.017                             | 0.13                          | <b>3.42</b>                                 |
| 9/16/2017                 | 0.99                               | 3                     | 0.94                      | 0.003                             | 0.06                          | <b>3.35</b>                                 |
| 12/14/2017                | --                                 | 2                     | 0.94                      | 0.006                             | 0.08                          | 2.48                                        |
| 3/17/2018                 | 0.847                              | 2                     | 0.92                      | 0.010                             | 0.10                          | 5.39                                        |
| 6/16/2018                 | --                                 | 2                     | 0.92                      | 0.010                             | 0.10                          | 5.39                                        |
| 9/29/2018                 | 0.844                              | 2                     | 0.85                      | 0.000                             | 0.00                          | -0.60                                       |
| 11/17/2018                | 0.824                              | 3                     | 0.84                      | 0.000                             | 0.01                          | -0.61                                       |
| 3/16/2019                 | 1.04                               | 3                     | 0.90                      | 0.014                             | 0.12                          | -1.49                                       |
| 6/1/2019                  | 0.01                               | 4                     | 0.68                      | 0.209                             | 0.46                          | -1.77                                       |
| 10/12/2019                | 0.85                               | 4                     | 0.68                      | 0.209                             | 0.46                          | -2.26                                       |
| 12/22/2019                | 0.81                               | 4                     | 0.68                      | 0.208                             | 0.46                          | -2.28                                       |
| 4/1/2020                  | 0.675                              | 4                     | 0.59                      | 0.153                             | 0.39                          | -1.63                                       |
| 6/26/2020                 | 0.82                               | 4                     | 0.79                      | 0.006                             | 0.08                          | -1.46                                       |
| 9/22/2020                 | 0.57                               | 4                     | 0.72                      | 0.014                             | 0.12                          | -2.67                                       |
| 12/29/2020                | 0.43                               | 4                     | 0.62                      | 0.027                             | 0.16                          | -2.73                                       |
| 3/11/2021                 | 0.66                               | 4                     | 0.62                      | 0.027                             | 0.16                          | -3.41                                       |
| 6/16/2021                 | 0.74                               | 4                     | 0.60                      | 0.018                             | 0.13                          | -3.43                                       |
| 9/30/2021                 | 0.84                               | 4                     | 0.67                      | 0.030                             | 0.17                          | -8.36                                       |
| 12/23/2021                | 0.66                               | 4                     | 0.73                      | 0.007                             | 0.09                          | -8.36                                       |
| 3/11/2022                 | 0.535                              | 4                     | 0.69                      | 0.017                             | 0.13                          | -1.82                                       |
| 6/30/2022                 | 0.63                               | 4                     | 0.67                      | 0.016                             | 0.13                          | -1.84                                       |
| 9/21/2022                 | 0.43                               | 4                     | 0.56                      | 0.011                             | 0.10                          | -0.52                                       |
| 12/19/2022                | 0.825                              | 4                     | 0.61                      | 0.028                             | 0.17                          | -0.46                                       |

**Table C-1. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Ammonia**  
Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                    |                       |                           |                                   |                               |                                             |
|---------------------------|------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Ammonia Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.05                               | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 0.05                               | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 0.05                               | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 0.05                               | 4                     | 0.05                      | 0.000                             | 0.00                          | -57.24                                      |
| 2/29/2016                 | 0.05                               | 4                     | 0.05                      | 0.000                             | 0.00                          | -22.81                                      |
| 6/16/2016                 | 0.05                               | 4                     | 0.05                      | 0.000                             | 0.00                          | -23.39                                      |
| 9/26/2016                 | 0.05                               | 4                     | 0.05                      | 0.000                             | 0.00                          | -25.24                                      |
| 3/8/2017                  | 0.025                              | 4                     | 0.04                      | 0.000                             | 0.01                          | -2.81                                       |
| 6/10/2017                 | 0.025                              | 4                     | 0.04                      | 0.000                             | 0.01                          | -1.92                                       |
| 9/16/2017                 | 0.025                              | 4                     | 0.03                      | 0.000                             | 0.01                          | -1.96                                       |
| 12/14/2017                | 0.0025                             | 4                     | 0.02                      | 0.000                             | 0.01                          | -1.02                                       |
| 3/17/2018                 | 0.0135                             | 4                     | 0.02                      | 0.000                             | 0.01                          | -37.53                                      |
| 6/16/2018                 | 0.01                               | 4                     | 0.01                      | 0.000                             | 0.01                          | -38.56                                      |
| 9/29/2018                 | 0.005                              | 4                     | 0.01                      | 0.000                             | 0.00                          | -1.61                                       |
| 11/17/2018                | --                                 | 3                     | 0.01                      | 0.000                             | 0.00                          | -1.61                                       |
| 3/16/2019                 | 0.01                               | 3                     | 0.01                      | 0.000                             | 0.00                          | -3.26                                       |
| 6/1/2019                  | --                                 | 2                     | 0.01                      | 0.000                             | 0.00                          | -3.26                                       |
| 10/12/2019                | 0.03                               | 2                     | 0.02                      | 0.000                             | 0.01                          | -23.34                                      |
| 12/22/2019                | --                                 | 2                     | 0.02                      | 0.000                             | 0.01                          | -23.34                                      |
| 4/1/2020                  | 0.02                               | 2                     | 0.03                      | 0.000                             | 0.01                          | -2.22                                       |
| 6/26/2020                 | --                                 | 2                     | 0.03                      | 0.000                             | 0.01                          | -2.22                                       |
| 9/22/2020                 | 0.025                              | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.13                                       |
| 12/29/2020                | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.13                                       |
| 3/11/2021                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.87                                       |
| 6/16/2021                 | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.87                                       |
| 9/30/2021                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -10.12                                      |
| 12/23/2021                | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -10.12                                      |
| 3/11/2022                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -2.32                                       |
| 6/30/2022                 | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -2.32                                       |
| 9/21/2022                 | 0.33                               | 2                     | 0.18                      | 0.048                             | 0.22                          | -0.97                                       |
| 12/19/2022                | --                                 | 2                     | 0.18                      | 0.048                             | 0.22                          | -0.97                                       |

| BXS-1 (Downgradient Well) |                                    |                       |                           |                                   |                               |                                             |
|---------------------------|------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Ammonia Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.05                               | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 0.05                               | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 0.041                              | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 0.05                               | 4                     | 0.05                      | 0.000                             | 0.00                          | -55.56                                      |
| 2/29/2016                 | 0.02                               | 4                     | 0.04                      | 0.000                             | 0.01                          | -21.96                                      |
| 6/16/2016                 | 0.05                               | 4                     | 0.04                      | 0.000                             | 0.01                          | -22.45                                      |
| 9/26/2016                 | 0.46                               | 4                     | 0.15                      | 0.044                             | 0.21                          | -3.34                                       |
| 3/8/2017                  | 0.17                               | 4                     | 0.18                      | 0.040                             | 0.20                          | -1.32                                       |
| 6/10/2017                 | --                                 | 3                     | 0.23                      | 0.044                             | 0.21                          | -0.64                                       |
| 9/16/2017                 | 0.025                              | 3                     | 0.22                      | 0.049                             | 0.22                          | -0.68                                       |
| 12/14/2017                | --                                 | 2                     | 0.10                      | 0.011                             | 0.10                          | -0.69                                       |
| 3/17/2018                 | 0.006                              | 2                     | 0.02                      | 0.000                             | 0.01                          | -32.61                                      |
| 6/16/2018                 | --                                 | 2                     | 0.02                      | 0.000                             | 0.01                          | -32.61                                      |
| 9/29/2018                 | 0.005                              | 2                     | 0.01                      | 0.000                             | 0.00                          | -1.61                                       |
| 11/17/2018                | --                                 | 2                     | 0.01                      | 0.000                             | 0.00                          | -1.61                                       |
| 3/16/2019                 | 0.01                               | 2                     | 0.01                      | 0.000                             | 0.00                          | -3.26                                       |
| 6/1/2019                  | --                                 | 2                     | 0.01                      | 0.000                             | 0.00                          | -3.26                                       |
| 10/12/2019                | 0.03                               | 2                     | 0.02                      | 0.000                             | 0.01                          | -23.34                                      |
| 12/22/2019                | --                                 | 2                     | 0.02                      | 0.000                             | 0.01                          | -23.34                                      |
| 4/1/2020                  | 0.02                               | 2                     | 0.03                      | 0.000                             | 0.01                          | -2.22                                       |
| 6/26/2020                 | --                                 | 2                     | 0.03                      | 0.000                             | 0.01                          | -2.22                                       |
| 9/22/2020                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.13                                       |
| 12/29/2020                | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.13                                       |
| 3/11/2021                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.88                                       |
| 6/16/2021                 | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -3.88                                       |
| 9/30/2021                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -10.12                                      |
| 12/23/2021                | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -10.12                                      |
| 3/11/2022                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -2.32                                       |
| 6/30/2022                 | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -2.32                                       |
| 9/21/2022                 | 0.02                               | 2                     | 0.02                      | 0.000                             | 0.00                          | -1.17                                       |
| 12/19/2022                | --                                 | 2                     | 0.02                      | 0.000                             | 0.00                          | -1.17                                       |

**Notes**  
x = average concentration for downgradient well. m<sub>u</sub> = average concentration for upgradient well. n = number of samples.  
s<sup>2</sup> = sample variance in upgradient well. s<sup>2</sup> = sample variance in downgradient well. s = sample standard deviation.  
t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference  
<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or *gray* is a statistically valid detection (Student's T-Test).

**Table C-2. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Total Organic Carbon (TOC)**

Former J.H. Baxter South Woodwaste Landfill, Arlington, Washington

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:  $t_c = 2.447$   $\nu = 6$

$t_c = 2.571$   $\nu = 5$

$t_c = 2.776$   $\nu = 4$

$t_c = 3.182$   $\nu = 3$

$t_c = 4.303$   $\nu = 2$

$t_c = 12.706$   $\nu = 1$

| BXS-4 (Upgradient Well) |                                |                       |                                         |                                   |
|-------------------------|--------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | TOC Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 0.78                           | --                    | --                                      | --                                |
| 2/23/2015               | 0.81                           | --                    | --                                      | --                                |
| 9/14/2015               | 1.00                           | --                    | --                                      | --                                |
| 12/7/2015               | 0.94                           | 4                     | 0.88                                    | 0.01096                           |
| 2/29/2016               | 0.79                           | 4                     | 0.89                                    | 0.01030                           |
| 6/16/2016               | 0.85                           | 4                     | 0.90                                    | 0.00870                           |
| 9/26/2016               | 0.86                           | 4                     | 0.86                                    | 0.00380                           |
| 3/8/2017                | 2.96                           | 4                     | 1.37                                    | 1.13163                           |
| 6/10/2017               | --                             | 3                     | 1.56                                    | 1.47703                           |
| 9/16/2017               | 1.06                           | 3                     | 1.63                                    | 1.34333                           |
| 12/14/2017              | --                             | 2                     | 2.01                                    | 1.80500                           |
| 3/17/2018               | 1.53                           | 2                     | 1.30                                    | 0.11045                           |
| 6/16/2018               | --                             | 2                     | 1.30                                    | 0.11045                           |
| 9/29/2018               | 1.66                           | 2                     | 1.60                                    | 0.00845                           |
| 11/17/2018              | --                             | 2                     | 1.60                                    | 0.00845                           |
| 3/16/2019               | 1.5                            | 2                     | 1.58                                    | 0.01280                           |
| 6/1/2019                | --                             | 2                     | 1.58                                    | 0.01280                           |
| 10/12/2019              | 2.3                            | 2                     | 1.90                                    | 0.32000                           |
| 12/22/2019              | --                             | 2                     | 1.90                                    | 0.32000                           |
| 4/1/2020                | 6.70                           | 2                     | 4.50                                    | 9.68000                           |
| 6/26/2020               | --                             | 2                     | 4.50                                    | 9.68000                           |
| 9/22/2020               | 3.80                           | 2                     | 5.25                                    | 4.20500                           |
| 12/29/2020              | --                             | 2                     | 5.25                                    | 4.20500                           |
| 3/11/2021               | 6.40                           | 2                     | 5.10                                    | 3.38000                           |
| 6/16/2021               | --                             | 2                     | 5.10                                    | 3.38000                           |
| 9/30/2021               | 5.00                           | 2                     | 5.70                                    | 0.98000                           |
| 12/23/2021              | --                             | 2                     | 5.70                                    | 0.98000                           |
| 3/11/2022               | 3.20                           | 2                     | 4.10                                    | 1.62000                           |
| 6/30/2022               | --                             | 2                     | 4.10                                    | 1.62000                           |
| 9/21/2022               | 2.60                           | 2                     | 2.90                                    | 0.18000                           |
| 12/19/2022              | --                             | 2                     | 2.90                                    | 0.18000                           |

| BXS-3 (Downgradient Well) |                                |                       |                            |                                   |                               |                                             |
|---------------------------|--------------------------------|-----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | TOC Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x̄) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 18.00                          | --                    | --                         | --                                | --                            | --                                          |
| 2/23/2015                 | 19.00                          | --                    | --                         | --                                | --                            | --                                          |
| 9/14/2015                 | 21.50                          | --                    | --                         | --                                | --                            | --                                          |
| 12/7/2015                 | 17.10                          | 4                     | 18.90                      | 3.607                             | 1.90                          | <b>18.95</b>                                |
| 2/29/2016                 | 16.6                           | 4                     | 18.55                      | 4.937                             | 2.22                          | <b>15.88</b>                                |
| 6/16/2016                 | 19.6                           | 4                     | 18.70                      | 5.207                             | 2.28                          | <b>15.59</b>                                |
| 9/26/2016                 | 22.00                          | 4                     | 18.83                      | 6.202                             | 2.49                          | <b>14.42</b>                                |
| 3/8/2017                  | 19.00                          | 4                     | 19.30                      | 4.920                             | 2.22                          | <b>14.58</b>                                |
| 6/10/2017                 | --                             | 3                     | 20.20                      | 2.520                             | 1.59                          | <b>16.15</b>                                |
| 9/16/2017                 | 21.30                          | 3                     | 20.77                      | 2.463                             | 1.57                          | <b>16.99</b>                                |
| 12/14/2017                | --                             | 2                     | 20.15                      | 2.645                             | 1.63                          | <b>12.16</b>                                |
| 3/17/2018                 | 54                             | 2                     | 37.65                      | 534.645                           | 23.12                         | 2.22                                        |
| 6/16/2018                 | --                             | 2                     | 37.65                      | 534.645                           | 23.12                         | 2.22                                        |
| 9/29/2018                 | 19                             | 2                     | 36.50                      | 612.500                           | 24.75                         | 1.99                                        |
| 11/17/2018                | 22.00                          | 3                     | 31.67                      | 376.333                           | 19.40                         | 2.68                                        |
| 3/16/2019                 | 18                             | 3                     | 19.67                      | 4.333                             | 2.08                          | <b>15.02</b>                                |
| 6/1/2019                  | 45                             | 4                     | 26.00                      | 163.333                           | 12.78                         | <b>3.82</b>                                 |
| 10/12/2019                | 20                             | 4                     | 26.25                      | 158.917                           | 12.61                         | <b>3.86</b>                                 |
| 12/22/2019                | 19.00                          | 4                     | 25.50                      | 169.667                           | 13.03                         | <b>3.62</b>                                 |
| 4/1/2020                  | 19.00                          | 4                     | 25.75                      | 164.917                           | 12.84                         | <b>3.13</b>                                 |
| 6/26/2020                 | 22.00                          | 4                     | 20.00                      | 2.000                             | 1.41                          | <b>6.71</b>                                 |
| 9/22/2020                 | 19.00                          | 4                     | 19.75                      | 2.250                             | 1.50                          | <b>8.88</b>                                 |
| 12/29/2020                | 8.80                           | 4                     | 17.20                      | 33.360                            | 5.78                          | <b>3.70</b>                                 |
| 3/11/2021                 | 23.00                          | 4                     | 18.20                      | 42.160                            | 6.49                          | <b>3.75</b>                                 |
| 6/16/2021                 | 23.00                          | 4                     | 18.45                      | 44.943                            | 6.70                          | <b>3.71</b>                                 |
| 9/30/2021                 | 25.00                          | 4                     | 19.95                      | 56.143                            | 7.49                          | <b>3.74</b>                                 |
| 12/23/2021                | 20.00                          | 4                     | 22.75                      | 4.250                             | 2.06                          | <b>13.68</b>                                |
| 3/11/2022                 | 26.00                          | 4                     | 23.50                      | 7.000                             | 2.65                          | <b>12.13</b>                                |
| 6/30/2022                 | 83.00                          | 4                     | 38.50                      | 887.000                           | 29.78                         | 2.31                                        |
| 9/21/2022                 | 21.00                          | 4                     | 37.50                      | 927.000                           | 30.45                         | 2.27                                        |
| 12/19/2022                | 25.50                          | 4                     | 38.88                      | 870.396                           | 29.50                         | 2.44                                        |

**Table C-2. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Total Organic Carbon (TOC)**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | TOC Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 13.80                          | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 14.50                          | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 12.80                          | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 12.80                          | 4                     | 13.48                               | 0.689                     | 0.83                          | <b>30.10</b>                                |
| 2/29/2016                 | 15                             | 4                     | 13.78                               | 1.309                     | 1.14                          | <b>22.44</b>                                |
| 6/16/2016                 | 13.6                           | 4                     | 13.55                               | 1.077                     | 1.04                          | <b>24.29</b>                                |
| 9/26/2016                 | 13.30                          | 4                     | 13.68                               | 0.889                     | 0.94                          | <b>27.12</b>                                |
| 3/8/2017                  | 14.10                          | 4                     | 14.00                               | 0.553                     | 0.74                          | <b>19.47</b>                                |
| 6/10/2017                 | 3.75                           | 4                     | 11.19                               | 24.694                    | 4.97                          | <b>3.73</b>                                 |
| 9/16/2017                 | 14.70                          | 4                     | 11.46                               | 26.766                    | 5.17                          | <b>3.68</b>                                 |
| 12/14/2017                | 11.00                          | 4                     | 10.89                               | 25.271                    | 5.03                          | <b>3.30</b>                                 |
| 3/17/2018                 | 37.50                          | 4                     | 16.74                               | 212.276                   | 14.57                         | 2.12                                        |
| 6/16/2018                 | 30.00                          | 4                     | 23.30                               | 157.260                   | 12.54                         | <b>3.51</b>                                 |
| 9/29/2018                 | 11.00                          | 4                     | 22.38                               | 181.896                   | 13.49                         | <b>3.08</b>                                 |
| 11/17/2018                | --                             | 3                     | 26.17                               | 186.583                   | 13.66                         | 3.12                                        |
| 3/16/2019                 | 12.00                          | 3                     | 17.67                               | 114.333                   | 10.69                         | 2.61                                        |
| 6/1/2019                  | --                             | 2                     | 11.50                               | 0.500                     | 0.71                          | <b>19.59</b>                                |
| 10/12/2019                | 13.00                          | 2                     | 12.50                               | 0.500                     | 0.71                          | <b>16.55</b>                                |
| 12/22/2019                | --                             | 2                     | 12.50                               | 0.500                     | 0.71                          | <b>16.55</b>                                |
| 4/1/2020                  | 13.00                          | 2                     | 13.00                               | 0.000                     | 0.00                          | 3.86                                        |
| 6/26/2020                 | --                             | 2                     | 13.00                               | 0.000                     | 0.00                          | <b>3.86</b>                                 |
| 9/22/2020                 | 12.50                          | 2                     | 12.75                               | 0.125                     | 0.35                          | <b>5.10</b>                                 |
| 12/29/2020                | --                             | 2                     | 12.75                               | 0.125                     | 0.35                          | <b>5.10</b>                                 |
| 3/11/2021                 | 18.00                          | 2                     | 15.25                               | 15.125                    | 3.89                          | <b>3.34</b>                                 |
| 6/16/2021                 | --                             | 2                     | 15.25                               | 15.125                    | 3.89                          | <b>3.34</b>                                 |
| 9/30/2021                 | 15.00                          | 2                     | 16.50                               | 4.500                     | 2.12                          | <b>6.52</b>                                 |
| 12/23/2021                | --                             | 2                     | 16.50                               | 4.500                     | 2.12                          | <b>6.52</b>                                 |
| 3/11/2022                 | 27.00                          | 2                     | 21.00                               | 72.000                    | 8.49                          | 2.79                                        |
| 6/30/2022                 | --                             | 2                     | 21.00                               | 72.000                    | 8.49                          | 2.79                                        |
| 9/21/2022                 | 13.00                          | 2                     | 20.00                               | 98.000                    | 9.90                          | 2.44                                        |
| 12/19/2022                | --                             | 2                     | 20.00                               | 98.000                    | 9.90                          | 2.44                                        |

| BXS-1 (Downgradient Well) |                                |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | TOC Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 2.45                           | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 2.47                           | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 2.45                           | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 3.00                           | 4                     | 2.59                                | 0.074                     | 0.27                          | <b>11.74</b>                                |
| 2/29/2016                 | 2.65                           | 4                     | 2.64                                | 0.065                     | 0.25                          | <b>12.82</b>                                |
| 6/16/2016                 | 3.07                           | 4                     | 2.79                                | 0.086                     | 0.29                          | <b>12.34</b>                                |
| 9/26/2016                 | 3.31                           | 4                     | 3.01                                | 0.074                     | 0.27                          | <b>15.36</b>                                |
| 3/8/2017                  | 2.10                           | 4                     | 2.78                                | 0.281                     | 0.53                          | 2.38                                        |
| 6/10/2017                 | --                             | 3                     | 2.83                                | 0.410                     | 0.64                          | 1.60                                        |
| 9/16/2017                 | 3.38                           | 3                     | 2.93                                | 0.518                     | 0.72                          | 1.65                                        |
| 12/14/2017                | --                             | 2                     | 2.74                                | 0.819                     | 0.91                          | 0.64                                        |
| 3/17/2018                 | 14                             | 2                     | 8.69                                | 56.392                    | 7.51                          | 1.39                                        |
| 6/16/2018                 | --                             | 2                     | 8.69                                | 56.392                    | 7.51                          | 1.39                                        |
| 9/29/2018                 | 2.6                            | 2                     | 8.30                                | 64.980                    | 8.06                          | 1.18                                        |
| 11/17/2018                | --                             | 2                     | 8.30                                | 64.980                    | 8.06                          | 1.18                                        |
| 3/16/2019                 | 2.4                            | 2                     | 2.50                                | 0.020                     | 0.14                          | <b>7.18</b>                                 |
| 6/1/2019                  | --                             | 2                     | 2.50                                | 0.020                     | 0.14                          | <b>7.18</b>                                 |
| 10/12/2019                | 3.2                            | 2                     | 2.80                                | 0.320                     | 0.57                          | 1.59                                        |
| 12/22/2019                | --                             | 2                     | 2.80                                | 0.320                     | 0.57                          | 1.59                                        |
| 4/1/2020                  | 2.4                            | 2                     | 2.80                                | 0.320                     | 0.57                          | -0.76                                       |
| 6/26/2020                 | --                             | 2                     | 2.80                                | 0.320                     | 0.57                          | -0.76                                       |
| 9/22/2020                 | 3.4                            | 2                     | 2.90                                | 0.500                     | 0.71                          | -1.53                                       |
| 12/29/2020                | --                             | 2                     | 2.90                                | 0.500                     | 0.71                          | -1.53                                       |
| 3/11/2021                 | 10                             | 2                     | 6.70                                | 21.780                    | 4.67                          | 0.45                                        |
| 6/16/2021                 | --                             | 2                     | 6.70                                | 21.780                    | 4.67                          | 0.45                                        |
| 9/30/2021                 | 5.3                            | 2                     | 7.65                                | 11.045                    | 3.32                          | 0.80                                        |
| 12/23/2021                | --                             | 2                     | 7.65                                | 11.045                    | 3.32                          | 0.80                                        |
| 3/11/2022                 | 10                             | 2                     | 7.65                                | 11.045                    | 3.32                          | 1.41                                        |
| 6/30/2022                 | --                             | 2                     | 7.65                                | 11.045                    | 3.32                          | 1.41                                        |
| 9/21/2022                 | 3.8                            | 2                     | 6.90                                | 19.220                    | 4.38                          | 1.28                                        |
| 12/19/2022                | --                             | 2                     | 6.90                                | 19.220                    | 4.38                          | 1.28                                        |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or gray is a statistically valid detection (Student's T-Test).

**Table C-3. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Chemical Oxygen Demand (COD)**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:  $t_c = 2.447$   $\nu = 6$

$t_c = 2.571$   $\nu = 5$

$t_c = 2.776$   $\nu = 4$

$t_c = 3.182$   $\nu = 3$

$t_c = 4.303$   $\nu = 2$

$t_c = 12.706$   $\nu = 1$

| BXS-4 (Upgradient Well) |                                |                       |                                         |                                   |
|-------------------------|--------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | COD Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 2.5                            | --                    | --                                      | --                                |
| 2/23/2015               | 2.5                            | --                    | --                                      | --                                |
| 9/14/2015               | 2.5                            | --                    | --                                      | --                                |
| 12/7/2015               | 2.5                            | 4                     | 2.50                                    | 0.00000                           |
| 2/29/2016               | 5                              | 4                     | 3.13                                    | 1.56250                           |
| 6/16/2016               | 4.8                            | 4                     | 3.70                                    | 1.92667                           |
| 9/26/2016               | 5.7                            | 4                     | 4.50                                    | 1.92667                           |
| 3/8/2017                | 9.7                            | 4                     | 6.30                                    | 5.28667                           |
| 6/10/2017               | --                             | 3                     | 6.73                                    | 6.80333                           |
| 9/16/2017               | 3.6                            | 3                     | 6.33                                    | 9.60333                           |
| 12/14/2017              | --                             | 2                     | 6.65                                    | 18.60500                          |
| 3/17/2018               | 11.4                           | 2                     | 7.50                                    | 30.42000                          |
| 6/16/2018               | --                             | 2                     | 7.50                                    | 30.42000                          |
| 9/29/2018               | 41.6                           | 2                     | 26.50                                   | 456.02000                         |
| 11/17/2018              | --                             | 2                     | 26.50                                   | 456.02000                         |
| 3/16/2019               | 10                             | 2                     | 25.80                                   | 499.28000                         |
| 6/1/2019                | --                             | 2                     | 25.80                                   | 499.28000                         |
| 10/12/2019              | 12                             | 2                     | 11.00                                   | 2.00000                           |
| 12/22/2019              | --                             | 2                     | 11.00                                   | 2.00000                           |
| 4/1/2020                | 66.0                           | 2                     | 39.00                                   | 1458.00000                        |
| 6/26/2020               | --                             | 2                     | 39.00                                   | 1458.00000                        |
| 9/22/2020               | 71.0                           | 2                     | 68.50                                   | 12.50000                          |
| 12/29/2020              | --                             | 2                     | 68.50                                   | 12.50000                          |
| 3/11/2021               | 40.0                           | 2                     | 55.50                                   | 480.50000                         |
| 6/16/2021               | --                             | 2                     | 55.50                                   | 480.50000                         |
| 9/30/2021               | 10.0                           | 2                     | 25.00                                   | 450.00000                         |
| 12/23/2021              | --                             | 2                     | 25.00                                   | 450.00000                         |
| 3/11/2022               | 5.0                            | 2                     | 7.50                                    | 12.50000                          |
| 6/30/2022               | --                             | 2                     | 7.50                                    | 12.50000                          |
| 9/21/2022               | 5.0                            | 2                     | 5.00                                    | 0.00000                           |
| 12/19/2022              | --                             | 2                     | 5.00                                    | 0.00000                           |

| BXS-3 (Downgradient Well) |                                |                       |                            |                                   |                               |                                             |
|---------------------------|--------------------------------|-----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | COD Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x̄) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 65.2                           | --                    | --                         | --                                | --                            | --                                          |
| 2/23/2015                 | 69.3                           | --                    | --                         | --                                | --                            | --                                          |
| 9/14/2015                 | 81.9                           | --                    | --                         | --                                | --                            | --                                          |
| 12/7/2015                 | 72.6                           | 4                     | 72.25                      | 50.550                            | 7.11                          | <b>19.62</b>                                |
| 2/29/2016                 | 65.7                           | 4                     | 72.38                      | 48.263                            | 6.95                          | <b>19.62</b>                                |
| 6/16/2016                 | 76.1                           | 4                     | 74.08                      | 45.883                            | 6.77                          | <b>20.36</b>                                |
| 9/26/2016                 | 85.4                           | 4                     | 74.95                      | 67.203                            | 8.20                          | <b>16.95</b>                                |
| 3/8/2017                  | 71.1                           | 4                     | 74.58                      | 70.116                            | 8.37                          | <b>15.73</b>                                |
| 6/10/2017                 | --                             | 3                     | 77.53                      | 52.663                            | 7.26                          | <b>15.90</b>                                |
| 9/16/2017                 | 70.0                           | 3                     | 75.50                      | 73.810                            | 8.59                          | <b>13.12</b>                                |
| 12/14/2017                | --                             | 2                     | 70.55                      | 0.605                             | 0.78                          | <b>20.62</b>                                |
| 3/17/2018                 | 40                             | 2                     | 55.00                      | 450.000                           | 21.21                         | 3.06                                        |
| 6/16/2018                 | --                             | 2                     | 55.00                      | 450.000                           | 21.21                         | 3.06                                        |
| 9/29/2018                 | 55.5                           | 2                     | 47.75                      | 120.125                           | 10.96                         | 1.25                                        |
| 11/17/2018                | 54.0                           | 3                     | 49.83                      | 73.083                            | 8.55                          | 1.47                                        |
| 3/16/2019                 | 37                             | 3                     | 48.83                      | 105.583                           | 10.28                         | 1.36                                        |
| 6/1/2019                  | 50                             | 4                     | 49.13                      | 70.729                            | 8.41                          | 1.43                                        |
| 10/12/2019                | 60                             | 4                     | 50.25                      | 94.917                            | 9.74                          | <b>7.89</b>                                 |
| 12/22/2019                | 40.0                           | 4                     | 46.75                      | 108.917                           | 10.44                         | <b>6.73</b>                                 |
| 4/1/2020                  | 61.5                           | 4                     | 52.88                      | 99.729                            | 9.99                          | 0.51                                        |
| 6/26/2020                 | 74.0                           | 4                     | 58.88                      | 197.729                           | 14.06                         | 0.71                                        |
| 9/22/2020                 | 35.0                           | 4                     | 52.63                      | 335.229                           | 18.31                         | -1.67                                       |
| 12/29/2020                | 42.0                           | 4                     | 53.13                      | 319.396                           | 17.87                         | -1.66                                       |
| 3/11/2021                 | 35.0                           | 4                     | 46.50                      | 347.000                           | 18.63                         | -0.50                                       |
| 6/16/2021                 | 110.0                          | 4                     | 55.50                      | 1331.000                          | 36.48                         | 0.00                                        |
| 9/30/2021                 | 42.0                           | 4                     | 57.25                      | 1247.583                          | 35.32                         | 1.39                                        |
| 12/23/2021                | 42.0                           | 4                     | 57.25                      | 1247.583                          | 35.32                         | 1.39                                        |
| 3/11/2022                 | 49.0                           | 4                     | 60.75                      | 1088.917                          | 33.00                         | <b>3.19</b>                                 |
| 6/30/2022                 | 5.0                            | 4                     | 34.50                      | 397.667                           | 19.94                         | 2.63                                        |
| 9/21/2022                 | 30.5                           | 4                     | 31.63                      | 373.229                           | 19.32                         | 2.76                                        |
| 12/19/2022                | 80.5                           | 4                     | 41.25                      | 1010.083                          | 31.78                         | 2.28                                        |

**Table C-3. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Chemical Oxygen Demand (COD)**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | COD Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 33.9                           | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 36.9                           | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 39.6                           | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 38.2                           | 4                     | 37.15                               | 5.910                     | 2.43                          | <b>28.51</b>                                |
| 2/29/2016                 | 44.1                           | 4                     | 39.70                               | 9.820                     | 3.13                          | <b>21.68</b>                                |
| 6/16/2016                 | 44.9                           | 4                     | 41.70                               | 10.887                    | 3.30                          | <b>21.23</b>                                |
| 9/26/2016                 | 40.6                           | 4                     | 41.95                               | 9.737                     | 3.12                          | <b>21.93</b>                                |
| 3/8/2017                  | 34.9                           | 4                     | 41.13                               | 20.709                    | 4.55                          | <b>13.66</b>                                |
| 6/10/2017                 | 4.8                            | 4                     | 31.30                               | 328.887                   | 18.14                         | <b>2.67</b>                                 |
| 9/16/2017                 | 35.0                           | 4                     | 28.83                               | 263.629                   | 16.24                         | <b>2.71</b>                                 |
| 12/14/2017                | 14.0                           | 4                     | 22.18                               | 231.709                   | 15.22                         | 1.89                                        |
| 3/17/2018                 | 19.0                           | 4                     | 18.20                               | 160.027                   | 12.65                         | 1.44                                        |
| 6/16/2018                 | 27.0                           | 4                     | 23.75                               | 84.917                    | 9.22                          | 2.69                                        |
| 9/29/2018                 | 38.0                           | 4                     | 24.50                               | 109.667                   | 10.47                         | -0.13                                       |
| 11/17/2018                | --                             | 3                     | 28.00                               | 91.000                    | 9.54                          | 0.09                                        |
| 3/16/2019                 | 12.0                           | 3                     | 25.67                               | 170.333                   | 13.05                         | -0.01                                       |
| 6/1/2019                  | --                             | 2                     | 25.00                               | 338.000                   | 18.38                         | -0.04                                       |
| 10/12/2019                | 38.0                           | 2                     | 25.00                               | 338.000                   | 18.38                         | 1.07                                        |
| 12/22/2019                | --                             | 2                     | 25.00                               | 338.000                   | 18.38                         | 1.07                                        |
| 4/1/2020                  | 29.0                           | 2                     | 33.50                               | 40.500                    | 6.36                          | -0.20                                       |
| 6/26/2020                 | --                             | 2                     | 33.50                               | 40.500                    | 6.36                          | -0.20                                       |
| 9/22/2020                 | 16.5                           | 2                     | 22.75                               | 78.125                    | 8.84                          | -6.80                                       |
| 12/29/2020                | --                             | 2                     | 22.75                               | 78.125                    | 8.84                          | -6.80                                       |
| 3/11/2021                 | 18.0                           | 2                     | 17.25                               | 1.125                     | 1.06                          | -2.46                                       |
| 6/16/2021                 | --                             | 2                     | 17.25                               | 1.125                     | 1.06                          | -2.46                                       |
| 9/30/2021                 | 21.0                           | 2                     | 19.50                               | 4.500                     | 2.12                          | -0.36                                       |
| 12/23/2021                | --                             | 2                     | 19.50                               | 4.500                     | 2.12                          | -0.36                                       |
| 3/11/2022                 | 24.0                           | 2                     | 22.50                               | 4.500                     | 2.12                          | <b>5.14</b>                                 |
| 6/30/2022                 | --                             | 2                     | 22.50                               | 4.500                     | 2.12                          | <b>5.14</b>                                 |
| 9/21/2022                 | 18.0                           | 2                     | 21.00                               | 18.000                    | 4.24                          | <b>5.33</b>                                 |
| 12/19/2022                | --                             | 2                     | 21.00                               | 18.000                    | 4.24                          | <b>5.33</b>                                 |

| BXS-1 (Downgradient Well) |                                |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | COD Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 5.6                            | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 6.8                            | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 8.2                            | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 7.3                            | 4                     | 6.98                                | 1.176                     | 1.08                          | <b>8.25</b>                                 |
| 2/29/2016                 | 8.6                            | 4                     | 7.73                                | 0.676                     | 0.82                          | <b>6.15</b>                                 |
| 6/16/2016                 | 12.1                           | 4                     | 9.05                                | 4.430                     | 2.10                          | <b>4.24</b>                                 |
| 9/26/2016                 | 9.9                            | 4                     | 9.48                                | 4.189                     | 2.05                          | <b>4.02</b>                                 |
| 3/8/2017                  | 6.1                            | 4                     | 9.18                                | 6.289                     | 2.51                          | 1.69                                        |
| 6/10/2017                 | --                             | 3                     | 9.37                                | 9.213                     | 3.04                          | 1.14                                        |
| 9/16/2017                 | 8.8                            | 3                     | 8.27                                | 3.823                     | 1.96                          | 0.91                                        |
| 12/14/2017                | --                             | 2                     | 7.45                                | 3.645                     | 1.91                          | 0.24                                        |
| 3/17/2018                 | 5                              | 2                     | 6.90                                | 7.220                     | 2.69                          | -0.14                                       |
| 6/16/2018                 | --                             | 2                     | 6.90                                | 7.220                     | 2.69                          | -0.14                                       |
| 9/29/2018                 | 27                             | 2                     | 16.00                               | 242.000                   | 15.56                         | -0.56                                       |
| 11/17/2018                | --                             | 2                     | 16.00                               | 242.000                   | 15.56                         | -0.56                                       |
| 3/16/2019                 | 5                              | 2                     | 16.00                               | 242.000                   | 15.56                         | -0.51                                       |
| 6/1/2019                  | --                             | 2                     | 16.00                               | 242.000                   | 15.56                         | -0.51                                       |
| 10/12/2019                | 15                             | 2                     | 10.00                               | 50.000                    | 7.07                          | -0.20                                       |
| 12/22/2019                | --                             | 2                     | 10.00                               | 50.000                    | 7.07                          | -0.20                                       |
| 4/1/2020                  | 10                             | 2                     | 12.50                               | 12.500                    | 3.54                          | -0.98                                       |
| 6/26/2020                 | --                             | 2                     | 12.50                               | 12.500                    | 3.54                          | -0.98                                       |
| 9/22/2020                 | 10                             | 2                     | 10.00                               | 0.000                     | 0.00                          | -23.40                                      |
| 12/29/2020                | --                             | 2                     | 10.00                               | 0.000                     | 0.00                          | -23.40                                      |
| 3/11/2021                 | 10                             | 2                     | 10.00                               | 0.000                     | 0.00                          | -2.94                                       |
| 6/16/2021                 | --                             | 2                     | 10.00                               | 0.000                     | 0.00                          | -2.94                                       |
| 9/30/2021                 | 10                             | 2                     | 10.00                               | 0.000                     | 0.00                          | -1.00                                       |
| 12/23/2021                | --                             | 2                     | 10.00                               | 0.000                     | 0.00                          | -1.00                                       |
| 3/11/2022                 | 5                              | 2                     | 7.50                                | 12.500                    | 3.54                          | 0.00                                        |
| 6/30/2022                 | --                             | 2                     | 7.50                                | 12.500                    | 3.54                          | 0.00                                        |
| 9/21/2022                 | 5                              | 2                     | 5.00                                | 0.000                     | 0.00                          | *                                           |
| 12/19/2022                | --                             | 2                     | 5.00                                | 0.000                     | 0.00                          | *                                           |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or gray is a statistically valid detection (Student's T-Test).

**Table C-4. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Field pH**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:

$t_c = 2.447$   $v = 6$

$t_c = 2.571$   $v = 5$

$t_c = 2.776$   $v = 4$

$t_c = 3.182$   $v = 3$

$t_c = 4.303$   $v = 2$

$t_c = 12.706$   $v = 1$

| BXS-4 (Upgradient Well) |                                     |                       |                                         |                                   |
|-------------------------|-------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Field pH Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 7.48                                | --                    | --                                      | --                                |
| 2/23/2015               | 7.28                                | --                    | --                                      | --                                |
| 9/14/2015               | 7.50                                | --                    | --                                      | --                                |
| 12/7/2015               | 7.06                                | 4                     | 7.33                                    | 0.04227                           |
| 2/29/2016               | 6.98                                | 4                     | 7.21                                    | 0.05477                           |
| 6/16/2016               | 7.69                                | 4                     | 7.31                                    | 0.11729                           |
| 9/26/2016               | 6.84                                | 4                     | 7.14                                    | 0.14149                           |
| 3/8/2017                | 7.28                                | 4                     | 7.20                                    | 0.14149                           |
| 6/10/2017               | --                                  | 3                     | 7.27                                    | 0.18070                           |
| 9/16/2017               | 6.97                                | 3                     | 7.03                                    | 0.05110                           |
| 12/14/2017              | --                                  | 2                     | 7.13                                    | 0.04805                           |
| 3/17/2018               | --                                  | 1                     | 6.97                                    | #DIV/0!                           |
| 6/16/2018               | --                                  | 1                     | 6.97                                    | #DIV/0!                           |
| 9/29/2018               | 7.92                                | 1                     | 7.92                                    | #DIV/0!                           |
| 11/17/2018              | --                                  | 1                     | 7.92                                    | #DIV/0!                           |
| 3/16/2019               | 7.29                                | 2                     | 7.61                                    | 0.19845                           |
| 6/1/2019                | --                                  | 2                     | 7.61                                    | 0.19845                           |
| 10/12/2019              | 9.58                                | 2                     | 8.44                                    | 2.62205                           |
| 12/22/2019              | --                                  | 2                     | 8.44                                    | 2.62205                           |
| 4/1/2020                | 7.04                                | 2                     | 8.31                                    | 3.22580                           |
| 6/26/2020               | --                                  | 2                     | 8.31                                    | 3.22580                           |
| 9/22/2020               | 7.15                                | 2                     | 7.10                                    | 0.00605                           |
| 12/29/2020              | --                                  | 2                     | 7.10                                    | 0.00605                           |
| 3/11/2021               | 6.51                                | 2                     | 6.83                                    | 0.20480                           |
| 6/16/2021               | --                                  | 2                     | 6.83                                    | 0.20480                           |
| 9/30/2021               | 6.98                                | 2                     | 6.75                                    | 0.11045                           |
| 12/23/2021              | --                                  | 2                     | 6.75                                    | 0.11045                           |
| 3/11/2022               | 7.44                                | 2                     | 7.21                                    | 0.10580                           |
| 6/30/2022               | --                                  | 2                     | 7.21                                    | 0.10580                           |
| 9/21/2022               | 6.97                                | 2                     | 7.21                                    | 0.11045                           |
| 12/19/2022              | --                                  | 2                     | 7.21                                    | 0.11045                           |

| BXS-3 (Downgradient Well) |                                     |                       |                           |                                   |                               |                                             |
|---------------------------|-------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Field pH Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 5.99                                | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 5.84                                | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 6.26                                | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 6.04                                | 4                     | 6.03                      | 0.030                             | 0.17                          | -9.64                                       |
| 2/29/2016                 | 6.00                                | 4                     | 6.04                      | 0.030                             | 0.17                          | -8.04                                       |
| 6/16/2016                 | 6.49                                | 4                     | 6.20                      | 0.051                             | 0.23                          | -5.41                                       |
| 9/26/2016                 | 6.19                                | 4                     | 6.18                      | 0.049                             | 0.22                          | -4.41                                       |
| 3/8/2017                  | 6.12                                | 4                     | 6.20                      | 0.044                             | 0.21                          | -4.64                                       |
| 6/10/2017                 | --                                  | 3                     | 6.27                      | 0.039                             | 0.20                          | -3.71                                       |
| 9/16/2017                 | 6.18                                | 3                     | 6.16                      | 0.001                             | 0.04                          | -6.55                                       |
| 12/14/2017                | --                                  | 2                     | 6.15                      | 0.002                             | 0.04                          | -6.18                                       |
| 3/17/2018                 | 6.28                                | 2                     | 6.23                      | 0.005                             | 0.07                          | *                                           |
| 6/16/2018                 | --                                  | 2                     | 6.23                      | 0.005                             | 0.07                          | *                                           |
| 9/29/2018                 | 6.13                                | 2                     | 6.21                      | 0.011                             | 0.11                          | *                                           |
| 11/17/2018                | --                                  | 2                     | 6.21                      | 0.011                             | 0.11                          | *                                           |
| 3/16/2019                 | 6.15                                | 2                     | 6.14                      | 0.000                             | 0.01                          | -4.65                                       |
| 6/1/2019                  | --                                  | 2                     | 6.14                      | 0.000                             | 0.01                          | -4.65                                       |
| 10/12/2019                | 8.02                                | 2                     | 7.09                      | 1.748                             | 1.32                          | -0.91                                       |
| 12/22/2019                | 5.73                                | 3                     | 6.63                      | 1.486                             | 1.22                          | -1.34                                       |
| 4/1/2020                  | 6.35                                | 3                     | 6.70                      | 1.403                             | 1.18                          | -1.12                                       |
| 6/26/2020                 | 6.47                                | 4                     | 6.64                      | 0.948                             | 0.97                          | -1.23                                       |
| 9/22/2020                 | 6.03                                | 4                     | 6.15                      | 0.111                             | 0.33                          | -5.41                                       |
| 12/29/2020                | 5.99                                | 4                     | 6.21                      | 0.056                             | 0.24                          | -6.78                                       |
| 3/11/2021                 | 6.14                                | 4                     | 6.16                      | 0.047                             | 0.22                          | -1.99                                       |
| 6/16/2021                 | 6.47                                | 4                     | 6.16                      | 0.047                             | 0.22                          | -1.99                                       |
| 9/30/2021                 | 6.26                                | 4                     | 6.22                      | 0.041                             | 0.20                          | -2.07                                       |
| 12/23/2021                | 5.75                                | 4                     | 6.16                      | 0.091                             | 0.30                          | -2.11                                       |
| 3/11/2022                 | 6.34                                | 4                     | 6.21                      | 0.099                             | 0.32                          | -3.60                                       |
| 6/30/2022                 | 6.14                                | 4                     | 6.12                      | 0.068                             | 0.26                          | -4.11                                       |
| 9/21/2022                 | 6.25                                | 4                     | 6.12                      | 0.068                             | 0.26                          | -4.04                                       |
| 12/19/2022                | 6.26                                | 4                     | 6.25                      | 0.007                             | 0.08                          | -4.01                                       |

**Table C-4. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Field pH**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                     |                       |                           |                                   |                               |                                             |
|---------------------------|-------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Field pH Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 5.88                                | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 5.78                                | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 6.24                                | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 5.94                                | 4                     | 5.96                      | 0.039                             | 0.20                          | -9.60                                       |
| 2/29/2016                 | 5.95                                | 4                     | 5.98                      | 0.037                             | 0.19                          | -8.12                                       |
| 6/16/2016                 | 6.57                                | 4                     | 6.18                      | 0.089                             | 0.30                          | -4.99                                       |
| 9/26/2016                 | 6.10                                | 4                     | 6.14                      | 0.088                             | 0.30                          | -4.19                                       |
| 3/8/2017                  | 6.08                                | 4                     | 6.18                      | 0.074                             | 0.27                          | -4.41                                       |
| 6/10/2017                 | 6.36                                | 4                     | 6.28                      | 0.054                             | 0.23                          | -3.65                                       |
| 9/16/2017                 | 6.12                                | 4                     | 6.17                      | 0.017                             | 0.13                          | -5.92                                       |
| 12/14/2017                | 6.26                                | 4                     | 6.21                      | 0.017                             | 0.13                          | -5.48                                       |
| 3/17/2018                 | --                                  | 3                     | 6.25                      | 0.015                             | 0.12                          | *                                           |
| 6/16/2018                 | 6.15                                | 3                     | 6.18                      | 0.005                             | 0.07                          | *                                           |
| 9/29/2018                 | 6.01                                | 3                     | 6.14                      | 0.016                             | 0.13                          | *                                           |
| 11/17/2018                | --                                  | 3                     | 6.08                      | 0.010                             | 0.10                          | *                                           |
| 3/16/2019                 | 6.16                                | 3                     | 6.11                      | 0.007                             | 0.08                          | -4.70                                       |
| 6/1/2019                  | --                                  | 2                     | 6.09                      | 0.011                             | 0.11                          | -4.69                                       |
| 10/12/2019                | 7.97                                | 2                     | 7.07                      | 1.638                             | 1.28                          | -0.94                                       |
| 12/22/2019                | --                                  | 2                     | 7.07                      | 1.638                             | 1.28                          | -0.94                                       |
| 4/1/2020                  | 6.31                                | 2                     | 7.14                      | 1.378                             | 1.17                          | -0.77                                       |
| 6/26/2020                 | --                                  | 2                     | 7.14                      | 1.378                             | 1.17                          | -0.77                                       |
| 9/22/2020                 | 6.46                                | 2                     | 6.39                      | 0.011                             | 0.11                          | -7.63                                       |
| 12/29/2020                | --                                  | 2                     | 6.39                      | 0.011                             | 0.11                          | -7.63                                       |
| 3/11/2021                 | 6.05                                | 2                     | 6.26                      | 0.084                             | 0.29                          | -1.51                                       |
| 6/16/2021                 | --                                  | 2                     | 6.26                      | 0.084                             | 0.29                          | -1.51                                       |
| 9/30/2021                 | 6.17                                | 2                     | 6.11                      | 0.007                             | 0.08                          | -2.62                                       |
| 12/23/2021                | --                                  | 2                     | 6.11                      | 0.007                             | 0.08                          | -2.62                                       |
| 3/11/2022                 | 6.37                                | 2                     | 6.27                      | 0.020                             | 0.14                          | -3.75                                       |
| 6/30/2022                 | --                                  | 2                     | 6.27                      | 0.020                             | 0.14                          | -3.75                                       |
| 9/21/2022                 | 6.17                                | 2                     | 6.27                      | 0.020                             | 0.14                          | -3.66                                       |
| 12/19/2022                | --                                  | 2                     | 6.27                      | 0.020                             | 0.14                          | -3.66                                       |

| BXS-1 (Downgradient Well) |                                     |                       |                           |                                   |                               |                                             |
|---------------------------|-------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Field pH Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 5.69                                | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 5.86                                | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 6.02                                | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 5.28                                | 4                     | 5.71                      | 0.101                             | 0.32                          | -8.54                                       |
| 2/29/2016                 | 5.86                                | 4                     | 5.76                      | 0.106                             | 0.33                          | -7.23                                       |
| 6/16/2016                 | 6.03                                | 4                     | 5.80                      | 0.125                             | 0.35                          | -6.13                                       |
| 9/26/2016                 | 5.81                                | 4                     | 5.75                      | 0.105                             | 0.32                          | -5.63                                       |
| 3/8/2017                  | 5.87                                | 4                     | 5.89                      | 0.009                             | 0.10                          | -6.73                                       |
| 6/10/2017                 | --                                  | 3                     | 5.90                      | 0.013                             | 0.11                          | -5.38                                       |
| 9/16/2017                 | --                                  | 2                     | 5.84                      | 0.002                             | 0.04                          | -8.89                                       |
| 12/14/2017                | --                                  | 1                     | 5.87                      | #DIV/0!                           | #DIV/0!                       | *                                           |
| 3/17/2018                 | 6.18                                | 1                     | 6.18                      | #DIV/0!                           | #DIV/0!                       | *                                           |
| 6/16/2018                 | --                                  | 1                     | 6.18                      | #DIV/0!                           | #DIV/0!                       | *                                           |
| 9/29/2018                 | 5.71                                | 2                     | 5.95                      | 0.110                             | 0.33                          | *                                           |
| 11/17/2018                | --                                  | 2                     | 5.95                      | 0.110                             | 0.33                          | *                                           |
| 3/16/2019                 | 6.03                                | 2                     | 5.87                      | 0.051                             | 0.23                          | -4.91                                       |
| 6/1/2019                  | --                                  | 2                     | 5.87                      | 0.051                             | 0.23                          | -4.91                                       |
| 10/12/2019                | 8.09                                | 2                     | 7.06                      | 2.122                             | 1.46                          | -0.89                                       |
| 12/22/2019                | --                                  | 2                     | 7.06                      | 2.122                             | 1.46                          | -0.89                                       |
| 4/1/2020                  | 6.31                                | 2                     | 7.20                      | 1.584                             | 1.26                          | -0.72                                       |
| 6/26/2020                 | --                                  | 2                     | 7.20                      | 1.584                             | 1.26                          | -0.72                                       |
| 9/22/2020                 | 6.25                                | 2                     | 6.28                      | 0.002                             | 0.04                          | -13.01                                      |
| 12/29/2020                | --                                  | 2                     | 6.28                      | 0.002                             | 0.04                          | -13.01                                      |
| 3/11/2021                 | 6.24                                | 2                     | 6.25                      | 0.000                             | 0.01                          | -1.83                                       |
| 6/16/2021                 | --                                  | 2                     | 6.25                      | 0.000                             | 0.01                          | -1.83                                       |
| 9/30/2021                 | 6.02                                | 2                     | 6.13                      | 0.024                             | 0.16                          | -2.37                                       |
| 12/23/2021                | --                                  | 2                     | 6.13                      | 0.024                             | 0.16                          | -2.37                                       |
| 3/11/2022                 | 6.26                                | 2                     | 6.14                      | 0.029                             | 0.17                          | -4.12                                       |
| 6/30/2022                 | --                                  | 2                     | 6.14                      | 0.029                             | 0.17                          | -4.12                                       |
| 9/21/2022                 | 6.09                                | 2                     | 6.18                      | 0.014                             | 0.12                          | -4.12                                       |
| 12/19/2022                | --                                  | 2                     | 6.18                      | 0.014                             | 0.12                          | -4.12                                       |

**Notes**

x̄ = average concentration for downgradient well. m<sub>o</sub> = average concentration for upgradient well. n = number of samples.

s<sup>1</sup> = sample variance in upgradient well. s<sup>2</sup> = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or *gray* is a statistically valid detection (Student's T-Test).

**Table C-5. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Total Dissolved Solids (TDS)**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\bar{x} - m_0$$

Critical Statistic:  $t_c = 2.447$   $\nu = 6$

$$\sqrt{[(s^2/n) + (s^2/n)]}$$

$t_c = 2.571$   $\nu = 5$

$t_c = 2.776$   $\nu = 4$

$t_c = 3.182$   $\nu = 3$

$t_c = 4.303$   $\nu = 2$

$t_c = 12.706$   $\nu = 1$

| BXS-4 (Upgradient Well) |                                |                       |                                         |                                   |
|-------------------------|--------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | TDS Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | NT                             | --                    | --                                      | --                                |
| 2/23/2015               | 122                            | --                    | --                                      | --                                |
| 9/14/2015               | 111                            | --                    | --                                      | --                                |
| 12/7/2015               | 112                            | --                    | --                                      | --                                |
| 2/29/2016               | 101                            | 4                     | 111.50                                  | 73.67                             |
| 6/16/2016               | 118                            | 4                     | 110.50                                  | 49.67                             |
| 9/26/2016               | 143                            | 4                     | 118.50                                  | 316.33                            |
| 3/8/2017                | 128                            | 4                     | 122.50                                  | 311.00                            |
| 6/10/2017               | --                             | 3                     | 129.67                                  | 158.33                            |
| 9/16/2017               | 139                            | 3                     | 136.67                                  | 60.33                             |
| 12/14/2017              | --                             | 2                     | 133.50                                  | 60.50                             |
| 3/17/2018               | 133                            | 2                     | 136.00                                  | 18.00                             |
| 6/16/2018               | --                             | 2                     | 136.00                                  | 18.00                             |
| 9/29/2018               | 159                            | 2                     | 146.00                                  | 338.00                            |
| 11/17/2018              | --                             | 2                     | 146.00                                  | 338.00                            |
| 3/16/2019               | 150                            | 2                     | 154.50                                  | 40.50                             |
| 6/1/2019                | --                             | 2                     | 154.50                                  | 40.50                             |
| 10/12/2019              | 110                            | 2                     | 130.00                                  | 800.00                            |
| 12/22/2019              | --                             | 2                     | 130.00                                  | 800.00                            |
| 4/1/2020                | 120                            | 2                     | 115.00                                  | 50.00                             |
| 6/26/2020               | --                             | 2                     | 115.00                                  | 50.00                             |
| 9/22/2020               | 330                            | 2                     | 225.00                                  | 22050.00                          |
| 12/29/2020              | --                             | 2                     | 225.00                                  | 22050.00                          |
| 3/11/2021               | 150                            | 2                     | 240.00                                  | 16200.00                          |
| 6/16/2021               | --                             | 2                     | 240.00                                  | 16200.00                          |
| 9/30/2021               | 160                            | 2                     | 155.00                                  | 50.00                             |
| 12/23/2021              | --                             | 2                     | 155.00                                  | 50.00                             |
| 3/11/2022               | 150                            | 2                     | 155.00                                  | 50.00                             |
| 6/30/2022               | --                             | 2                     | 155.00                                  | 50.00                             |
| 9/21/2022               | 140                            | 2                     | 145.00                                  | 50.00                             |
| 12/19/2022              | --                             | 2                     | 145.00                                  | 50.00                             |

| BXS-3 (Downgradient Well) |                                |                       |                            |                                   |                               |                                             |
|---------------------------|--------------------------------|-----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | TDS Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x̄) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | NT                             | --                    | --                         | --                                | --                            | --                                          |
| 2/23/2015                 | 325                            | --                    | --                         | --                                | --                            | --                                          |
| 9/14/2015                 | 267                            | --                    | --                         | --                                | --                            | --                                          |
| 12/7/2015                 | 285                            | --                    | --                         | --                                | --                            | --                                          |
| 2/29/2016                 | 290                            | 4                     | 291.75                     | 588.92                            | 24.27                         | <b>14.01</b>                                |
| 6/16/2016                 | 301                            | 4                     | 285.75                     | 200.92                            | 14.17                         | <b>22.14</b>                                |
| 9/26/2016                 | 311                            | 4                     | 296.75                     | 134.92                            | 11.62                         | <b>16.78</b>                                |
| 3/8/2017                  | --                             | 3                     | 300.67                     | 110.33                            | 10.50                         | <b>16.65</b>                                |
| 6/10/2017                 | --                             | 2                     | 306.00                     | 50.00                             | 7.07                          | <b>19.99</b>                                |
| 9/16/2017                 | 216                            | 2                     | 263.50                     | 4512.50                           | 67.18                         | 2.66                                        |
| 12/14/2017                | --                             | 1                     | 216.00                     | #DIV/0!                           | #DIV/0!                       | *                                           |
| 3/17/2018                 | 440                            | 2                     | 328.00                     | 25088.00                          | 158.39                        | 1.71                                        |
| 6/16/2018                 | --                             | 2                     | 328.00                     | 25088.00                          | 158.39                        | 1.71                                        |
| 9/29/2018                 | 235                            | 2                     | 337.50                     | 21012.50                          | 144.96                        | 1.85                                        |
| 11/17/2018                | 330                            | 3                     | 335.00                     | 10525.00                          | 102.59                        | 3.12                                        |
| 3/16/2019                 | 360                            | 3                     | 308.33                     | 4258.33                           | 65.26                         | <b>4.05</b>                                 |
| 6/1/2019                  | 230                            | 4                     | 288.75                     | 4372.92                           | 66.13                         | <b>4.02</b>                                 |
| 10/12/2019                | 260                            | 4                     | 295.00                     | 3633.33                           | 60.28                         | <b>4.56</b>                                 |
| 12/22/2019                | 340                            | 4                     | 297.50                     | 3891.67                           | 62.38                         | <b>4.52</b>                                 |
| 4/1/2020                  | 245                            | 4                     | 268.75                     | 2406.25                           | 49.05                         | <b>6.14</b>                                 |
| 6/26/2020                 | 320                            | 4                     | 291.25                     | 2106.25                           | 45.89                         | <b>7.50</b>                                 |
| 9/22/2020                 | 310                            | 4                     | 303.75                     | 1689.58                           | 41.10                         | 0.74                                        |
| 12/29/2020                | 330                            | 4                     | 301.25                     | 1472.92                           | 38.38                         | 0.71                                        |
| 3/11/2021                 | 330                            | 4                     | 322.50                     | 91.67                             | 9.57                          | 0.92                                        |
| 6/16/2021                 | 310                            | 4                     | 320.00                     | 133.33                            | 11.55                         | 0.89                                        |
| 9/30/2021                 | 118.5                          | 4                     | 272.13                     | 10578.06                          | 102.85                        | 2.27                                        |
| 12/23/2021                | 200                            | 4                     | 239.63                     | 9787.23                           | 98.93                         | 1.70                                        |
| 3/11/2022                 | 295                            | 4                     | 230.88                     | 7984.73                           | 89.36                         | 1.69                                        |
| 6/30/2022                 | 310                            | 4                     | 230.88                     | 7984.73                           | 89.36                         | 1.69                                        |
| 9/21/2022                 | 185                            | 4                     | 247.50                     | 4108.33                           | 64.10                         | <b>3.16</b>                                 |
| 12/19/2022                | 565                            | 4                     | 338.75                     | 25856.25                          | 160.80                        | 2.41                                        |

**Table C-5. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Total Dissolved Solids (TDS)**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | TDS Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | NT                             | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 479                            | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 430                            | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 424                            | --                    | --                                  | --                        | --                            | --                                          |
| 2/29/2016                 | 447                            | 4                     | 445.00                              | 608.67                    | 24.67                         | <b>25.53</b>                                |
| 6/16/2016                 | 443                            | 4                     | 436.00                              | 116.67                    | 10.80                         | <b>50.48</b>                                |
| 9/26/2016                 | 419                            | 4                     | 433.25                              | 190.92                    | 13.82                         | <b>27.95</b>                                |
| 3/8/2017                  | --                             | 3                     | 436.33                              | 229.33                    | 15.14                         | <b>25.27</b>                                |
| 6/10/2017                 | 252                            | 3                     | 371.33                              | 10824.33                  | 104.04                        | <b>3.99</b>                                 |
| 9/16/2017                 | 406                            | 3                     | 359.00                              | 8629.00                   | 92.89                         | <b>4.13</b>                                 |
| 12/14/2017                | 460                            | 3                     | 372.67                              | 11649.33                  | 107.93                        | <b>3.82</b>                                 |
| 3/17/2018                 | 455                            | 4                     | 393.25                              | 9460.92                   | 97.27                         | <b>5.28</b>                                 |
| 6/16/2018                 | 430                            | 4                     | 437.75                              | 620.25                    | 24.90                         | <b>23.56</b>                                |
| 9/29/2018                 | 420                            | 4                     | 441.25                              | 372.92                    | 19.31                         | <b>18.23</b>                                |
| 11/17/2018                | --                             | 3                     | 435.00                              | 325.00                    | 18.03                         | <b>17.35</b>                                |
| 3/16/2019                 | 420                            | 3                     | 423.33                              | 33.33                     | 5.77                          | <b>48.01</b>                                |
| 6/1/2019                  | --                             | 2                     | 420.00                              | 0.00                      | 0.00                          | <b>59.00</b>                                |
| 10/12/2019                | 330                            | 2                     | 375.00                              | 4050.00                   | 63.64                         | <b>4.98</b>                                 |
| 12/22/2019                | --                             | 2                     | 375.00                              | 4050.00                   | 63.64                         | <b>4.98</b>                                 |
| 4/1/2020                  | 330                            | 2                     | 330.00                              | 0.00                      | 0.00                          | <b>43.00</b>                                |
| 6/26/2020                 | --                             | 2                     | 330.00                              | 0.00                      | 0.00                          | <b>43.00</b>                                |
| 9/22/2020                 | 390                            | 2                     | 360.00                              | 1800.00                   | 42.43                         | 1.24                                        |
| 12/29/2020                | --                             | 2                     | 360.00                              | 1800.00                   | 42.43                         | 1.24                                        |
| 3/11/2021                 | 390                            | 2                     | 390.00                              | 0.00                      | 0.00                          | 1.67                                        |
| 6/16/2021                 | --                             | 2                     | 390.00                              | 0.00                      | 0.00                          | 1.67                                        |
| 9/30/2021                 | 360                            | 2                     | 375.00                              | 450.00                    | 21.21                         | <b>13.91</b>                                |
| 12/23/2021                | --                             | 2                     | 375.00                              | 450.00                    | 21.21                         | <b>13.91</b>                                |
| 3/11/2022                 | 340                            | 2                     | 350.00                              | 200.00                    | 14.14                         | <b>17.44</b>                                |
| 6/30/2022                 | --                             | 2                     | 350.00                              | 200.00                    | 14.14                         | <b>17.44</b>                                |
| 9/21/2022                 | 330                            | 2                     | 335.00                              | 50.00                     | 7.07                          | <b>26.87</b>                                |
| 12/19/2022                | --                             | 2                     | 335.00                              | 50.00                     | 7.07                          | <b>26.87</b>                                |

| BXS-1 (Downgradient Well) |                                |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | TDS Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | NT                             | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 157                            | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 144                            | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 151                            | --                    | --                                  | --                        | --                            | --                                          |
| 2/29/2016                 | 135                            | 4                     | 146.75                              | 89.58                     | 9.46                          | <b>5.52</b>                                 |
| 6/16/2016                 | 194                            | 4                     | 156.00                              | 684.67                    | 26.17                         | <b>3.36</b>                                 |
| 9/26/2016                 | 204                            | 4                     | 171.00                              | 1104.67                   | 33.24                         | <b>2.79</b>                                 |
| 3/8/2017                  | 224                            | 4                     | 189.25                              | 1463.58                   | 38.26                         | <b>3.17</b>                                 |
| 6/10/2017                 | --                             | 3                     | 207.33                              | 233.33                    | 15.28                         | <b>6.80</b>                                 |
| 9/16/2017                 | 191                            | 3                     | 206.33                              | 276.33                    | 16.62                         | <b>6.58</b>                                 |
| 12/14/2017                | --                             | 2                     | 207.50                              | 544.50                    | 23.33                         | 4.25                                        |
| 3/17/2018                 | 240                            | 2                     | 215.50                              | 1200.50                   | 34.65                         | 3.22                                        |
| 6/16/2018                 | --                             | 2                     | 215.50                              | 1200.50                   | 34.65                         | 3.22                                        |
| 9/29/2018                 | 200                            | 2                     | 220.00                              | 800.00                    | 28.28                         | 3.10                                        |
| 11/17/2018                | --                             | 2                     | 220.00                              | 800.00                    | 28.28                         | 3.10                                        |
| 3/16/2019                 | 200                            | 2                     | 200.00                              | 0.00                      | 0.00                          | <b>10.11</b>                                |
| 6/1/2019                  | --                             | 2                     | 200.00                              | 0.00                      | 0.00                          | <b>10.11</b>                                |
| 10/12/2019                | 160                            | 2                     | 180.00                              | 800.00                    | 28.28                         | 1.77                                        |
| 12/22/2019                | --                             | 2                     | 180.00                              | 800.00                    | 28.28                         | 1.77                                        |
| 4/1/2020                  | 140                            | 2                     | 150.00                              | 200.00                    | 14.14                         | 3.13                                        |
| 6/26/2020                 | --                             | 2                     | 150.00                              | 200.00                    | 14.14                         | 3.13                                        |
| 9/22/2020                 | 190                            | 2                     | 165.00                              | 1250.00                   | 35.36                         | -0.56                                       |
| 12/29/2020                | --                             | 2                     | 165.00                              | 1250.00                   | 35.36                         | -0.56                                       |
| 3/11/2021                 | 220                            | 2                     | 205.00                              | 450.00                    | 21.21                         | -0.38                                       |
| 6/16/2021                 | --                             | 2                     | 205.00                              | 450.00                    | 21.21                         | -0.38                                       |
| 9/30/2021                 | 210                            | 2                     | 215.00                              | 50.00                     | 7.07                          | <b>8.49</b>                                 |
| 12/23/2021                | --                             | 2                     | 215.00                              | 50.00                     | 7.07                          | <b>8.49</b>                                 |
| 3/11/2022                 | 220                            | 2                     | 215.00                              | 50.00                     | 7.07                          | <b>8.49</b>                                 |
| 6/30/2022                 | --                             | 2                     | 215.00                              | 50.00                     | 7.07                          | <b>8.49</b>                                 |
| 9/21/2022                 | 230                            | 2                     | 225.00                              | 50.00                     | 7.07                          | <b>11.31</b>                                |
| 12/19/2022                | --                             | 2                     | 225.00                              | 50.00                     | 7.07                          | <b>11.31</b>                                |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or gray is a statistically valid detection (Student's T-Test).

**Table C-6. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Sulfate**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:

$t_c = 2.447$   $v = 6$

$t_c = 2.571$   $v = 5$

$t_c = 2.776$   $v = 4$

$t_c = 3.182$   $v = 3$

$t_c = 4.303$   $v = 2$

$t_c = 12.706$   $v = 1$

| BXS-4 (Upgradient Well) |                                    |                       |                                         |                                   |
|-------------------------|------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Sulfate Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 1.56                               | --                    | --                                      | --                                |
| 2/23/2015               | 0.81                               | --                    | --                                      | --                                |
| 9/14/2015               | 1.20                               | --                    | --                                      | --                                |
| 12/7/2015               | 1.09                               | 4                     | 1.17                                    | 0.09630                           |
| 2/29/2016               | 1.2                                | 4                     | 1.08                                    | 0.03390                           |
| 6/16/2016               | 1.05                               | 4                     | 1.14                                    | 0.00590                           |
| 9/26/2016               | 1.50                               | 4                     | 1.21                                    | 0.04140                           |
| 3/8/2017                | 2.10                               | 4                     | 1.46                                    | 0.21563                           |
| 6/10/2017               | --                                 | 3                     | 1.55                                    | 0.27750                           |
| 9/16/2017               | 1.86                               | 3                     | 1.82                                    | 0.09120                           |
| 12/14/2017              | --                                 | 2                     | 1.98                                    | 0.02880                           |
| 3/17/2018               | 1.71                               | 2                     | 1.79                                    | 0.01125                           |
| 6/16/2018               | --                                 | 2                     | 1.79                                    | 0.01125                           |
| 9/29/2018               | 0.63                               | 2                     | 1.17                                    | 0.58320                           |
| 11/17/2018              | --                                 | 2                     | 1.17                                    | 0.58320                           |
| 3/16/2019               | 3                                  | 2                     | 1.82                                    | 2.80845                           |
| 6/1/2019                | --                                 | 2                     | 1.82                                    | 2.80845                           |
| 10/12/2019              | 0.2                                | 2                     | 1.60                                    | 3.92000                           |
| 12/22/2019              | --                                 | 2                     | 1.60                                    | 3.92000                           |
| 4/1/2020                | 0.60                               | 2                     | 0.40                                    | 0.08000                           |
| 6/26/2020               | --                                 | 2                     | 0.40                                    | 0.08000                           |
| 9/22/2020               | 0.30                               | 2                     | 0.45                                    | 0.04500                           |
| 12/29/2020              | --                                 | 2                     | 0.45                                    | 0.04500                           |
| 3/11/2021               | --                                 | 1                     | 0.30                                    | #DIV/0!                           |
| 6/16/2021               | --                                 | 1                     | 0.30                                    | #DIV/0!                           |
| 9/30/2021               | 19.60                              | 1                     | 19.60                                   | #DIV/0!                           |
| 12/23/2021              | --                                 | 1                     | 19.60                                   | #DIV/0!                           |
| 3/11/2022               | 1.90                               | 2                     | 10.75                                   | 156.645                           |
| 6/30/2022               | --                                 | 2                     | 10.75                                   | 156.645                           |
| 9/21/2022               | 0.40                               | 2                     | 1.15                                    | 1.12500                           |
| 12/19/2022              | --                                 | 2                     | 1.15                                    | 1.12500                           |

| BXS-3 (Downgradient Well) |                                    |                       |                           |                                   |                               |                                             |
|---------------------------|------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Sulfate Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.18                               | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 0.22                               | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 0.39                               | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 0.18                               | 4                     | 0.24                      | 0.010                             | 0.10                          | -5.66                                       |
| 2/29/2016                 | 1.16                               | 4                     | 0.49                      | 0.209                             | 0.46                          | -2.38                                       |
| 6/16/2016                 | 1.13                               | 4                     | 0.72                      | 0.254                             | 0.50                          | -1.65                                       |
| 9/26/2016                 | 0.94                               | 4                     | 0.85                      | 0.210                             | 0.46                          | -1.42                                       |
| 3/8/2017                  | 0.10                               | 4                     | 0.83                      | 0.248                             | 0.50                          | -1.85                                       |
| 6/10/2017                 | --                                 | 3                     | 0.72                      | 0.300                             | 0.55                          | -1.88                                       |
| 9/16/2017                 | 0.10                               | 3                     | 0.38                      | 0.235                             | 0.48                          | -4.37                                       |
| 12/14/2017                | --                                 | 2                     | 0.10                      | 0.000                             | 0.00                          | -15.67                                      |
| 3/17/2018                 | 0.22                               | 2                     | 0.16                      | 0.007                             | 0.08                          | -16.92                                      |
| 6/16/2018                 | --                                 | 2                     | 0.16                      | 0.007                             | 0.08                          | -16.92                                      |
| 9/29/2018                 | 0.125                              | 2                     | 0.17                      | 0.005                             | 0.07                          | -1.84                                       |
| 11/17/2018                | 2.00                               | 3                     | 0.78                      | 1.116                             | 1.06                          | -0.48                                       |
| 3/16/2019                 | 2.3                                | 3                     | 1.48                      | 1.389                             | 1.18                          | -0.25                                       |
| 6/1/2019                  | 0.22                               | 4                     | 1.16                      | 1.320                             | 1.15                          | -0.50                                       |
| 10/12/2019                | 0.3                                | 4                     | 1.21                      | 1.207                             | 1.10                          | -0.26                                       |
| 12/22/2019                | 0.30                               | 4                     | 0.78                      | 1.028                             | 1.01                          | -0.55                                       |
| 4/1/2020                  | 0.10                               | 4                     | 0.23                      | 0.009                             | 0.09                          | -0.83                                       |
| 6/26/2020                 | 0.10                               | 4                     | 0.20                      | 0.013                             | 0.12                          | -0.96                                       |
| 9/22/2020                 | 0.15                               | 4                     | 0.16                      | 0.009                             | 0.09                          | -1.83                                       |
| 12/29/2020                | 0.20                               | 4                     | 0.14                      | 0.002                             | 0.05                          | -2.06                                       |
| 3/11/2021                 | --                                 | 3                     | 0.15                      | 0.003                             | 0.05                          | *                                           |
| 6/16/2021                 | 0.13                               | 3                     | 0.16                      | 0.001                             | 0.04                          | *                                           |
| 9/30/2021                 | 0.10                               | 3                     | 0.14                      | 0.003                             | 0.05                          | *                                           |
| 12/23/2021                | 0.60                               | 3                     | 0.28                      | 0.079                             | 0.28                          | *                                           |
| 3/11/2022                 | 0.81                               | 4                     | 0.41                      | 0.124                             | 0.35                          | -1.17                                       |
| 6/30/2022                 | 0.34                               | 4                     | 0.46                      | 0.095                             | 0.31                          | -1.16                                       |
| 9/21/2022                 | 0.15                               | 4                     | 0.48                      | 0.084                             | 0.29                          | -0.88                                       |
| 12/19/2022                | 0.83                               | 4                     | 0.53                      | 0.116                             | 0.34                          | -0.80                                       |

**Table C-6. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Sulfate**  
Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                    |                       |                                     |                           |                               |                                             |
|---------------------------|------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Sulfate Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.33                               | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 0.34                               | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 0.46                               | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 0.27                               | 4                     | 0.35                                | 0.006                     | 0.08                          | -5.09                                       |
| 2/29/2016                 | 0.5                                | 4                     | 0.39                                | 0.011                     | 0.11                          | -6.42                                       |
| 6/16/2016                 | 0.48                               | 4                     | 0.43                                | 0.011                     | 0.11                          | -10.79                                      |
| 9/26/2016                 | 0.20                               | 4                     | 0.36                                | 0.023                     | 0.15                          | -6.70                                       |
| 3/8/2017                  | 0.20                               | 4                     | 0.35                                | 0.028                     | 0.17                          | -4.53                                       |
| 6/10/2017                 | 7.36                               | 4                     | 2.06                                | 12.502                    | 3.54                          | 0.28                                        |
| 9/16/2017                 | 0.10                               | 4                     | 1.97                                | 12.938                    | 3.60                          | 0.08                                        |
| 12/14/2017                | 51.60                              | 4                     | 14.82                               | 612.948                   | 24.76                         | 1.04                                        |
| 3/17/2018                 | 0.33                               | 4                     | 14.85                               | 611.734                   | 24.73                         | 1.06                                        |
| 6/16/2018                 | 0.50                               | 4                     | 13.13                               | 657.736                   | 25.65                         | 0.88                                        |
| 9/29/2018                 | 0.34                               | 4                     | 13.19                               | 655.665                   | 25.61                         | 0.94                                        |
| 11/17/2018                | --                                 | 3                     | 0.39                                | 0.009                     | 0.10                          | -1.44                                       |
| 3/16/2019                 | 7.70                               | 3                     | 2.85                                | 17.673                    | 4.20                          | 0.38                                        |
| 6/1/2019                  | --                                 | 2                     | 4.02                                | 27.085                    | 5.20                          | 0.57                                        |
| 10/12/2019                | 0.50                               | 2                     | 4.10                                | 25.920                    | 5.09                          | 0.65                                        |
| 12/22/2019                | --                                 | 2                     | 4.10                                | 25.920                    | 5.09                          | 0.65                                        |
| 4/1/2020                  | 0.10                               | 2                     | 0.30                                | 0.080                     | 0.28                          | -0.35                                       |
| 6/26/2020                 | --                                 | 2                     | 0.30                                | 0.080                     | 0.28                          | -0.35                                       |
| 9/22/2020                 | 0.22                               | 2                     | 0.16                                | 0.007                     | 0.08                          | -1.80                                       |
| 12/29/2020                | --                                 | 2                     | 0.16                                | 0.007                     | 0.08                          | -1.80                                       |
| 3/11/2021                 | --                                 | 1                     | 0.22                                | #DIV/0!                   | #DIV/0!                       | *                                           |
| 6/16/2021                 | --                                 | 1                     | 0.22                                | #DIV/0!                   | #DIV/0!                       | *                                           |
| 9/30/2021                 | 13.20                              | 1                     | 13.20                               | #DIV/0!                   | #DIV/0!                       | *                                           |
| 12/23/2021                | --                                 | 1                     | 13.20                               | #DIV/0!                   | #DIV/0!                       | *                                           |
| 3/11/2022                 | 0.20                               | 2                     | 6.70                                | 84.500                    | 9.19                          | -0.37                                       |
| 6/30/2022                 | --                                 | 2                     | 6.70                                | 84.500                    | 9.19                          | -0.37                                       |
| 9/21/2022                 | 0.30                               | 2                     | 0.25                                | 0.005                     | 0.07                          | -1.20                                       |
| 12/19/2022                | --                                 | 2                     | 0.25                                | 0.005                     | 0.07                          | -1.20                                       |

| BXS-1 (Downgradient Well) |                                    |                       |                                     |                           |                               |                                             |
|---------------------------|------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Sulfate Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 8.42                               | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 7.74                               | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 9.66                               | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 10.70                              | 4                     | 9.13                                | 1.727                     | 1.31                          | <b>11.80</b>                                |
| 2/29/2016                 | 9.00                               | 4                     | 9.28                                | 1.537                     | 1.24                          | <b>13.09</b>                                |
| 6/16/2016                 | 6.87                               | 4                     | 9.06                                | 2.616                     | 1.62                          | <b>9.78</b>                                 |
| 9/26/2016                 | 6.00                               | 4                     | 8.14                                | 4.495                     | 2.12                          | <b>6.51</b>                                 |
| 3/8/2017                  | 4.50                               | 4                     | 6.59                                | 3.534                     | 1.88                          | <b>5.30</b>                                 |
| 6/10/2017                 | --                                 | 3                     | 5.79                                | 1.437                     | 1.20                          | <b>5.61</b>                                 |
| 9/16/2017                 | 5.64                               | 3                     | 5.38                                | 0.613                     | 0.78                          | <b>7.35</b>                                 |
| 12/14/2017                | --                                 | 2                     | 5.07                                | 0.650                     | 0.81                          | <b>5.30</b>                                 |
| 3/17/2018                 | 9.06                               | 2                     | 7.35                                | 5.848                     | 2.42                          | 3.25                                        |
| 6/16/2018                 | --                                 | 2                     | 7.35                                | 5.848                     | 2.42                          | 3.25                                        |
| 9/29/2018                 | 10.9                               | 2                     | 9.98                                | 1.693                     | 1.30                          | <b>8.26</b>                                 |
| 11/17/2018                | --                                 | 2                     | 9.98                                | 1.693                     | 1.30                          | <b>8.26</b>                                 |
| 3/16/2019                 | 14.8                               | 2                     | 12.85                               | 7.605                     | 2.76                          | <b>4.84</b>                                 |
| 6/1/2019                  | --                                 | 2                     | 12.85                               | 7.605                     | 2.76                          | <b>4.84</b>                                 |
| 10/12/2019                | 15                                 | 2                     | 14.90                               | 0.020                     | 0.14                          | <b>9.48</b>                                 |
| 12/22/2019                | --                                 | 2                     | 14.90                               | 0.020                     | 0.14                          | <b>9.48</b>                                 |
| 4/1/2020                  | 17.2                               | 2                     | 16.10                               | 2.420                     | 1.56                          | <b>14.04</b>                                |
| 6/26/2020                 | --                                 | 2                     | 16.10                               | 2.420                     | 1.56                          | <b>14.04</b>                                |
| 9/22/2020                 | 13.8                               | 2                     | 15.50                               | 5.780                     | 2.40                          | <b>8.82</b>                                 |
| 12/29/2020                | --                                 | 2                     | 15.50                               | 5.780                     | 2.40                          | <b>8.82</b>                                 |
| 3/11/2021                 | --                                 | 1                     | 13.80                               | #DIV/0!                   | #DIV/0!                       | *                                           |
| 6/16/2021                 | --                                 | 1                     | 13.80                               | #DIV/0!                   | #DIV/0!                       | *                                           |
| 9/30/2021                 | 13.2                               | 1                     | 13.20                               | #DIV/0!                   | #DIV/0!                       | *                                           |
| 12/23/2021                | --                                 | 1                     | 13.20                               | #DIV/0!                   | #DIV/0!                       | *                                           |
| 3/11/2022                 | 15                                 | 2                     | 14.10                               | 1.620                     | 1.27                          | 0.38                                        |
| 6/30/2022                 | --                                 | 2                     | 14.10                               | 1.620                     | 1.27                          | 0.38                                        |
| 9/21/2022                 | 11.3                               | 2                     | 13.15                               | 6.845                     | 2.62                          | <b>6.01</b>                                 |
| 12/19/2022                | --                                 | 2                     | 13.15                               | 6.845                     | 2.62                          | <b>6.01</b>                                 |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or **gray** is a statistically valid detection (Student's T-Test).

**Table C-7. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Tannin & Lignin**

Former J.H. Baxter South Woodwaste Landfill, Arlington, Washington

Student's T-Test Formula (t):

$$\bar{x} - m_0$$

Critical Statistic:

$$t_c = 2.447$$

$$v = 6$$

$$v [ (s^2/n) + (s^2/n) ]$$

$$t_c = 2.571$$

$$v = 5$$

$$t_c = 2.776$$

$$v = 4$$

$$t_c = 3.182$$

$$v = 3$$

$$t_c = 4.303$$

$$v = 2$$

$$t_c = 12.706$$

$$v = 1$$

| BXS-4 (Upgradient Well) |                                             |                       |                                         |                                   |
|-------------------------|---------------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Tanin and Lignin Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 0.29                                        | --                    | --                                      | --                                |
| 2/23/2015               | 0.31                                        | --                    | --                                      | --                                |
| 9/14/2015               | 0.22                                        | --                    | --                                      | --                                |
| 12/7/2015               | 0.34                                        | 4                     | 0.29                                    | 0.00260                           |
| 2/29/2016               | 0.2                                         | 4                     | 0.27                                    | 0.00463                           |
| 6/16/2016               | 0.21                                        | 4                     | 0.24                                    | 0.00429                           |
| 9/26/2016               | 0.12                                        | 4                     | 0.22                                    | 0.00829                           |
| 3/8/2017                | 0.15                                        | 4                     | 0.17                                    | 0.00180                           |
| 6/10/2017               | --                                          | 3                     | 0.16                                    | 0.00210                           |
| 9/16/2017               | 0.20                                        | 3                     | 0.16                                    | 0.00163                           |
| 12/14/2017              | --                                          | 2                     | 0.18                                    | 0.00125                           |
| 3/17/2018               | 0.21                                        | 2                     | 0.21                                    | 0.00005                           |
| 6/16/2018               | --                                          | 2                     | 0.21                                    | 0.00005                           |
| 9/29/2018               | 0.51                                        | 2                     | 0.36                                    | 0.04500                           |
| 11/17/2018              | --                                          | 2                     | 0.36                                    | 0.04500                           |
| 3/16/2019               | 0.49                                        | 2                     | 0.50                                    | 0.00020                           |
| 6/1/2019                | --                                          | 2                     | 0.50                                    | 0.00020                           |
| 10/12/2019              | 0.95                                        | 2                     | 0.72                                    | 0.10580                           |
| 12/22/2019              | --                                          | 2                     | 0.72                                    | 0.10580                           |
| 4/1/2020                | 1.10                                        | 2                     | 1.03                                    | 0.01125                           |
| 6/26/2020               | --                                          | 2                     | 1.03                                    | 0.01125                           |
| 9/22/2020               | 5.10                                        | 2                     | 3.10                                    | 8.00000                           |
| 12/29/2020              | --                                          | 2                     | 3.10                                    | 8.00000                           |
| 3/11/2021               | 1.20                                        | 2                     | 3.15                                    | 7.60500                           |
| 6/16/2021               | --                                          | 2                     | 3.15                                    | 7.60500                           |
| 9/30/2021               | 2.40                                        | 2                     | 1.80                                    | 0.72000                           |
| 12/23/2021              | --                                          | 2                     | 1.80                                    | 0.72000                           |
| 3/11/2022               | 3.20                                        | 2                     | 2.80                                    | 0.32000                           |
| 6/30/2022               | --                                          | 2                     | 2.80                                    | 0.32000                           |
| 9/21/2022               | 2.60                                        | 2                     | 2.90                                    | 0.18000                           |
| 12/19/2022              | --                                          | 2                     | 2.90                                    | 0.18000                           |

| BXS-3 (Downgradient Well) |                                             |                       |                            |                                   |                               |                                             |
|---------------------------|---------------------------------------------|-----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Tanin and Lignin Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x̄) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 20.50                                       | --                    | --                         | --                                | --                            | --                                          |
| 2/23/2015                 | 23.00                                       | --                    | --                         | --                                | --                            | --                                          |
| 9/14/2015                 | 4.49                                        | --                    | --                         | --                                | --                            | --                                          |
| 12/7/2015                 | 1.13                                        | 4                     | 12.28                      | 122.498                           | 11.07                         | 2.17                                        |
| 2/29/2016                 | 5.30                                        | 4                     | 8.48                       | 96.962                            | 9.85                          | 1.67                                        |
| 6/16/2016                 | 7.80                                        | 4                     | 4.68                       | 7.586                             | 2.75                          | <b>3.22</b>                                 |
| 9/26/2016                 | 3.75                                        | 4                     | 4.50                       | 7.816                             | 2.80                          | <b>3.06</b>                                 |
| 3/8/2017                  | 49.50                                       | 4                     | 16.59                      | 484.221                           | 22.01                         | 1.49                                        |
| 6/10/2017                 | --                                          | 3                     | 20.35                      | 641.393                           | 25.33                         | 1.38                                        |
| 9/16/2017                 | 18.50                                       | 3                     | 23.92                      | 545.271                           | 23.35                         | 1.76                                        |
| 12/14/2017                | --                                          | 2                     | 34.00                      | 480.500                           | 21.92                         | 2.18                                        |
| 3/17/2018                 | 2.2                                         | 2                     | 10.35                      | 132.845                           | 11.53                         | 1.24                                        |
| 6/16/2018                 | --                                          | 2                     | 10.35                      | 132.845                           | 11.53                         | 1.24                                        |
| 9/29/2018                 | 59.5                                        | 2                     | 30.85                      | 1641.645                          | 40.52                         | 1.06                                        |
| 11/17/2018                | 50                                          | 3                     | 37.23                      | 943.063                           | 30.71                         | 2.08                                        |
| 3/16/2019                 | 47                                          | 3                     | 52.17                      | 42.583                            | 6.53                          | <b>13.71</b>                                |
| 6/1/2019                  | 320                                         | 4                     | 119.13                     | 17962.06                          | 134.02                        | 1.77                                        |
| 10/12/2019                | 100                                         | 4                     | 129.25                     | 16762.25                          | 129.47                        | 1.99                                        |
| 12/22/2019                | 89                                          | 4                     | 139.00                     | 15082.00                          | 122.81                        | 2.25                                        |
| 4/1/2020                  | 26                                          | 4                     | 133.63                     | 16516.23                          | 128.52                        | 2.06                                        |
| 6/26/2020                 | 86                                          | 4                     | 75.13                      | 1130.73                           | 33.63                         | <b>4.41</b>                                 |
| 9/22/2020                 | 94                                          | 4                     | 73.63                      | 1040.23                           | 32.25                         | <b>4.34</b>                                 |
| 12/29/2020                | 53                                          | 4                     | 64.63                      | 995.23                            | 31.55                         | <b>3.87</b>                                 |
| 3/11/2021                 | 24                                          | 4                     | 64.25                      | 1034.92                           | 32.17                         | <b>3.77</b>                                 |
| 6/16/2021                 | 33                                          | 4                     | 51.00                      | 968.67                            | 31.12                         | <b>3.05</b>                                 |
| 9/30/2021                 | 81                                          | 4                     | 47.63                      | 627.23                            | 25.04                         | <b>3.66</b>                                 |
| 12/23/2021                | 34                                          | 4                     | 42.88                      | 649.40                            | 25.48                         | <b>3.22</b>                                 |
| 3/11/2022                 | 26                                          | 4                     | 43.38                      | 625.23                            | 25.00                         | <b>3.24</b>                                 |
| 6/30/2022                 | 83                                          | 4                     | 55.88                      | 904.40                            | 30.07                         | <b>3.53</b>                                 |
| 9/21/2022                 | 21                                          | 4                     | 41.00                      | 812.67                            | 28.51                         | 2.67                                        |
| 12/19/2022                | 26                                          | 4                     | 38.88                      | 870.40                            | 29.50                         | 2.44                                        |

**Table C-7. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Tannin & Lignin**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                             |                       |                                     |                           |                               |                                             |
|---------------------------|---------------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Tanin and Lignin Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 1.37                                        | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 1.33                                        | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 1.34                                        | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 1.23                                        | 4                     | 1.32                                | 0.004                     | 0.06                          | <b>25.91</b>                                |
| 2/29/2016                 | 1.32                                        | 4                     | 1.31                                | 0.003                     | 0.05                          | <b>24.47</b>                                |
| 6/16/2016                 | 1.19                                        | 4                     | 1.27                                | 0.005                     | 0.07                          | <b>21.17</b>                                |
| 9/26/2016                 | 1.04                                        | 4                     | 1.20                                | 0.014                     | 0.12                          | <b>13.20</b>                                |
| 3/8/2017                  | 1.18                                        | 4                     | 1.18                                | 0.013                     | 0.11                          | <b>16.59</b>                                |
| 6/10/2017                 | 1.00                                        | 4                     | 1.10                                | 0.009                     | 0.10                          | <b>17.10</b>                                |
| 9/16/2017                 | 1.26                                        | 4                     | 1.12                                | 0.015                     | 0.12                          | <b>14.84</b>                                |
| 12/14/2017                | 2.80                                        | 4                     | 1.56                                | 0.695                     | 0.83                          | <b>3.32</b>                                 |
| 3/17/2018                 | 1.85                                        | 4                     | 1.73                                | 0.638                     | 0.80                          | <b>3.81</b>                                 |
| 6/16/2018                 | 1.50                                        | 4                     | 1.85                                | 0.458                     | 0.68                          | <b>4.87</b>                                 |
| 9/29/2018                 | 1.50                                        | 4                     | 1.91                                | 0.377                     | 0.61                          | <b>4.54</b>                                 |
| 11/17/2018                | --                                          | 3                     | 1.62                                | 0.041                     | 0.20                          | <b>6.61</b>                                 |
| 3/16/2019                 | 2.50                                        | 3                     | 1.83                                | 0.333                     | 0.58                          | <b>4.00</b>                                 |
| 6/1/2019                  | --                                          | 2                     | 2.00                                | 0.500                     | 0.71                          | 3.00                                        |
| 10/12/2019                | 2.80                                        | 2                     | 2.65                                | 0.045                     | 0.21                          | <b>7.03</b>                                 |
| 12/22/2019                | --                                          | 2                     | 2.65                                | 0.045                     | 0.21                          | <b>7.03</b>                                 |
| 4/1/2020                  | 3.90                                        | 2                     | 3.35                                | 0.605                     | 0.78                          | 4.19                                        |
| 6/26/2020                 | --                                          | 2                     | 3.35                                | 0.605                     | 0.78                          | 4.19                                        |
| 9/22/2020                 | 1.75                                        | 2                     | 2.83                                | 2.311                     | 1.52                          | -0.12                                       |
| 12/29/2020                | --                                          | 2                     | 2.83                                | 2.311                     | 1.52                          | -0.12                                       |
| 3/11/2021                 | 2.30                                        | 2                     | 2.03                                | 0.151                     | 0.39                          | -0.57                                       |
| 6/16/2021                 | --                                          | 2                     | 2.03                                | 0.151                     | 0.39                          | -0.57                                       |
| 9/30/2021                 | 2.00                                        | 2                     | 2.15                                | 0.045                     | 0.21                          | 0.57                                        |
| 12/23/2021                | --                                          | 2                     | 2.15                                | 0.045                     | 0.21                          | 0.57                                        |
| 3/11/2022                 | 27.00                                       | 2                     | 14.50                               | 312.500                   | 17.68                         | 0.94                                        |
| 6/30/2022                 | --                                          | 2                     | 14.50                               | 312.500                   | 17.68                         | 0.94                                        |
| 9/21/2022                 | 13.00                                       | 2                     | 20.00                               | 98.000                    | 9.90                          | 2.44                                        |
| 12/19/2022                | --                                          | 2                     | 20.00                               | 98.000                    | 9.90                          | 2.44                                        |

| BXS-1 (Downgradient Well) |                                             |                       |                                     |                           |                               |                                             |
|---------------------------|---------------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Tanin and Lignin Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.11                                        | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 0.15                                        | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 0.09                                        | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 0.14                                        | 4                     | 0.12                                | 0.001                     | 0.03                          | -5.78                                       |
| 2/29/2016                 | 0.05                                        | 4                     | 0.11                                | 0.002                     | 0.05                          | -3.89                                       |
| 6/16/2016                 | 0.09                                        | 4                     | 0.09                                | 0.001                     | 0.04                          | -3.99                                       |
| 9/26/2016                 | 0.11                                        | 4                     | 0.10                                | 0.001                     | 0.04                          | -2.43                                       |
| 3/8/2017                  | 0.13                                        | 4                     | 0.10                                | 0.001                     | 0.03                          | -2.75                                       |
| 6/10/2017                 | --                                          | 3                     | 0.11                                | 0.000                     | 0.02                          | -1.73                                       |
| 9/16/2017                 | 0.10                                        | 3                     | 0.11                                | 0.000                     | 0.02                          | -1.74                                       |
| 12/14/2017                | --                                          | 2                     | 0.12                                | 0.000                     | 0.02                          | -2.06                                       |
| 3/17/2018                 | 0.2                                         | 2                     | 0.15                                | 0.005                     | 0.07                          | -1.09                                       |
| 6/16/2018                 | --                                          | 2                     | 0.15                                | 0.005                     | 0.07                          | -1.09                                       |
| 9/29/2018                 | 0.2                                         | 2                     | 0.20                                | 0.000                     | 0.00                          | -1.07                                       |
| 11/17/2018                | --                                          | 2                     | 0.20                                | 0.000                     | 0.00                          | -1.07                                       |
| 3/16/2019                 | 0.22                                        | 2                     | 0.21                                | 0.000                     | 0.01                          | -20.51                                      |
| 6/1/2019                  | --                                          | 2                     | 0.21                                | 0.000                     | 0.01                          | -20.51                                      |
| 10/12/2019                | 0.39                                        | 2                     | 0.31                                | 0.014                     | 0.12                          | -1.69                                       |
| 12/22/2019                | --                                          | 2                     | 0.31                                | 0.014                     | 0.12                          | -1.69                                       |
| 4/1/2020                  | 0.1                                         | 2                     | 0.25                                | 0.042                     | 0.21                          | -4.78                                       |
| 6/26/2020                 | --                                          | 2                     | 0.25                                | 0.042                     | 0.21                          | -4.78                                       |
| 9/22/2020                 | 0.13                                        | 2                     | 0.12                                | 0.000                     | 0.02                          | -1.49                                       |
| 12/29/2020                | --                                          | 2                     | 0.12                                | 0.000                     | 0.02                          | -1.49                                       |
| 3/11/2021                 | 0.22                                        | 2                     | 0.18                                | 0.004                     | 0.06                          | -1.53                                       |
| 6/16/2021                 | --                                          | 2                     | 0.18                                | 0.004                     | 0.06                          | -1.53                                       |
| 9/30/2021                 | 0.55                                        | 2                     | 0.39                                | 0.054                     | 0.23                          | -2.27                                       |
| 12/23/2021                | --                                          | 2                     | 0.39                                | 0.054                     | 0.23                          | -2.27                                       |
| 3/11/2022                 | 10                                          | 2                     | 5.28                                | 44.651                    | 6.68                          | 0.52                                        |
| 6/30/2022                 | --                                          | 2                     | 5.28                                | 44.651                    | 6.68                          | 0.52                                        |
| 9/21/2022                 | 3.8                                         | 2                     | 6.90                                | 19.220                    | 4.38                          | 1.28                                        |
| 12/19/2022                | --                                          | 2                     | 6.90                                | 19.220                    | 4.38                          | 1.28                                        |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_u$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or **gray** is a statistically valid detection (Student's T-Test).

**Table C-8. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Arsenic**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:  $t_c = 2.447$   $\nu = 6$

$t_c = 2.571$   $\nu = 5$

$t_c = 2.776$   $\nu = 4$

$t_c = 3.182$   $\nu = 3$

$t_c = 4.303$   $\nu = 2$

$t_c = 12.706$   $\nu = 1$

| BXS-4 (Upgradient Well) |                                    |                       |                                         |                                   |
|-------------------------|------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Arsenic Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 5.70                               | --                    | --                                      | --                                |
| 2/23/2015               | 5.90                               | --                    | --                                      | --                                |
| 9/14/2015               | 5.90                               | --                    | --                                      | --                                |
| 12/7/2015               | 6.32                               | 4                     | 5.96                                    | 0.06810                           |
| 2/29/2016               | 6.3                                | 4                     | 6.11                                    | 0.05610                           |
| 6/16/2016               | 6.1                                | 4                     | 6.16                                    | 0.03877                           |
| 9/26/2016               | 6.56                               | 4                     | 6.32                                    | 0.03547                           |
| 3/8/2017                | 10.50                              | 4                     | 7.37                                    | 4.40357                           |
| 6/10/2017               | --                                 | 3                     | 7.72                                    | 5.84920                           |
| 9/16/2017               | 8.00                               | 3                     | 8.35                                    | 3.97453                           |
| 12/14/2017              | --                                 | 2                     | 9.25                                    | 3.12500                           |
| 3/17/2018               | --                                 | 1                     | 8.00                                    | #DIV/0!                           |
| 6/16/2018               | --                                 | 1                     | 8.00                                    | #DIV/0!                           |
| 9/29/2018               | 5                                  | 1                     | 5.00                                    | #DIV/0!                           |
| 11/17/2018              | --                                 | 1                     | 5.00                                    | #DIV/0!                           |
| 3/16/2019               | 2.5                                | 2                     | 3.75                                    | 3.12500                           |
| 6/1/2019                | --                                 | 2                     | 3.75                                    | 3.12500                           |
| 10/12/2019              | 2.5                                | 2                     | 2.50                                    | 0.00000                           |
| 12/22/2019              | --                                 | 2                     | 2.50                                    | 0.00000                           |
| 4/1/2020                | 2.5                                | 2                     | 2.50                                    | 0.00000                           |
| 6/26/2020               | --                                 | 2                     | 2.50                                    | 0.00000                           |
| 9/22/2020               | 2.5                                | 2                     | 2.50                                    | 0.00000                           |
| 12/29/2020              | --                                 | 2                     | 2.50                                    | 0.00000                           |
| 3/11/2021               | 2.5                                | 2                     | 2.50                                    | 0.00000                           |
| 6/16/2021               | --                                 | 2                     | 2.50                                    | 0.00000                           |
| 9/30/2021               | 2.5                                | 2                     | 2.50                                    | 0.00000                           |
| 12/23/2021              | --                                 | 2                     | 2.50                                    | 0.00000                           |
| 3/11/2022               | 10                                 | 2                     | 6.25                                    | 28.12500                          |
| 6/30/2022               | --                                 | 2                     | 6.25                                    | 28.12500                          |
| 9/21/2022               | 10                                 | 2                     | 10.00                                   | 0.00000                           |
| 12/19/2022              | --                                 | 2                     | 10.00                                   | 0.00000                           |

| BXS-3 (Downgradient Well) |                                    |                       |                            |                                   |                               |                                             |
|---------------------------|------------------------------------|-----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Arsenic Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x̄) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 174                                | --                    | --                         | --                                | --                            | --                                          |
| 2/23/2015                 | 163                                | --                    | --                         | --                                | --                            | --                                          |
| 9/14/2015                 | 185                                | --                    | --                         | --                                | --                            | --                                          |
| 12/7/2015                 | 174                                | 4                     | 174.00                     | 80.667                            | 8.98                          | <b>37.40</b>                                |
| 2/29/2016                 | 147                                | 4                     | 167.25                     | 262.917                           | 16.21                         | <b>19.87</b>                                |
| 6/16/2016                 | 138                                | 4                     | 161.00                     | 490.000                           | 22.14                         | <b>13.99</b>                                |
| 9/26/2016                 | 191                                | 4                     | 162.50                     | 595.000                           | 24.39                         | <b>12.81</b>                                |
| 3/8/2017                  | 161                                | 4                     | 159.25                     | 537.583                           | 23.19                         | <b>13.05</b>                                |
| 6/10/2017                 | --                                 | 3                     | 163.33                     | 706.333                           | 26.58                         | <b>10.10</b>                                |
| 9/16/2017                 | 181                                | 3                     | 177.67                     | 233.333                           | 15.28                         | <b>19.04</b>                                |
| 12/14/2017                | --                                 | 2                     | 171.00                     | 200.000                           | 14.14                         | <b>16.05</b>                                |
| 3/17/2018                 | 96                                 | 2                     | 138.50                     | 3612.500                          | 60.10                         | *                                           |
| 6/16/2018                 | --                                 | 2                     | 138.50                     | 3612.500                          | 60.10                         | *                                           |
| 9/29/2018                 | 52.5                               | 2                     | 74.25                      | 946.125                           | 30.76                         | *                                           |
| 11/17/2018                | 82                                 | 3                     | 76.83                      | 493.083                           | 22.21                         | *                                           |
| 3/16/2019                 | 66                                 | 3                     | 66.83                      | 218.083                           | 14.77                         | <b>7.32</b>                                 |
| 6/1/2019                  | 48                                 | 4                     | 62.13                      | 234.063                           | 15.30                         | <b>7.53</b>                                 |
| 10/12/2019                | 24                                 | 4                     | 55.00                      | 620.000                           | 24.90                         | <b>4.22</b>                                 |
| 12/22/2019                | 102                                | 4                     | 60.00                      | 1080.000                          | 32.86                         | <b>3.50</b>                                 |
| 4/1/2020                  | 69                                 | 4                     | 60.75                      | 1094.250                          | 33.08                         | <b>3.52</b>                                 |
| 6/26/2020                 | 41                                 | 4                     | 59.00                      | 1166.000                          | 34.15                         | <b>3.31</b>                                 |
| 9/22/2020                 | 105                                | 4                     | 79.25                      | 916.250                           | 30.27                         | <b>5.07</b>                                 |
| 12/29/2020                | 86                                 | 4                     | 75.25                      | 737.583                           | 27.16                         | <b>5.36</b>                                 |
| 3/11/2021                 | 83                                 | 4                     | 78.63                      | 726.896                           | 26.96                         | <b>5.65</b>                                 |
| 6/16/2021                 | 79                                 | 4                     | 88.13                      | 134.729                           | 11.61                         | <b>14.75</b>                                |
| 9/30/2021                 | 104                                | 4                     | 87.88                      | 123.729                           | 11.12                         | <b>15.35</b>                                |
| 12/23/2021                | 2.5                                | 4                     | 67.00                      | 1971.167                          | 44.40                         | <b>2.91</b>                                 |
| 3/11/2022                 | 10                                 | 4                     | 48.88                      | 2536.063                          | 50.36                         | 1.67                                        |
| 6/30/2022                 | 81                                 | 4                     | 49.38                      | 2577.229                          | 50.77                         | 1.68                                        |
| 9/21/2022                 | 23                                 | 4                     | 29.13                      | 1267.729                          | 35.61                         | 1.07                                        |
| 12/19/2022                | 61                                 | 4                     | 43.75                      | 1084.917                          | 32.94                         | 2.05                                        |

**Table C-8. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Arsenic**  
Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                    |                       |                                     |                           |                               |                                             |
|---------------------------|------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Arsenic Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.70                               | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 0.70                               | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 0.60                               | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 0.76                               | 4                     | 0.69                                | 0.004                     | 0.07                          | -39.11                                      |
| 2/29/2016                 | 0.69                               | 4                     | 0.69                                | 0.004                     | 0.07                          | -44.07                                      |
| 6/16/2016                 | 0.7                                | 4                     | 0.69                                | 0.004                     | 0.07                          | -52.66                                      |
| 9/26/2016                 | 0.47                               | 4                     | 0.66                                | 0.016                     | 0.13                          | -49.86                                      |
| 3/8/2017                  | 10.50                              | 4                     | 3.09                                | 24.415                    | 4.94                          | -1.59                                       |
| 6/10/2017                 | 10.50                              | 4                     | 5.54                                | 32.778                    | 5.73                          | -0.68                                       |
| 9/16/2017                 | 5.50                               | 4                     | 6.74                                | 23.042                    | 4.80                          | -0.61                                       |
| 12/14/2017                | --                                 | 3                     | 8.83                                | 8.333                     | 2.89                          | -0.20                                       |
| 3/17/2018                 | 5                                  | 3                     | 7.00                                | 9.250                     | 3.04                          | *                                           |
| 6/16/2018                 | 5                                  | 3                     | 5.17                                | 0.083                     | 0.29                          | *                                           |
| 9/29/2018                 | 6                                  | 3                     | 5.33                                | 0.333                     | 0.58                          | *                                           |
| 11/17/2018                | --                                 | 3                     | 5.33                                | 0.333                     | 0.58                          | *                                           |
| 3/16/2019                 | 2.5                                | 3                     | 4.50                                | 3.250                     | 1.80                          | 0.46                                        |
| 6/1/2019                  | --                                 | 2                     | 4.25                                | 6.125                     | 2.47                          | 0.23                                        |
| 10/12/2019                | 5                                  | 2                     | 3.75                                | 3.125                     | 1.77                          | 1.00                                        |
| 12/22/2019                | --                                 | 2                     | 3.75                                | 3.125                     | 1.77                          | 1.00                                        |
| 4/1/2020                  | 2.5                                | 2                     | 3.75                                | 3.125                     | 1.77                          | 1.00                                        |
| 6/26/2020                 | --                                 | 2                     | 3.75                                | 3.125                     | 1.77                          | 1.00                                        |
| 9/22/2020                 | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 12/29/2020                | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 3/11/2021                 | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 6/16/2021                 | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 9/30/2021                 | 6                                  | 2                     | 4.25                                | 6.125                     | 2.47                          | 1.00                                        |
| 12/23/2021                | --                                 | 2                     | 4.25                                | 6.125                     | 2.47                          | 1.00                                        |
| 3/11/2022                 | 10                                 | 2                     | 8.00                                | 8.000                     | 2.83                          | 0.41                                        |
| 6/30/2022                 | --                                 | 2                     | 8.00                                | 8.000                     | 2.83                          | 0.41                                        |
| 9/21/2022                 | 10                                 | 2                     | 10.00                               | 0.000                     | 0.00                          | *                                           |
| 12/19/2022                | --                                 | 2                     | 10.00                               | 0.000                     | 0.00                          | *                                           |

| BXS-1 (Downgradient Well) |                                    |                       |                                     |                           |                               |                                             |
|---------------------------|------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Arsenic Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 0.30                               | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 0.20                               | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 0.50                               | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 0.26                               | 4                     | 0.32                                | 0.017                     | 0.13                          | -38.69                                      |
| 2/29/2016                 | 0.29                               | 4                     | 0.31                                | 0.017                     | 0.13                          | -42.84                                      |
| 6/16/2016                 | 0.30                               | 4                     | 0.34                                | 0.012                     | 0.11                          | -51.63                                      |
| 9/26/2016                 | 0.25                               | 4                     | 0.28                                | 0.001                     | 0.02                          | -63.69                                      |
| 3/8/2017                  | 10.50                              | 4                     | 2.84                                | 26.113                    | 5.11                          | -1.64                                       |
| 6/10/2017                 | --                                 | 3                     | 3.68                                | 34.851                    | 5.90                          | -1.10                                       |
| 9/16/2017                 | 5.50                               | 3                     | 5.42                                | 26.271                    | 5.13                          | -0.92                                       |
| 12/14/2017                | 5                                  | 3                     | 7.00                                | 9.250                     | 3.04                          | -1.04                                       |
| 3/17/2018                 | 5                                  | 3                     | 5.17                                | 0.083                     | 0.29                          | *                                           |
| 6/16/2018                 | --                                 | 3                     | 5.17                                | 0.083                     | 0.29                          | *                                           |
| 9/29/2018                 | 5                                  | 3                     | 5.00                                | 0.000                     | 0.00                          | *                                           |
| 11/17/2018                | --                                 | 2                     | 5.00                                | 0.000                     | 0.00                          | *                                           |
| 3/16/2019                 | 2.5                                | 2                     | 3.75                                | 3.125                     | 1.77                          | 0.00                                        |
| 6/1/2019                  | --                                 | 2                     | 3.75                                | 3.125                     | 1.77                          | 0.00                                        |
| 10/12/2019                | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 12/22/2019                | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 4/1/2020                  | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 6/26/2020                 | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 9/22/2020                 | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 12/29/2020                | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 3/11/2021                 | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 6/16/2021                 | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 9/30/2021                 | 2.5                                | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 12/23/2021                | --                                 | 2                     | 2.50                                | 0.000                     | 0.00                          | *                                           |
| 3/11/2022                 | 10                                 | 2                     | 6.25                                | 28.125                    | 5.30                          | 0.00                                        |
| 6/30/2022                 | --                                 | 2                     | 6.25                                | 28.125                    | 5.30                          | 0.00                                        |
| 9/21/2022                 | 10                                 | 2                     | 10.00                               | 0.000                     | 0.00                          | *                                           |
| 12/19/2022                | --                                 | 2                     | 10.00                               | 0.000                     | 0.00                          | *                                           |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or *gray* is a statistically valid detection (Student's T-Test).

**Table C-9. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Barium**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:  $t_c = 2.447$   $\nu = 6$

$t_c = 2.571$   $\nu = 5$

$t_c = 2.776$   $\nu = 4$

$t_c = 3.182$   $\nu = 3$

$t_c = 4.303$   $\nu = 2$

$t_c = 12.706$   $\nu = 1$

| BXS-4 (Upgradient Well) |                                   |                       |                                         |                                   |
|-------------------------|-----------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Barium Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 27.7                              | --                    | --                                      | --                                |
| 2/23/2015               | 27.7                              | --                    | --                                      | --                                |
| 9/14/2015               | 30.0                              | --                    | --                                      | --                                |
| 12/7/2015               | 27.7                              | 4                     | 28.28                                   | 1.32250                           |
| 2/29/2016               | 28.6                              | 4                     | 28.50                                   | 1.18000                           |
| 6/16/2016               | 30.5                              | 4                     | 29.20                                   | 1.64667                           |
| 9/26/2016               | 31.2                              | 4                     | 29.50                                   | 2.64667                           |
| 3/8/2017                | 28.9                              | 4                     | 29.80                                   | 1.56667                           |
| 6/10/2017               | --                                | 3                     | 30.20                                   | 1.39000                           |
| 9/16/2017               | 30.0                              | 3                     | 30.03                                   | 1.32333                           |
| 12/14/2017              | --                                | 2                     | 29.45                                   | 0.60500                           |
| 3/17/2018               | 35.9                              | 2                     | 32.95                                   | 17.40500                          |
| 6/16/2018               | --                                | 2                     | 32.95                                   | 17.40500                          |
| 9/29/2018               | 31.8                              | 2                     | 33.85                                   | 8.40500                           |
| 11/17/2018              | --                                | 2                     | 33.85                                   | 8.40500                           |
| 3/16/2019               | 26                                | 2                     | 28.90                                   | 16.82000                          |
| 6/1/2019                | --                                | 2                     | 28.90                                   | 16.82000                          |
| 10/12/2019              | 28                                | 2                     | 27.00                                   | 2.00000                           |
| 12/22/2019              | --                                | 2                     | 27.00                                   | 2.00000                           |
| 4/1/2020                | 24.0                              | 2                     | 26.00                                   | 8.00000                           |
| 6/26/2020               | --                                | 2                     | 26.00                                   | 8.00000                           |
| 9/22/2020               | 24.1                              | 2                     | 24.05                                   | 0.00500                           |
| 12/29/2020              | --                                | 2                     | 24.05                                   | 0.00500                           |
| 3/11/2021               | 16.2                              | 2                     | 20.15                                   | 31.20500                          |
| 6/16/2021               | --                                | 2                     | 20.15                                   | 31.20500                          |
| 9/30/2021               | 27.1                              | 2                     | 21.65                                   | 59.40500                          |
| 12/23/2021              | --                                | 2                     | 21.65                                   | 59.40500                          |
| 3/11/2022               | 2.5                               | 2                     | 14.80                                   | 302.5800                          |
| 6/30/2022               | --                                | 2                     | 14.80                                   | 302.5800                          |
| 9/21/2022               | 18.9                              | 2                     | 10.70                                   | 134.4800                          |
| 12/19/2022              | --                                | 2                     | 10.70                                   | 134.4800                          |

| BXS-3 (Downgradient Well) |                                   |                       |                           |                                   |                               |                                             |
|---------------------------|-----------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Barium Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 130                               | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 127                               | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 152                               | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 162                               | 4                     | 142.75                    | 288.917                           | 17.00                         | <b>13.44</b>                                |
| 2/29/2016                 | 115                               | 4                     | 139.00                    | 472.667                           | 21.74                         | <b>10.15</b>                                |
| 6/16/2016                 | 109                               | 4                     | 134.50                    | 697.667                           | 26.41                         | <b>7.96</b>                                 |
| 9/26/2016                 | 128                               | 4                     | 128.50                    | 561.667                           | 23.70                         | <b>8.33</b>                                 |
| 3/8/2017                  | 128                               | 4                     | 120.00                    | 91.333                            | 9.56                          | <b>18.72</b>                                |
| 6/10/2017                 | --                                | 3                     | 121.67                    | 120.333                           | 10.97                         | <b>14.36</b>                                |
| 9/16/2017                 | 129                               | 3                     | 128.33                    | 0.333                             | 0.58                          | <b>132.28</b>                               |
| 12/14/2017                | --                                | 2                     | 128.50                    | 0.500                             | 0.71                          | <b>133.26</b>                               |
| 3/17/2018                 | 49.7                              | 2                     | 89.35                     | 3144.245                          | 56.07                         | 1.42                                        |
| 6/16/2018                 | --                                | 2                     | 89.35                     | 3144.245                          | 56.07                         | 1.42                                        |
| 9/29/2018                 | 29.95                             | 2                     | 39.83                     | 195.031                           | 13.97                         | 0.59                                        |
| 11/17/2018                | 25.5                              | 3                     | 35.05                     | 165.918                           | 12.88                         | 0.16                                        |
| 3/16/2019                 | 34                                | 3                     | 29.82                     | 18.076                            | 4.25                          | 0.24                                        |
| 6/1/2019                  | 29                                | 4                     | 29.61                     | 12.217                            | 3.50                          | 0.21                                        |
| 10/12/2019                | 57.7                              | 4                     | 36.55                     | 210.977                           | 14.53                         | 1.30                                        |
| 12/22/2019                | 41.5                              | 4                     | 40.55                     | 157.110                           | 12.53                         | 2.14                                        |
| 4/1/2020                  | 43.3                              | 4                     | 42.86                     | 138.109                           | 11.75                         | 2.72                                        |
| 6/26/2020                 | 31.6                              | 4                     | 43.51                     | 115.771                           | 10.76                         | <b>3.05</b>                                 |
| 9/22/2020                 | 57.8                              | 4                     | 43.54                     | 116.719                           | 10.80                         | <b>3.61</b>                                 |
| 12/29/2020                | 47.0                              | 4                     | 44.91                     | 116.811                           | 10.81                         | <b>3.86</b>                                 |
| 3/11/2021                 | 23.6                              | 4                     | 40.00                     | 235.120                           | 15.33                         | 2.30                                        |
| 6/16/2021                 | 24.5                              | 4                     | 38.23                     | 287.483                           | 16.96                         | 1.93                                        |
| 9/30/2021                 | 26.9                              | 4                     | 30.50                     | 122.940                           | 11.09                         | 1.14                                        |
| 12/23/2021                | 16.7                              | 4                     | 22.93                     | 19.162                            | 4.38                          | 0.22                                        |
| 3/11/2022                 | 24.6                              | 4                     | 23.18                     | 19.863                            | 4.46                          | 0.67                                        |
| 6/30/2022                 | 30.8                              | 4                     | 24.75                     | 35.350                            | 5.95                          | 0.79                                        |
| 9/21/2022                 | 18.3                              | 4                     | 22.60                     | 41.513                            | 6.44                          | 1.35                                        |
| 12/19/2022                | 17.7                              | 4                     | 22.85                     | 37.830                            | 6.15                          | 1.39                                        |

**Table C-9. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Barium**  
Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BX5-2 (Downgradient Well) |                                   |                       |                           |                                   |                               |                                             |
|---------------------------|-----------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Barium Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 49.6                              | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 47.0                              | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 46.6                              | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 43.7                              | 4                     | 46.73                     | 5.836                             | 2.42                          | <b>13.79</b>                                |
| 2/29/2016                 | 47.8                              | 4                     | 46.28                     | 3.196                             | 1.79                          | <b>16.99</b>                                |
| 6/16/2016                 | 43.5                              | 4                     | 45.40                     | 4.567                             | 2.14                          | <b>13.00</b>                                |
| 9/26/2016                 | 31.9                              | 4                     | 41.73                     | 46.829                            | 6.84                          | <b>3.48</b>                                 |
| 3/8/2017                  | 40.1                              | 4                     | 40.83                     | 45.329                            | 6.73                          | <b>3.22</b>                                 |
| 6/10/2017                 | 20.3                              | 4                     | 33.95                     | 106.517                           | 10.32                         | 0.72                                        |
| 9/16/2017                 | 40.5                              | 4                     | 33.20                     | 89.667                            | 9.47                          | 0.66                                        |
| 12/14/2017                | --                                | 3                     | 33.63                     | 133.373                           | 11.55                         | 0.63                                        |
| 3/17/2018                 | 37.8                              | 3                     | 32.87                     | 120.263                           | 10.97                         | -0.01                                       |
| 6/16/2018                 | 35.7                              | 3                     | 38.00                     | 5.790                             | 2.41                          | 1.55                                        |
| 9/29/2018                 | 34.6                              | 3                     | 36.03                     | 2.643                             | 1.63                          | 0.97                                        |
| 11/17/2018                | --                                | 3                     | 36.03                     | 2.643                             | 1.63                          | 0.97                                        |
| 3/16/2019                 | 40                                | 3                     | 36.77                     | 8.143                             | 2.85                          | 2.36                                        |
| 6/1/2019                  | --                                | 2                     | 37.30                     | 14.580                            | 3.82                          | 2.12                                        |
| 10/12/2019                | 41.1                              | 2                     | 40.55                     | 0.605                             | 0.78                          | <b>11.87</b>                                |
| 12/22/2019                | --                                | 2                     | 40.55                     | 0.605                             | 0.78                          | <b>11.87</b>                                |
| 4/1/2020                  | 38.0                              | 2                     | 39.55                     | 4.805                             | 2.19                          | <b>5.36</b>                                 |
| 6/26/2020                 | --                                | 2                     | 39.55                     | 4.805                             | 2.19                          | <b>5.36</b>                                 |
| 9/22/2020                 | 38.2                              | 2                     | 38.10                     | 0.020                             | 0.14                          | <b>125.67</b>                               |
| 12/29/2020                | --                                | 2                     | 38.10                     | 0.020                             | 0.14                          | <b>125.67</b>                               |
| 3/11/2021                 | 32.0                              | 2                     | 35.10                     | 19.220                            | 4.38                          | 2.98                                        |
| 6/16/2021                 | --                                | 2                     | 35.10                     | 19.220                            | 4.38                          | 2.98                                        |
| 9/30/2021                 | 35.8                              | 2                     | 33.90                     | 7.220                             | 2.69                          | 2.12                                        |
| 12/23/2021                | --                                | 2                     | 33.90                     | 7.220                             | 2.69                          | 2.12                                        |
| 3/11/2022                 | 28.8                              | 2                     | 32.30                     | 24.500                            | 4.95                          | 1.37                                        |
| 6/30/2022                 | --                                | 2                     | 32.30                     | 24.500                            | 4.95                          | 1.37                                        |
| 9/21/2022                 | 27.7                              | 2                     | 28.25                     | 0.605                             | 0.78                          | 2.14                                        |
| 12/19/2022                | --                                | 2                     | 28.25                     | 0.605                             | 0.78                          | 2.14                                        |

| BX5-1 (Downgradient Well) |                                   |                       |                           |                                   |                               |                                             |
|---------------------------|-----------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Barium Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 15.3                              | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 13.1                              | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 14.4                              | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 13.2                              | 4                     | 14.00                     | 1.100                             | 1.05                          | -18.34                                      |
| 2/29/2016                 | 14.5                              | 4                     | 13.80                     | 0.567                             | 0.75                          | -22.25                                      |
| 6/16/2016                 | 18.8                              | 4                     | 15.23                     | 6.029                             | 2.46                          | -10.09                                      |
| 9/26/2016                 | 17.7                              | 4                     | 16.05                     | 6.937                             | 2.63                          | -8.69                                       |
| 3/8/2017                  | 22.4                              | 4                     | 18.35                     | 10.617                            | 3.26                          | -6.56                                       |
| 6/10/2017                 | --                                | 3                     | 19.63                     | 6.043                             | 2.46                          | -6.71                                       |
| 9/16/2017                 | 24.2                              | 3                     | 21.43                     | 11.263                            | 3.36                          | -4.20                                       |
| 12/14/2017                | 35.2                              | 3                     | 27.27                     | 48.013                            | 6.93                          | -0.54                                       |
| 3/17/2018                 | 16.4                              | 3                     | 25.27                     | 89.213                            | 9.45                          | -1.24                                       |
| 6/16/2018                 | --                                | 3                     | 25.27                     | 89.213                            | 9.45                          | -1.24                                       |
| 9/29/2018                 | 16.1                              | 3                     | 22.57                     | 119.723                           | 10.94                         | -1.70                                       |
| 11/17/2018                | --                                | 2                     | 16.25                     | 0.045                             | 0.21                          | -8.56                                       |
| 3/16/2019                 | 16                                | 2                     | 16.05                     | 0.005                             | 0.07                          | -4.43                                       |
| 6/1/2019                  | --                                | 2                     | 16.05                     | 0.005                             | 0.07                          | -4.43                                       |
| 10/12/2019                | 14.3                              | 2                     | 15.15                     | 1.445                             | 1.20                          | -9.03                                       |
| 12/22/2019                | --                                | 2                     | 15.15                     | 1.445                             | 1.20                          | -9.03                                       |
| 4/1/2020                  | 14.2                              | 2                     | 14.25                     | 0.005                             | 0.07                          | -5.87                                       |
| 6/26/2020                 | --                                | 2                     | 14.25                     | 0.005                             | 0.07                          | -5.87                                       |
| 9/22/2020                 | 18.2                              | 2                     | 16.20                     | 8.000                             | 2.83                          | -3.92                                       |
| 12/29/2020                | --                                | 2                     | 16.20                     | 8.000                             | 2.83                          | -3.92                                       |
| 3/11/2021                 | 16.2                              | 2                     | 17.20                     | 2.000                             | 1.41                          | -0.72                                       |
| 6/16/2021                 | --                                | 2                     | 17.20                     | 2.000                             | 1.41                          | -0.72                                       |
| 9/30/2021                 | 23.8                              | 2                     | 20.00                     | 28.880                            | 5.37                          | -0.25                                       |
| 12/23/2021                | --                                | 2                     | 20.00                     | 28.880                            | 5.37                          | -0.25                                       |
| 3/11/2022                 | 21.1                              | 2                     | 22.45                     | 3.645                             | 1.91                          | 0.62                                        |
| 6/30/2022                 | --                                | 2                     | 22.45                     | 3.645                             | 1.91                          | 0.62                                        |
| 9/21/2022                 | 18.7                              | 2                     | 19.90                     | 2.880                             | 1.70                          | 1.11                                        |
| 12/19/2022                | --                                | 2                     | 19.90                     | 2.880                             | 1.70                          | 1.11                                        |

**Notes**

x̄ = average concentration for downgradient well. m<sub>o</sub> = average concentration for upgradient well. n = number of samples.

s<sup>1</sup> = sample variance in upgradient well. s<sup>2</sup> = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or **gray** is a statistically valid detection (Student's T-Test).

**Table C-10. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Iron**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:

$t_c = 2.447$   $v=6$

$t_c = 2.571$   $v=5$

$t_c = 2.776$   $v=4$

$t_c = 3.182$   $v=3$

$t_c = 4.303$   $v=2$

$t_c = 12.706$   $v=1$

| BXS-4 (Upgradient Well) |                                 |                       |                                         |                                   |
|-------------------------|---------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Iron Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 70.0                            | --                    | --                                      | --                                |
| 2/23/2015               | 73.2                            | --                    | --                                      | --                                |
| 9/14/2015               | 53.5                            | --                    | --                                      | --                                |
| 12/7/2015               | 56.0                            | 4                     | 63.18                                   | 97.39                             |
| 2/29/2016               | 95                              | 4                     | 69.43                                   | 367.39                            |
| 6/16/2016               | 55.2                            | 4                     | 64.93                                   | 403.09                            |
| 9/26/2016               | 68.0                            | 4                     | 68.55                                   | 345.21                            |
| 3/8/2017                | 498.0                           | 4                     | 179.05                                  | 45488.14                          |
| 6/10/2017               | --                              | 3                     | 207.07                                  | 63522.61                          |
| 9/16/2017               | 839.0                           | 3                     | 468.33                                  | 149270.33                         |
| 12/14/2017              | --                              | 2                     | 668.50                                  | 58140.50                          |
| 3/17/2018               | 825                             | 2                     | 832.00                                  | 98.00                             |
| 6/16/2018               | --                              | 2                     | 832.00                                  | 98.00                             |
| 9/29/2018               | 886                             | 2                     | 855.50                                  | 1860.50                           |
| 11/17/2018              | --                              | 2                     | 855.50                                  | 1860.50                           |
| 3/16/2019               | 131                             | 2                     | 508.50                                  | 285012.50                         |
| 6/1/2019                | --                              | 2                     | 508.50                                  | 285012.50                         |
| 10/12/2019              | 45                              | 2                     | 88.00                                   | 3698.00                           |
| 12/22/2019              | --                              | 2                     | 88.00                                   | 3698.00                           |
| 4/1/2020                | 101                             | 2                     | 73.00                                   | 1568.00                           |
| 6/26/2020               | --                              | 2                     | 73.00                                   | 1568.00                           |
| 9/22/2020               | 50                              | 2                     | 75.50                                   | 1300.50                           |
| 12/29/2020              | --                              | 2                     | 75.50                                   | 1300.50                           |
| 3/11/2021               | 10                              | 2                     | 30.00                                   | 800.00                            |
| 6/16/2021               | --                              | 2                     | 30.00                                   | 800.00                            |
| 9/30/2021               | 232                             | 2                     | 121.00                                  | 24642.00                          |
| 12/23/2021              | --                              | 2                     | 121.00                                  | 24642.00                          |
| 3/11/2022               | 117                             | 2                     | 174.50                                  | 6612.50                           |
| 6/30/2022               | --                              | 2                     | 174.50                                  | 6612.50                           |
| 9/21/2022               | 99                              | 2                     | 108.00                                  | 162.00                            |
| 12/19/2022              | --                              | 2                     | 108.00                                  | 162.00                            |

| BXS-3 (Downgradient Well) |                                 |                       |                            |                                   |                               |                                             |
|---------------------------|---------------------------------|-----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Iron Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x̄) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 120,000                         | --                    | --                         | --                                | --                            | --                                          |
| 2/23/2015                 | 114,000                         | --                    | --                         | --                                | --                            | --                                          |
| 9/14/2015                 | 122,000                         | --                    | --                         | --                                | --                            | --                                          |
| 12/7/2015                 | 126,000                         | 4                     | 120,500                    | 25,000,000                        | 5,000                         | <b>48.17</b>                                |
| 2/29/2016                 | 106,000                         | 4                     | 117,000                    | 78,666,667                        | 8,869                         | <b>26.37</b>                                |
| 6/16/2016                 | 108,000                         | 4                     | 115,500                    | 99,666,667                        | 9,983                         | <b>23.13</b>                                |
| 9/26/2016                 | 107,000                         | 4                     | 111,750                    | 90,916,667                        | 9,535                         | <b>23.43</b>                                |
| 3/8/2017                  | 112,000                         | 4                     | 108,250                    | 6,916,667                         | 2,630                         | <b>81.92</b>                                |
| 6/10/2017                 | --                              | 3                     | 109,000                    | 7,000,000                         | 2,646                         | <b>70.90</b>                                |
| 9/16/2017                 | 108,000                         | 3                     | 109,000                    | 7,000,000                         | 2,646                         | <b>70.31</b>                                |
| 12/14/2017                | --                              | 2                     | 110,000                    | 8,000,000                         | 2,828                         | <b>54.47</b>                                |
| 3/17/2018                 | 95,400                          | 2                     | 101,700                    | 79,380,000                        | 8,910                         | <b>16.01</b>                                |
| 6/16/2018                 | --                              | 2                     | 101,700                    | 79,380,000                        | 8,910                         | <b>16.01</b>                                |
| 9/29/2018                 | 70,350                          | 2                     | 82,875                     | 313,751,250                       | 17,713                        | <b>6.55</b>                                 |
| 11/17/2018                | 81,800                          | 3                     | 82,517                     | 157,260,833                       | 12,540                        | <b>11.28</b>                                |
| 3/16/2019                 | 98,000                          | 3                     | 83,383                     | 193,010,833                       | 13,893                        | <b>10.32</b>                                |
| 6/1/2019                  | 79,600                          | 4                     | 82,438                     | 132,252,292                       | 11,500                        | <b>14.22</b>                                |
| 10/12/2019                | 85,400                          | 4                     | 86,200                     | 67,600,000                        | 8,222                         | <b>20.95</b>                                |
| 12/22/2019                | 99,600                          | 4                     | 90,650                     | 94,596,667                        | 9,726                         | <b>18.62</b>                                |
| 4/1/2020                  | 81,700                          | 4                     | 86,575                     | 81,149,167                        | 9,008                         | <b>19.20</b>                                |
| 6/26/2020                 | 79,400                          | 4                     | 86,525                     | 82,089,167                        | 9,060                         | <b>19.08</b>                                |
| 9/22/2020                 | 85,900                          | 4                     | 86,650                     | 81,776,667                        | 9,043                         | <b>19.15</b>                                |
| 12/29/2020                | 67,100                          | 4                     | 78,525                     | 65,255,833                        | 8,078                         | <b>19.42</b>                                |
| 3/11/2021                 | 74,050                          | 4                     | 76,613                     | 63,693,958                        | 7,981                         | <b>19.19</b>                                |
| 6/16/2021                 | 60,100                          | 4                     | 71,788                     | 120,950,625                       | 10,998                        | <b>13.05</b>                                |
| 9/30/2021                 | 88,300                          | 4                     | 72,388                     | 144,970,625                       | 12,040                        | <b>12.00</b>                                |
| 12/23/2021                | 10                              | 4                     | 55,615                     | 1,506,729,900                     | 38,817                        | <b>2.86</b>                                 |
| 3/11/2022                 | 40,000                          | 4                     | 47,103                     | 1,378,106,025                     | 37,123                        | 2.53                                        |
| 6/30/2022                 | 75,900                          | 4                     | 51,053                     | 1,577,423,025                     | 39,717                        | 2.56                                        |
| 9/21/2022                 | 45,300                          | 4                     | 40,303                     | 971,911,358                       | 31,175                        | 2.58                                        |
| 12/19/2022                | 66,850                          | 4                     | 57,013                     | 293,373,958                       | 17,128                        | <b>6.64</b>                                 |

**Table C-10. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Iron**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                 |                       |                                     |                           |                               |                                             |
|---------------------------|---------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Iron Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 3/17/2014                 | 424                             | --                    | --                                  | --                        | --                            | --                                          |
| 6/2/2014                  | 421                             | --                    | --                                  | --                        | --                            | --                                          |
| 9/29/2014                 | 409                             | --                    | --                                  | --                        | --                            | --                                          |
| 11/17/2014                | 421                             | 4                     | 419                                 | 44                        | 6.7                           | <b>59.75</b>                                |
| 2/23/2015                 | 375                             | 4                     | 407                                 | 473                       | 21.7                          | <b>23.25</b>                                |
| 9/14/2015                 | 358                             | 4                     | 391                                 | 856                       | 29.3                          | <b>18.36</b>                                |
| 12/7/2015                 | 361                             | 4                     | 379                                 | 848                       | 29.1                          | <b>17.96</b>                                |
| 3/8/2017                  | 279                             | 4                     | 343                                 | 1890                      | 43.5                          | 1.51                                        |
| 6/10/2017                 | 8                               | 4                     | 252                                 | 27794                     | 166.7                         | 0.26                                        |
| 9/16/2017                 | 328                             | 4                     | 244                                 | 25889                     | 160.9                         | -0.95                                       |
| 12/14/2017                | --                              | 3                     | 205                                 | 29707                     | 172.4                         | -2.35                                       |
| 3/17/2018                 | 161.5                           | 3                     | 166                                 | 25614                     | 160.0                         | -7.19                                       |
| 6/16/2018                 | 206                             | 3                     | 232                                 | 7431                      | 86.2                          | -11.94                                      |
| 9/29/2018                 | 105                             | 3                     | 158                                 | 2562                      | 50.6                          | -16.52                                      |
| 11/17/2018                | --                              | 3                     | 158                                 | 2562                      | 50.6                          | -16.52                                      |
| 3/16/2019                 | 117                             | 3                     | 143                                 | 3044                      | 55.2                          | -0.97                                       |
| 6/1/2019                  | --                              | 2                     | 111                                 | 72                        | 8.5                           | -1.05                                       |
| 10/12/2019                | 62                              | 2                     | 90                                  | 1513                      | 38.9                          | 0.03                                        |
| 12/22/2019                | --                              | 2                     | 90                                  | 1513                      | 38.9                          | 0.03                                        |
| 4/1/2020                  | 256                             | 2                     | 159                                 | 18818                     | 137.2                         | 0.85                                        |
| 6/26/2020                 | --                              | 2                     | 159                                 | 18818                     | 137.2                         | 0.85                                        |
| 9/22/2020                 | 50                              | 2                     | 153                                 | 21218                     | 145.7                         | 0.73                                        |
| 12/29/2020                | --                              | 2                     | 153                                 | 21218                     | 145.7                         | 0.73                                        |
| 3/11/2021                 | 104                             | 2                     | 77                                  | 1458                      | 38.2                          | 1.40                                        |
| 6/16/2021                 | --                              | 2                     | 77                                  | 1458                      | 38.2                          | 1.40                                        |
| 9/30/2021                 | 186                             | 2                     | 145                                 | 3362                      | 58.0                          | 0.20                                        |
| 12/23/2021                | --                              | 2                     | 145                                 | 3362                      | 58.0                          | 0.20                                        |
| 3/11/2022                 | 15                              | 2                     | 101                                 | 14621                     | 120.9                         | -0.72                                       |
| 6/30/2022                 | --                              | 2                     | 101                                 | 14621                     | 120.9                         | -0.72                                       |
| 9/21/2022                 | 15                              | 2                     | 15                                  | 0                         | 0.0                           | -10.33                                      |
| 12/19/2022                | --                              | 2                     | 15                                  | 0                         | 0.0                           | -10.33                                      |

| BXS-1 (Downgradient Well) |                                 |                       |                                     |                           |                               |                                             |
|---------------------------|---------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Iron Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 10.0                            | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 10.0                            | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 6.4                             | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 9.0                             | 4                     | 8.85                                | 2.890                     | 1.70                          | -10.85                                      |
| 2/29/2016                 | 10.0                            | 4                     | 8.85                                | 2.890                     | 1.70                          | -6.30                                       |
| 6/16/2016                 | 3.0                             | 4                     | 7.10                                | 9.773                     | 3.13                          | -5.69                                       |
| 9/26/2016                 | 10.0                            | 4                     | 8.00                                | 11.333                    | 3.37                          | -6.41                                       |
| 3/8/2017                  | 54.0                            | 4                     | 19.25                               | 547.583                   | 23.40                         | -1.49                                       |
| 6/10/2017                 | --                              | 3                     | 22.33                               | 764.333                   | 27.65                         | -1.26                                       |
| 9/16/2017                 | 38.0                            | 3                     | 34.00                               | 496.000                   | 22.27                         | -1.94                                       |
| 12/14/2017                | 198.0                           | 3                     | 96.67                               | 7765.333                  | 88.12                         | -3.21                                       |
| 3/17/2018                 | 10.0                            | 3                     | 82.00                               | 10288.000                 | 101.43                        | -3.25                                       |
| 6/16/2018                 | --                              | 3                     | 82.00                               | 10288.000                 | 101.43                        | -3.25                                       |
| 9/29/2018                 | 10.0                            | 3                     | 72.67                               | 11781.333                 | 108.54                        | -3.28                                       |
| 11/17/2018                | --                              | 2                     | 10.00                               | 0.000                     | 0.00                          | -3.86                                       |
| 3/16/2019                 | 10.0                            | 2                     | 10.00                               | 0.000                     | 0.00                          | -1.32                                       |
| 6/1/2019                  | --                              | 2                     | 10.00                               | 0.000                     | 0.00                          | -1.32                                       |
| 10/12/2019                | 10.0                            | 2                     | 10.00                               | 0.000                     | 0.00                          | -1.81                                       |
| 12/22/2019                | --                              | 2                     | 10.00                               | 0.000                     | 0.00                          | -1.81                                       |
| 4/1/2020                  | 50.0                            | 2                     | 30.00                               | 800.000                   | 28.28                         | -1.25                                       |
| 6/26/2020                 | --                              | 2                     | 30.00                               | 800.000                   | 28.28                         | -1.25                                       |
| 9/22/2020                 | 50.0                            | 2                     | 50.00                               | 0.000                     | 0.00                          | -1.00                                       |
| 12/29/2020                | --                              | 2                     | 50.00                               | 0.000                     | 0.00                          | -1.00                                       |
| 3/11/2021                 | 20.0                            | 2                     | 35.00                               | 450.000                   | 21.21                         | 0.20                                        |
| 6/16/2021                 | --                              | 2                     | 35.00                               | 450.000                   | 21.21                         | 0.20                                        |
| 9/30/2021                 | 20.0                            | 2                     | 20.00                               | 0.000                     | 0.00                          | -0.91                                       |
| 12/23/2021                | --                              | 2                     | 20.00                               | 0.000                     | 0.00                          | -0.91                                       |
| 3/11/2022                 | 15.0                            | 2                     | 17.50                               | 12.500                    | 3.54                          | -2.73                                       |
| 6/30/2022                 | --                              | 2                     | 17.50                               | 12.500                    | 3.54                          | -2.73                                       |
| 9/21/2022                 | 15.0                            | 2                     | 15.00                               | 0.000                     | 0.00                          | -10.33                                      |
| 12/19/2022                | --                              | 2                     | 15.00                               | 0.000                     | 0.00                          | -10.33                                      |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or *gray* is a statistically valid detection (Student's T-Test).

**Table C-11. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Manganese**

Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:  $t_c = 2.447$   $\nu = 6$

$t_c = 2.571$   $\nu = 5$

$t_c = 2.776$   $\nu = 4$

$t_c = 3.182$   $\nu = 3$

$t_c = 4.303$   $\nu = 2$

$t_c = 12.706$   $\nu = 1$

| BXS-4 (Upgradient Well) |                                      |                       |                                         |                                   |
|-------------------------|--------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Manganese Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 115                                  | --                    | --                                      | --                                |
| 2/23/2015               | 120                                  | --                    | --                                      | --                                |
| 9/14/2015               | 114                                  | --                    | --                                      | --                                |
| 12/7/2015               | 110                                  | 4                     | 114.75                                  | 16.91667                          |
| 2/29/2016               | 105                                  | 4                     | 112.25                                  | 40.25000                          |
| 6/16/2016               | 118                                  | 4                     | 111.75                                  | 30.91667                          |
| 9/26/2016               | 124                                  | 4                     | 114.25                                  | 70.91667                          |
| 3/8/2017                | 74                                   | 4                     | 105.33                                  | 490.68917                         |
| 6/10/2017               | --                                   | 3                     | 105.43                                  | 735.96333                         |
| 9/16/2017               | 145                                  | 3                     | 114.43                                  | 1318.26333                        |
| 12/14/2017              | --                                   | 2                     | 109.65                                  | 2499.24500                        |
| 3/17/2018               | 115                                  | 2                     | 130.00                                  | 450.00000                         |
| 6/16/2018               | --                                   | 2                     | 130.00                                  | 450.00000                         |
| 9/29/2018               | 143                                  | 2                     | 129.00                                  | 392.00000                         |
| 11/17/2018              | --                                   | 2                     | 129.00                                  | 392.00000                         |
| 3/16/2019               | 137                                  | 2                     | 140.00                                  | 18.00000                          |
| 6/1/2019                | --                                   | 2                     | 140.00                                  | 18.00000                          |
| 10/12/2019              | 145                                  | 2                     | 141.00                                  | 32.00000                          |
| 12/22/2019              | --                                   | 2                     | 141.00                                  | 32.00000                          |
| 4/1/2020                | 138                                  | 2                     | 141.50                                  | 24.50000                          |
| 6/26/2020               | --                                   | 2                     | 141.50                                  | 24.50000                          |
| 9/22/2020               | 169                                  | 2                     | 153.50                                  | 480.50000                         |
| 12/29/2020              | --                                   | 2                     | 153.50                                  | 480.50000                         |
| 3/11/2021               | 148                                  | 2                     | 158.50                                  | 220.50000                         |
| 6/16/2021               | --                                   | 2                     | 158.50                                  | 220.50000                         |
| 9/30/2021               | 176                                  | 2                     | 162.00                                  | 392.00000                         |
| 12/23/2021              | --                                   | 2                     | 162.00                                  | 392.00000                         |
| 3/11/2022               | 119                                  | 2                     | 147.50                                  | 1624.50000                        |
| 6/30/2022               | --                                   | 2                     | 147.50                                  | 1624.50000                        |
| 9/21/2022               | 125                                  | 2                     | 122.00                                  | 18.00000                          |
| 12/19/2022              | --                                   | 2                     | 122.00                                  | 18.00000                          |

| BXS-3 (Downgradient Well) |                                      |                       |                           |                                   |                               |                                             |
|---------------------------|--------------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Manganese Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 8,620                                | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 10,100                               | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 5,290                                | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 5,990                                | 4                     | 7,500                     | 5,059,533                         | 2,249                         | <b>6.57</b>                                 |
| 2/29/2016                 | 11,800                               | 4                     | 8,295                     | 9,962,033                         | 3,156                         | <b>5.19</b>                                 |
| 6/16/2016                 | 13,900                               | 4                     | 9,245                     | 18,144,700                        | 4,260                         | <b>4.29</b>                                 |
| 9/26/2016                 | 4,620                                | 4                     | 9,078                     | 20,023,492                        | 4,475                         | <b>4.01</b>                                 |
| 3/8/2017                  | 8,730                                | 4                     | 9,763                     | 16,260,558                        | 4,032                         | <b>4.79</b>                                 |
| 6/10/2017                 | --                                   | 3                     | 9,083                     | 21,623,233                        | 4,650                         | <b>3.34</b>                                 |
| 9/16/2017                 | 6,460                                | 3                     | 6,603                     | 4,238,433                         | 2,059                         | <b>5.46</b>                                 |
| 12/14/2017                | --                                   | 2                     | 7,595                     | 2,576,450                         | 1,605                         | <b>6.59</b>                                 |
| 3/17/2018                 | 8,179                                | 2                     | 7,320                     | 1,477,481                         | 1,216                         | <b>8.36</b>                                 |
| 6/16/2018                 | --                                   | 2                     | 7,320                     | 1,477,481                         | 1,216                         | <b>8.36</b>                                 |
| 9/29/2018                 | 5,683                                | 2                     | 6,931                     | 3,116,256                         | 1,765                         | <b>5.45</b>                                 |
| 11/17/2018                | 4,890                                | 3                     | 6,251                     | 2,946,348                         | 1,716                         | <b>6.18</b>                                 |
| 3/16/2019                 | 4,136                                | 3                     | 4,903                     | 598,039                           | 773                           | <b>10.67</b>                                |
| 6/1/2019                  | 3,573                                | 4                     | 4,570                     | 840,807                           | 917                           | <b>9.66</b>                                 |
| 10/12/2019                | 5,310                                | 4                     | 4,477                     | 599,318                           | 774                           | <b>11.20</b>                                |
| 12/22/2019                | 5,550                                | 4                     | 4,642                     | 889,828                           | 943                           | <b>9.54</b>                                 |
| 4/1/2020                  | 6,355                                | 4                     | 5,197                     | 1,371,906                         | 1,171                         | <b>8.63</b>                                 |
| 6/26/2020                 | 4,620                                | 4                     | 5,459                     | 512,406                           | 716                           | <b>14.86</b>                                |
| 9/22/2020                 | 6,830                                | 4                     | 5,839                     | 939,273                           | 969                           | <b>11.73</b>                                |
| 12/29/2020                | 8,300                                | 4                     | 6,526                     | 2,300,523                         | 1,517                         | <b>8.40</b>                                 |
| 3/11/2021                 | 5,750                                | 4                     | 6,375                     | 2,461,100                         | 1,569                         | <b>7.92</b>                                 |
| 6/16/2021                 | 5,340                                | 4                     | 6,555                     | 1,748,300                         | 1,322                         | <b>9.67</b>                                 |
| 9/30/2021                 | 3,495                                | 4                     | 5,721                     | 3,917,440                         | 1,979                         | <b>5.62</b>                                 |
| 12/23/2021                | 5,720                                | 4                     | 5,076                     | 1,146,090                         | 1,071                         | <b>9.18</b>                                 |
| 3/11/2022                 | 8,835                                | 4                     | 5,848                     | 4,911,075                         | 2,216                         | <b>5.14</b>                                 |
| 6/30/2022                 | 8,680                                | 4                     | 6,683                     | 6,569,942                         | 2,563                         | <b>5.10</b>                                 |
| 9/21/2022                 | 6,195                                | 4                     | 7,358                     | 2,654,942                         | 1,629                         | <b>8.88</b>                                 |
| 12/19/2022                | 3,755                                | 4                     | 6,866                     | 5,765,373                         | 2,401                         | <b>5.62</b>                                 |

**Table C-11. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Manganese**  
Former J.H. Baxter South Woodwaste Landfill. *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                      |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Manganese Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 1,680                                | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 1,580                                | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 1,570                                | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 1,500                                | 4                     | 1,583                               | 5,492                     | 74.11                         | <b>39.55</b>                                |
| 2/29/2016                 | 1,600                                | 4                     | 1,563                               | 1,892                     | 43.49                         | <b>65.99</b>                                |
| 6/16/2016                 | 1,580                                | 4                     | 1,563                               | 1,892                     | 43.49                         | <b>66.17</b>                                |
| 9/26/2016                 | 1,200                                | 4                     | 1,470                               | 34,267                    | 185.11                        | <b>14.63</b>                                |
| 3/8/2017                  | 1,540                                | 4                     | 1,480                               | 35,467                    | 188.33                        | <b>14.50</b>                                |
| 6/10/2017                 | 324                                  | 4                     | 1,161                               | 340,431                   | 583.46                        | <b>3.61</b>                                 |
| 9/16/2017                 | 1,490                                | 4                     | 1,139                               | 317,316                   | 563.31                        | <b>3.63</b>                                 |
| 12/14/2017                | --                                   | 3                     | 1,118                               | 473,452                   | 688.08                        | 2.53                                        |
| 3/17/2018                 | 1,577                                | 3                     | 1,130                               | 489,299                   | 699.50                        | 2.47                                        |
| 6/16/2018                 | 1,475                                | 3                     | 1,514                               | 3,002                     | 54.79                         | <b>39.53</b>                                |
| 9/29/2018                 | 1,416                                | 3                     | 1,489                               | 6,591                     | 81.18                         | <b>27.81</b>                                |
| 11/17/2018                | --                                   | 3                     | 1,489                               | 6,591                     | 81.18                         | <b>27.81</b>                                |
| 3/16/2019                 | 1,664                                | 3                     | 1,518                               | 16,784                    | 129.55                        | <b>18.41</b>                                |
| 6/1/2019                  | --                                   | 2                     | 1,540                               | 30,752                    | 175.36                        | <b>11.29</b>                                |
| 10/12/2019                | 1,670                                | 2                     | 1,667                               | 18                        | 4.24                          | <b>305.20</b>                               |
| 12/22/2019                | --                                   | 2                     | 1,667                               | 18                        | 4.24                          | <b>305.20</b>                               |
| 4/1/2020                  | 1,520                                | 2                     | 1,595                               | 11,250                    | 106.07                        | <b>19.36</b>                                |
| 6/26/2020                 | --                                   | 2                     | 1,595                               | 11,250                    | 106.07                        | <b>19.36</b>                                |
| 9/22/2020                 | 1,605                                | 2                     | 1,563                               | 3,613                     | 60.10                         | <b>31.15</b>                                |
| 12/29/2020                | --                                   | 2                     | 1,563                               | 3,613                     | 60.10                         | <b>31.15</b>                                |
| 3/11/2021                 | 1,390                                | 2                     | 1,498                               | 23,113                    | 152.03                        | <b>12.40</b>                                |
| 6/16/2021                 | --                                   | 2                     | 1,498                               | 23,113                    | 152.03                        | <b>12.40</b>                                |
| 9/30/2021                 | 1,590                                | 2                     | 1,490                               | 20,000                    | 141.42                        | <b>13.15</b>                                |
| 12/23/2021                | --                                   | 2                     | 1,490                               | 20,000                    | 141.42                        | <b>13.15</b>                                |
| 3/11/2022                 | 1,360                                | 2                     | 1,475                               | 26,450                    | 162.63                        | <b>11.20</b>                                |
| 6/30/2022                 | --                                   | 2                     | 1,475                               | 26,450                    | 162.63                        | <b>11.20</b>                                |
| 9/21/2022                 | 1,330                                | 2                     | 1,345                               | 450                       | 21.21                         | <b>79.95</b>                                |
| 12/19/2022                | --                                   | 2                     | 1,345                               | 450                       | 21.21                         | <b>79.95</b>                                |

| BXS-1 (Downgradient Well) |                                      |                       |                                     |                           |                               |                                             |
|---------------------------|--------------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Manganese Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 265                                  | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 311                                  | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 238                                  | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 321                                  | 4                     | 284                                 | 1525                      | 39.05                         | <b>8.61</b>                                 |
| 2/29/2016                 | 150                                  | 4                     | 255                                 | 6269                      | 79.17                         | <b>3.59</b>                                 |
| 6/16/2016                 | 249                                  | 4                     | 240                                 | 4915                      | 70.11                         | <b>3.63</b>                                 |
| 9/26/2016                 | 290                                  | 4                     | 253                                 | 5539                      | 74.42                         | <b>3.69</b>                                 |
| 3/8/2017                  | 584                                  | 4                     | 318                                 | 34842                     | 186.66                        | 2.27                                        |
| 6/10/2017                 | --                                   | 3                     | 374                                 | 33390                     | 182.73                        | 2.52                                        |
| 9/16/2017                 | 216                                  | 3                     | 363                                 | 37889                     | 194.65                        | 2.18                                        |
| 12/14/2017                | 1,417                                | 3                     | 739                                 | 378619                    | 615.32                        | 1.76                                        |
| 3/17/2018                 | 198                                  | 3                     | 610                                 | 488114                    | 698.65                        | 1.19                                        |
| 6/16/2018                 | --                                   | 3                     | 610                                 | 488114                    | 698.65                        | 1.19                                        |
| 9/29/2018                 | 250                                  | 3                     | 622                                 | 475092                    | 689.27                        | 1.24                                        |
| 11/17/2018                | --                                   | 2                     | 224                                 | 1352                      | 36.77                         | 3.22                                        |
| 3/16/2019                 | 262                                  | 2                     | 256                                 | 72                        | 8.49                          | <b>17.29</b>                                |
| 6/1/2019                  | --                                   | 2                     | 256                                 | 72                        | 8.49                          | <b>17.29</b>                                |
| 10/12/2019                | 193                                  | 2                     | 228                                 | 2381                      | 48.79                         | 2.49                                        |
| 12/22/2019                | --                                   | 2                     | 228                                 | 2381                      | 48.79                         | 2.49                                        |
| 4/1/2020                  | 32                                   | 2                     | 113                                 | 12961                     | 113.84                        | -0.36                                       |
| 6/26/2020                 | --                                   | 2                     | 113                                 | 12961                     | 113.84                        | -0.36                                       |
| 9/22/2020                 | 38                                   | 2                     | 35                                  | 18                        | 4.24                          | -7.51                                       |
| 12/29/2020                | --                                   | 2                     | 35                                  | 18                        | 4.24                          | -7.51                                       |
| 3/11/2021                 | 8                                    | 2                     | 23                                  | 450                       | 21.21                         | -7.40                                       |
| 6/16/2021                 | --                                   | 2                     | 23                                  | 450                       | 21.21                         | -7.40                                       |
| 9/30/2021                 | 14                                   | 2                     | 11                                  | 18                        | 4.24                          | -10.55                                      |
| 12/23/2021                | --                                   | 2                     | 11                                  | 18                        | 4.24                          | -10.55                                      |
| 3/11/2022                 | 80                                   | 2                     | 47                                  | 2178                      | 46.67                         | -2.30                                       |
| 6/30/2022                 | --                                   | 2                     | 47                                  | 2178                      | 46.67                         | -2.30                                       |
| 9/21/2022                 | 302                                  | 2                     | 191                                 | 24642                     | 156.98                        | 0.62                                        |
| 12/19/2022                | --                                   | 2                     | 191                                 | 24642                     | 156.98                        | 0.62                                        |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_o$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or *gray* is a statistically valid detection (Student's T-Test).

**Table C-12. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Nickel**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

Student's T-Test Formula (t):

$$\frac{\bar{x} - m_0}{\sqrt{[(s^2/n) + (s^2/n)]}}$$

Critical Statistic:  $t_c = 2.447$

$\nu = 6$

$t_c = 2.571$

$\nu = 5$

$t_c = 2.776$

$\nu = 4$

$t_c = 3.182$

$\nu = 3$

$t_c = 4.303$

$\nu = 2$

$t_c = 12.706$

$\nu = 1$

| BXS-4 (Upgradient Well) |                                   |                       |                                         |                                   |
|-------------------------|-----------------------------------|-----------------------|-----------------------------------------|-----------------------------------|
| Date                    | Nickel Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (m <sub>0</sub> ) | Sample Variance (s <sup>2</sup> ) |
| 11/17/2014              | 1.1                               | --                    | --                                      | --                                |
| 2/23/2015               | 0.4                               | --                    | --                                      | --                                |
| 9/14/2015               | 2.0                               | --                    | --                                      | --                                |
| 12/7/2015               | 2.0                               | 4                     | 1.37                                    | 0.62890                           |
| 2/29/2016               | 2.0                               | 4                     | 1.59                                    | 0.67240                           |
| 6/16/2016               | 0.4                               | 4                     | 1.60                                    | 0.64000                           |
| 9/26/2016               | 2.0                               | 4                     | 1.60                                    | 0.64000                           |
| 3/8/2017                | 3.5                               | 4                     | 1.98                                    | 1.60250                           |
| 6/10/2017               | --                                | 3                     | 1.97                                    | 2.40333                           |
| 9/16/2017               | 2.7                               | 3                     | 2.73                                    | 0.56333                           |
| 12/14/2017              | --                                | 2                     | 3.10                                    | 0.32000                           |
| 3/17/2018               | 1.9                               | 2                     | 2.30                                    | 0.32000                           |
| 6/16/2018               | --                                | 2                     | 2.30                                    | 0.32000                           |
| 9/29/2018               | 0.4                               | 2                     | 1.15                                    | 1.12500                           |
| 11/17/2018              | --                                | 2                     | 1.15                                    | 1.12500                           |
| 3/16/2019               | 5                                 | 2                     | 2.70                                    | 10.58000                          |
| 6/1/2019                | --                                | 2                     | 2.70                                    | 10.58000                          |
| 10/12/2019              | 8                                 | 2                     | 6.50                                    | 4.50000                           |
| 12/22/2019              | --                                | 2                     | 6.50                                    | 4.50000                           |
| 4/1/2020                | 5                                 | 2                     | 6.50                                    | 4.50000                           |
| 6/26/2020               | --                                | 2                     | 6.50                                    | 4.50000                           |
| 9/22/2020               | 5                                 | 2                     | 5.00                                    | 0.00000                           |
| 12/29/2020              | --                                | 2                     | 5.00                                    | 0.00000                           |
| 3/11/2021               | 15                                | 2                     | 10.00                                   | 50.00000                          |
| 6/16/2021               | --                                | 2                     | 10.00                                   | 50.00000                          |
| 9/30/2021               | 5                                 | 2                     | 10.00                                   | 50.00000                          |
| 12/23/2021              | --                                | 2                     | 10.00                                   | 50.00000                          |
| 3/11/2022               | 5                                 | 2                     | 5.00                                    | 0.00000                           |
| 6/30/2022               | --                                | 2                     | 5.00                                    | 0.00000                           |
| 9/21/2022               | 5                                 | 2                     | 5.00                                    | 0.00000                           |
| 12/19/2022              | --                                | 2                     | 5.00                                    | 0.00000                           |

| BXS-3 (Downgradient Well) |                                   |                       |                           |                                   |                               |                                             |
|---------------------------|-----------------------------------|-----------------------|---------------------------|-----------------------------------|-------------------------------|---------------------------------------------|
| Date                      | Nickel Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration (x) | Sample Variance (s <sup>2</sup> ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 19.7                              | --                    | --                        | --                                | --                            | --                                          |
| 2/23/2015                 | 18.9                              | --                    | --                        | --                                | --                            | --                                          |
| 9/14/2015                 | 18.0                              | --                    | --                        | --                                | --                            | --                                          |
| 12/7/2015                 | 20.6                              | 4                     | 19.30                     | 1.233                             | 1.11                          | <b>26.29</b>                                |
| 2/29/2016                 | 18.4                              | 4                     | 18.98                     | 1.309                             | 1.14                          | <b>24.70</b>                                |
| 6/16/2016                 | 20.8                              | 4                     | 19.45                     | 2.117                             | 1.45                          | <b>21.50</b>                                |
| 9/26/2016                 | 14.8                              | 4                     | 18.65                     | 7.770                             | 2.79                          | <b>11.76</b>                                |
| 3/8/2017                  | 15.3                              | 4                     | 17.33                     | 7.902                             | 2.81                          | <b>9.96</b>                                 |
| 6/10/2017                 | --                                | 3                     | 16.97                     | 11.083                            | 3.33                          | <b>7.07</b>                                 |
| 9/16/2017                 | 21.0                              | 3                     | 17.03                     | 11.863                            | 3.44                          | <b>7.03</b>                                 |
| 12/14/2017                | --                                | 2                     | 18.15                     | 16.245                            | 4.03                          | <b>5.23</b>                                 |
| 3/17/2018                 | 5                                 | 2                     | 13.00                     | 128.000                           | 11.31                         | 1.34                                        |
| 6/16/2018                 | --                                | 2                     | 13.00                     | 128.000                           | 11.31                         | 1.34                                        |
| 9/29/2018                 | 26                                | 2                     | 15.50                     | 220.500                           | 14.85                         | 1.36                                        |
| 11/17/2018                | 43                                | 3                     | 24.67                     | 362.333                           | 19.04                         | 2.13                                        |
| 3/16/2019                 | 27                                | 3                     | 32.00                     | 91.000                            | 9.54                          | <b>4.91</b>                                 |
| 6/1/2019                  | 29                                | 4                     | 31.25                     | 62.917                            | 7.93                          | <b>6.23</b>                                 |
| 10/12/2019                | 36                                | 4                     | 33.75                     | 52.917                            | 7.27                          | <b>6.93</b>                                 |
| 12/22/2019                | 28                                | 4                     | 30.00                     | 16.667                            | 4.08                          | <b>9.28</b>                                 |
| 4/1/2020                  | 29.5                              | 4                     | 30.63                     | 13.229                            | 3.64                          | <b>10.23</b>                                |
| 6/26/2020                 | 30                                | 4                     | 30.88                     | 12.396                            | 3.52                          | <b>10.54</b>                                |
| 9/22/2020                 | 30                                | 4                     | 29.38                     | 0.896                             | 0.95                          | <b>51.51</b>                                |
| 12/29/2020                | 29                                | 4                     | 29.63                     | 0.229                             | 0.48                          | <b>102.88</b>                               |
| 3/11/2021                 | 48                                | 4                     | 34.13                     | 79.729                            | 8.93                          | <b>3.60</b>                                 |
| 6/16/2021                 | 38                                | 4                     | 36.13                     | 73.729                            | 8.59                          | <b>3.96</b>                                 |
| 9/30/2021                 | 29                                | 4                     | 35.88                     | 78.063                            | 8.84                          | <b>3.88</b>                                 |
| 12/23/2021                | 27                                | 4                     | 35.38                     | 88.229                            | 9.39                          | <b>3.70</b>                                 |
| 3/11/2022                 | 46                                | 4                     | 35.00                     | 76.667                            | 8.76                          | <b>6.85</b>                                 |
| 6/30/2022                 | 39                                | 4                     | 35.25                     | 78.917                            | 8.88                          | <b>6.81</b>                                 |
| 9/21/2022                 | 24                                | 4                     | 34.00                     | 106.000                           | 10.30                         | <b>5.63</b>                                 |
| 12/19/2022                | 28                                | 4                     | 34.25                     | 101.583                           | 10.08                         | <b>5.80</b>                                 |

**Table C-12. Statistical Analysis of Groundwater Quality Results for Downgradient Wells: Nickel**

Former J.H. Baxter South Woodwaste Landfill, *Arlington, Washington*

| BXS-2 (Downgradient Well) |                                   |                       |                                     |                           |                               |                                             |
|---------------------------|-----------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Nickel Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 35.8                              | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 34.1                              | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 30.5                              | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 29.3                              | 4                     | 32.43                               | 9.222                     | 3.04                          | <b>19.79</b>                                |
| 2/29/2016                 | 32.5                              | 4                     | 31.60                               | 4.520                     | 2.13                          | <b>26.34</b>                                |
| 6/16/2016                 | 31.8                              | 4                     | 31.03                               | 2.009                     | 1.42                          | <b>36.16</b>                                |
| 9/26/2016                 | 21.6                              | 4                     | 28.80                               | 24.927                    | 4.99                          | <b>10.76</b>                                |
| 3/8/2017                  | 30.2                              | 4                     | 29.03                               | 25.429                    | 5.04                          | <b>10.41</b>                                |
| 6/10/2017                 | 10.2                              | 4                     | 23.45                               | 98.090                    | 9.90                          | <b>4.27</b>                                 |
| 9/16/2017                 | 31.0                              | 4                     | 23.25                               | 93.797                    | 9.68                          | <b>4.22</b>                                 |
| 12/14/2017                | --                                | 3                     | 23.80                               | 138.880                   | 11.78                         | 3.04                                        |
| 3/17/2018                 | 18                                | 3                     | 19.73                               | 110.413                   | 10.51                         | 2.87                                        |
| 6/16/2018                 | 5                                 | 3                     | 18.00                               | 169.000                   | 13.00                         | 2.09                                        |
| 9/29/2018                 | 32                                | 3                     | 18.33                               | 182.333                   | 13.50                         | 2.19                                        |
| 11/17/2018                | --                                | 3                     | 18.33                               | 182.333                   | 13.50                         | 2.19                                        |
| 3/16/2019                 | 38                                | 3                     | 25.00                               | 309.000                   | 17.58                         | 2.14                                        |
| 6/1/2019                  | --                                | 2                     | 35.00                               | 18.000                    | 4.24                          | <b>8.54</b>                                 |
| 10/12/2019                | 39                                | 2                     | 38.50                               | 0.500                     | 0.71                          | <b>20.24</b>                                |
| 12/22/2019                | --                                | 2                     | 38.50                               | 0.500                     | 0.71                          | <b>20.24</b>                                |
| 4/1/2020                  | 36                                | 2                     | 37.50                               | 4.500                     | 2.12                          | <b>14.61</b>                                |
| 6/26/2020                 | --                                | 2                     | 37.50                               | 4.500                     | 2.12                          | <b>14.61</b>                                |
| 9/22/2020                 | 34                                | 2                     | 35.00                               | 2.000                     | 1.41                          | <b>30.00</b>                                |
| 12/29/2020                | --                                | 2                     | 35.00                               | 2.000                     | 1.41                          | <b>30.00</b>                                |
| 3/11/2021                 | 41                                | 2                     | 37.50                               | 24.500                    | 4.95                          | <b>4.51</b>                                 |
| 6/16/2021                 | --                                | 2                     | 37.50                               | 24.500                    | 4.95                          | <b>4.51</b>                                 |
| 9/30/2021                 | 35                                | 2                     | 38.00                               | 18.000                    | 4.24                          | <b>4.80</b>                                 |
| 12/23/2021                | --                                | 2                     | 38.00                               | 18.000                    | 4.24                          | <b>4.80</b>                                 |
| 3/11/2022                 | 34                                | 2                     | 34.50                               | 0.500                     | 0.71                          | <b>59.00</b>                                |
| 6/30/2022                 | --                                | 2                     | 34.50                               | 0.500                     | 0.71                          | <b>59.00</b>                                |
| 9/21/2022                 | 16                                | 2                     | 25.00                               | 162.000                   | 12.73                         | 2.22                                        |
| 12/19/2022                | --                                | 2                     | 25.00                               | 162.000                   | 12.73                         | 2.22                                        |

| BXS-1 (Downgradient Well) |                                   |                       |                                     |                           |                               |                                             |
|---------------------------|-----------------------------------|-----------------------|-------------------------------------|---------------------------|-------------------------------|---------------------------------------------|
| Date                      | Nickel Concentration <sup>1</sup> | Number of Samples (n) | Average Concentration ( $\bar{x}$ ) | Sample Variance ( $s^2$ ) | Sample Standard Deviation (s) | Student's T-Test Statistic (t) <sup>2</sup> |
| 11/17/2014                | 10.0                              | --                    | --                                  | --                        | --                            | --                                          |
| 2/23/2015                 | 9.3                               | --                    | --                                  | --                        | --                            | --                                          |
| 9/14/2015                 | 7.7                               | --                    | --                                  | --                        | --                            | --                                          |
| 12/7/2015                 | 6.6                               | 4                     | 8.40                                | 2.355                     | 1.53                          | <b>8.14</b>                                 |
| 2/29/2016                 | 6.6                               | 4                     | 7.55                                | 1.607                     | 1.27                          | <b>7.89</b>                                 |
| 6/16/2016                 | 9.2                               | 4                     | 7.53                                | 1.516                     | 1.23                          | <b>8.07</b>                                 |
| 9/26/2016                 | 8.4                               | 4                     | 7.70                                | 1.720                     | 1.31                          | <b>7.94</b>                                 |
| 3/8/2017                  | 15.7                              | 4                     | 9.98                                | 15.749                    | 3.97                          | <b>3.84</b>                                 |
| 6/10/2017                 | --                                | 3                     | 11.10                               | 16.030                    | 4.00                          | <b>3.68</b>                                 |
| 9/16/2017                 | 10.3                              | 3                     | 11.47                               | 14.343                    | 3.79                          | <b>3.92</b>                                 |
| 12/14/2017                | --                                | 2                     | 13.00                               | 14.580                    | 3.82                          | 3.63                                        |
| 3/17/2018                 | 5                                 | 2                     | 7.65                                | 14.045                    | 3.75                          | 2.00                                        |
| 6/16/2018                 | --                                | 2                     | 7.65                                | 14.045                    | 3.75                          | 2.00                                        |
| 9/29/2018                 | 12                                | 2                     | 8.50                                | 24.500                    | 4.95                          | 2.05                                        |
| 11/17/2018                | --                                | 2                     | 8.50                                | 24.500                    | 4.95                          | 2.05                                        |
| 3/16/2019                 | 12                                | 2                     | 12.00                               | 0.000                     | 0.00                          | 4.04                                        |
| 6/1/2019                  | --                                | 2                     | 12.00                               | 0.000                     | 0.00                          | 4.04                                        |
| 10/12/2019                | 12                                | 2                     | 12.00                               | 0.000                     | 0.00                          | 3.67                                        |
| 12/22/2019                | --                                | 2                     | 12.00                               | 0.000                     | 0.00                          | 3.67                                        |
| 4/1/2020                  | 5                                 | 2                     | 8.50                                | 24.500                    | 4.95                          | 0.53                                        |
| 6/26/2020                 | --                                | 2                     | 8.50                                | 24.500                    | 4.95                          | 0.53                                        |
| 9/22/2020                 | 11                                | 2                     | 8.00                                | 18.000                    | 4.24                          | 1.00                                        |
| 12/29/2020                | --                                | 2                     | 8.00                                | 18.000                    | 4.24                          | 1.00                                        |
| 3/11/2021                 | 15                                | 2                     | 13.00                               | 8.000                     | 2.83                          | 0.56                                        |
| 6/16/2021                 | --                                | 2                     | 13.00                               | 8.000                     | 2.83                          | 0.56                                        |
| 9/30/2021                 | 15                                | 2                     | 15.00                               | 0.000                     | 0.00                          | 1.00                                        |
| 12/23/2021                | --                                | 2                     | 15.00                               | 0.000                     | 0.00                          | 1.00                                        |
| 3/11/2022                 | 14                                | 2                     | 14.50                               | 0.500                     | 0.71                          | <b>19.00</b>                                |
| 6/30/2022                 | --                                | 2                     | 14.50                               | 0.500                     | 0.71                          | <b>19.00</b>                                |
| 9/21/2022                 | 28                                | 2                     | 21.00                               | 98.000                    | 9.90                          | 2.29                                        |
| 12/19/2022                | --                                | 2                     | 21.00                               | 98.000                    | 9.90                          | 2.29                                        |

**Notes**

$\bar{x}$  = average concentration for downgradient well.  $m_n$  = average concentration for upgradient well. n = number of samples.

$s^1$  = sample variance in upgradient well.  $s^2$  = sample variance in downgradient well. s = sample standard deviation.

t = Student's T-Test statistic. -- = analysis not applicable. \* = statistic with no/zero difference

<sup>1</sup> For non-detect concentrations, half of the reporting limit (MRL) is used. <sup>2</sup> Statistic in **bold** or *gray* is a statistically valid detection (Student's T-Test).

## **Appendix D**

### **Arsenic Transport Model and Calculations**

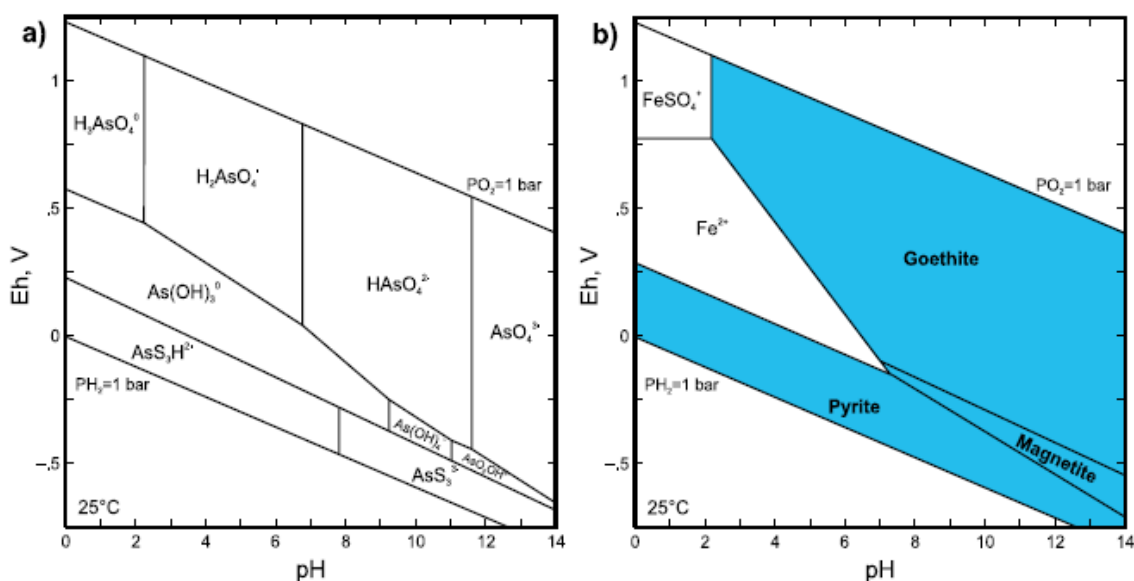
**(Source: GSI Water Solutions, Inc.)**

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# Arsenic Transport Model and Calculations

Naturally occurring arsenic can become mobilized in landfill groundwater interactions due enhanced microbial activity around disposed organic material. Arsenic is used in some wood preservation applications and can become a source of arsenic leaching from treated waste materials, however, the woodwaste disposed at J.H. Baxter's North and South Landfill consists of almost entirely of wood shavings and some intermixed bark. The woodwaste in turn provides organic content which can fuel microbial induced anaerobic groundwater conditions. The observation of low pH, negative oxidation reduction potential (ORP), low dissolved oxygen content, and diminishing concentrations of sulfate across the Site indicate the occurrence of these reduced conditions (USGS, 2006). Consequently, arsenic bearing minerals such as orpiment (arsenic sulfide) or arsenic rich pyrite (iron sulfides) can become unstable, allowing the dissolution or desorption of previously immobile arsenic (EPA, 2007). High concentrations of dissolved iron and manganese in the downgradient well (BXS-3) suggest that the process of mineral desorption may be occurring within the Site.

As the reduced site groundwater blends with the more aerobic and oxidative background aquifer it is expected that downgradient groundwater rapidly returns to aerobic conditions. A multitude of complexing and precipitation processes can occur in oxic groundwater conditions to reduce arsenic mobility. Additional groundwater water quality data was taken from United States Geologic Survey (USGS) monitored wells in the proximity to landfill to better determine background aquifer conditions (Figure D-1). The water quality data (Table D-1) indicate that reduced site groundwater will mix with a generally higher pH and oxygenated background aquifer (high dissolved oxygen generally associated with positive oxidation potential values). These oxidizing conditions, in turn, induce more rapid sorption and precipitation of arsenic. Figure D-2 below demonstrates the mineral solubility of some common arsenic bearing minerals (pyrite and goethite) and their sorbing characteristics relative to oxidation potential (Eh) and pH that is likely ongoing downgradient of the Site. As show in the figure, a positive oxidation potential and increasing pH correspond to greater propensity for arsenic sorption.



**Figure D-2.** Eh-pH diagrams for arsenic and iron at 25°C for coupled iron- and sulfate-reducing

systems. These paired diagrams show the relative distribution of potentially adsorbing arsenic species (left) relative to representative types of Fe-bearing sorbents (right) that are predicted to occur as a function of Eh and pH. (Figure 6.4, EPA 2007).

## Conservative Solute Transport Model

To quantify the potential offsite migration of dissolved arsenic a conservative modeling approach was taken. Using the Quick Domenico model, an advection-dispersion calculation for solute transport, arsenic was modeled as if no redox or sorptive forces were occurring. As previously noted, the redox conditions of arsenic once mixed with the more oxic background aquifer the mobile arsenic fraction will likely be rapidly reduced. This conservative approach provides a “worst case” scenario for the persistence of the highest observed concentration of arsenic.

The Domenico model was developed using the Site’s most recent groundwater data in conjunction with guidance from the Domenico Spreadsheet Analytical Model Manual developed by the California Regional Water Quality Board (SWRCB). Some of the assumptions in our calculation and this model include:

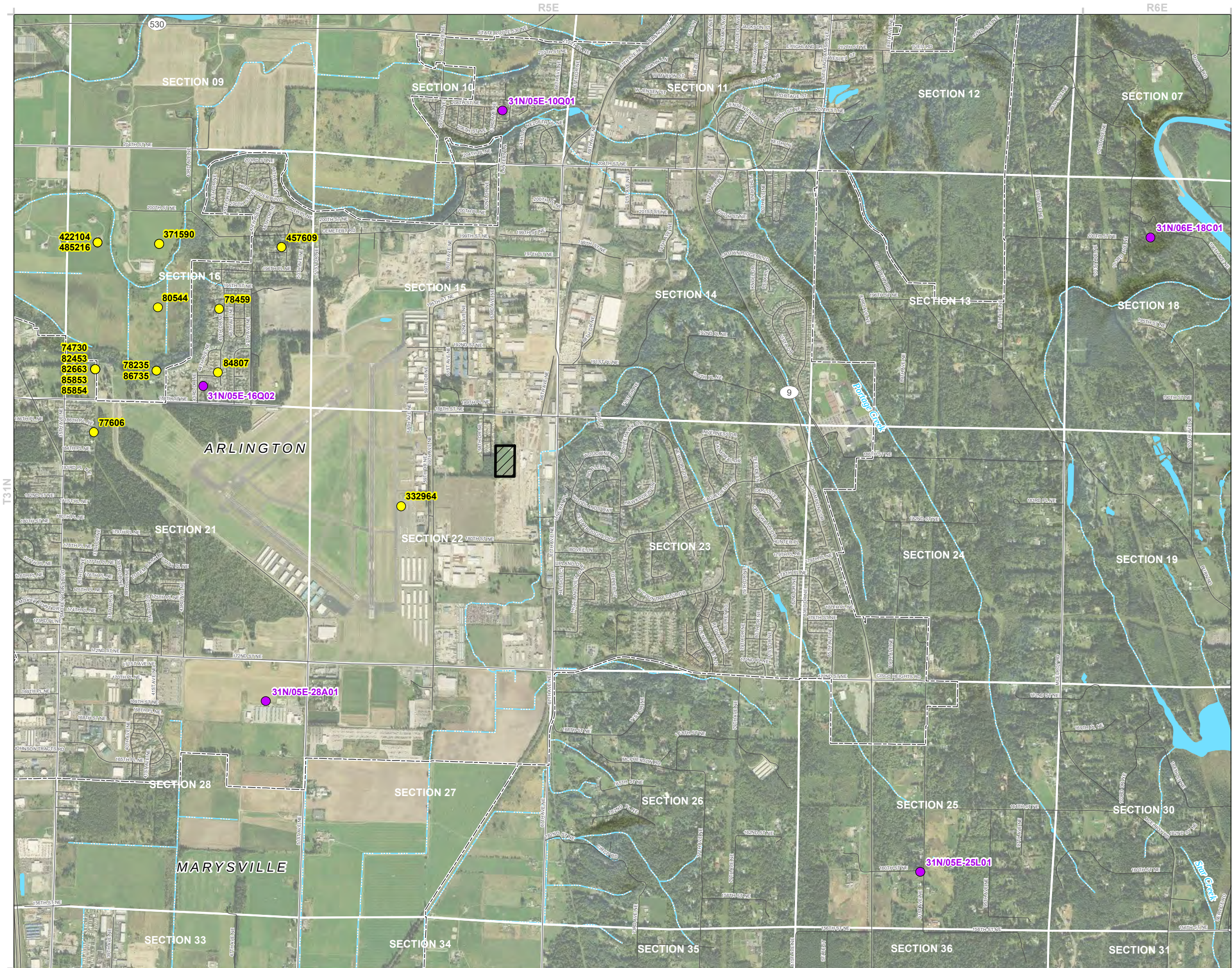
- The finite source dimension, delineated by interwell arsenic concentrations.
- Steady state source at the highest observed arsenic concentration.
- Contaminant concentration estimated at the centerline of the plume.
- No retardation (e.g., sorption) in transport process.

The sensitive parameters involved in the Domenico advection-dispersion model are conductivity and dispersivity. Generally, dispersivity values were scaled to the nearest downgradient monitoring well or receptor point, however, very large dispersion values are generally considered less conservative. The results of a water well survey, conducted on March 10, 2016 using the Washington Department of Ecology’s Well Log Database, indicated the nearest downgradient water well is approximately 3,000 feet northwest of the landfill (Figure D-1). Consequently, the upper range of the United States Environmental Protection Agency (US EPA) recommended longitudinal dispersivity of 323 feet was selected (EPA 1996; SWRCB 1999). Associated transverse and vertical dispersivity values were calculated using this method.

The Domenico model was run for the upper range of site hydraulic conductivity (Table 2). The model was set to a 10-year run period, at which point the modeled concentration has reached the furthest downgradient extent given a constant source, the concentration being peak arsenic measured in 2022 (Table 3C). The largest areal extent with arsenic concentrations meeting or exceeding the Washington groundwater standard of 5 µg/L is plotted in Figure 17. Arsenic concentrations exceeding the groundwater standard were not found to persist greater than 295 feet downgradient of BXS-3.

## References

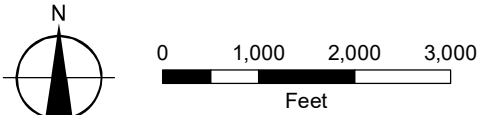
- California Regional Water Quality Control Board – Los Angeles Region (SWRCB) 1999. Domenico Spreadsheet Analytical Model Manual. December 1.
- EPA 2007. *Monitored Natural Attenuation of Inorganic Contaminants in Groundwater: Volume 2*. EPA/600/R-07/140. Pg. 57-70. October.
- United States Environmental Protection Agency (EPA) 1996. Soil screening guidance: technical background document E-25pp EPA/540/R-95/128, PB96-963502.
- USGS 2006. “Redox conditions in Contaminated Ground Water”. Scientific Investigations Report 2006-5056.



**FIGURE D-1**  
**Location of Potable Water Wells**  
**Downgradient of South Landfill**  
Former J.H. Baxter North Woodwaste Landfill  
Arlington, Washington

- LEGEND**
- Approximate Boundary of South Landfill
  - Downgradient Potable Water Wells
  - Background USGS Wells
  - Cities
  - Roads
  - Watercourses
  - Waterbodies

**NOTE:**  
USGS = United States Geological Survey



**MAP NOTES:**  
Date: March 21, 2016  
Data Sources: WADOE, US BLM, USGS, ESRI,  
Air photo taken on September 28, 2015 by the USDA



**Table D-1. Background Groundwater Conditions**  
Former J.H. Baxter South Woodwaste Landfill  
*Arlington, Washington*

| USGS Well Name | USGS Well ID    | Date Sampled | Hydrologic Unit Code | Latitude   | Longitude    | Surface Elevation (ft amsl) | Well Depth (ft) | Temp. (°C) | pH  | Dissolved Oxygen (mg/L) | Organic Carbon, filtered (mg/L) | Dissolved Iron (µg/L) | Dissolved Manganese (µg/L) | Arsenic (µg/L) |
|----------------|-----------------|--------------|----------------------|------------|--------------|-----------------------------|-----------------|------------|-----|-------------------------|---------------------------------|-----------------------|----------------------------|----------------|
| 31N/05E-25L01  | 480827122062701 | 7/27/1993    | 17110008             | 48.1406553 | -122.1087496 | 460                         | 79              | 11.4       | 8   | 0                       | 0.2                             | 230                   | 84                         | 4              |
| 31N/05E-10Q01  | 480903122094701 | 8/11/1993    | 17110008             | 48.1498214 | -122.1651414 | 115                         | 16.5            | 12.6       | 7.5 | 5.5                     | 0.5                             | 10                    | <1                         | 2              |
| 31N/05E-13D02  | 481001122100801 | 7/30/1993    | 17110008             | 48.1678773 | -122.1709758 | 125                         | 48              | 11.2       | 7   | 9.6                     | 0.2                             | <1                    | <1                         | <3             |
| 31N/05E-28A01  | 481039122065901 | 7/27/1993    | 17110008             | 48.1773229 | -122.0898614 | 370                         | 25              | 12.5       | 6.5 | 5.9                     | 0.5                             | <1                    | 62                         | <1             |
| 31N/05E-16Q02  | 481103122084001 | 7/27/1993    | 17110008             | 48.183989  | -122.1456976 | 90                          | 79              | 11.4       | 7   | 5                       | 55                              | <1                    | 96                         | 10             |

Notes:  
- AMSL = above mean sea level (NGVD29)

| ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL |                            |                                       |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|--------------|----------------------|----------|------------------|--------------|------------------------|-------|-------|--|--|--|--|--|
| Project:                                                                                                      |                            | Arsenic Conservative Solute Transport |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
| Date:                                                                                                         |                            | 3/20/2023                             |              | Prepared by:         |          | EBK              |              |                        |       |       |  |  |  |  |  |
|                                                                                                               |                            |                                       |              | Contaminant:         |          | Arsenic          |              |                        |       |       |  |  |  |  |  |
| SOURCE                                                                                                        |                            | Ax                                    | Ay           | Az                   | LAMBDA   | SOURCE           | SOURCE       | Time (days)            |       |       |  |  |  |  |  |
| CONC                                                                                                          |                            | (ft)                                  | (ft)         | (ft)                 |          | WIDTH            | THICKNESS    | (days)                 |       |       |  |  |  |  |  |
| (MG/L)                                                                                                        |                            |                                       |              | >=.001               | day-1    | (ft)             | (ft)         |                        |       |       |  |  |  |  |  |
| 0.081                                                                                                         |                            | 3.23E+02                              | 4.20E+01     | 1.94E+00             | 1.00E-03 | 100              | 10           | 3650                   |       |       |  |  |  |  |  |
| Hydraulic Cond                                                                                                |                            | Hydraulic Gradient                    | Porosity     | Soil Bulk Density    | KOC      | Frac. Org. Carb. | Retard-ation | V                      |       |       |  |  |  |  |  |
| (ft/day)                                                                                                      |                            | (ft/ft)                               | (dec. frac.) | (g/cm <sup>3</sup> ) |          |                  | (R)          | (=K*i/n*R)<br>(ft/day) |       |       |  |  |  |  |  |
| 1.70E+02                                                                                                      |                            | 0.0175                                | 0.3          | 1.7                  | 1        | 1.00E-03         | 1.005666667  | 9.860788863            |       |       |  |  |  |  |  |
| Point Concentration                                                                                           |                            | x(ft)                                 | y(ft)        | z(ft)                |          |                  |              |                        |       |       |  |  |  |  |  |
| 295                                                                                                           |                            | 0                                     | 0            |                      |          |                  |              |                        |       |       |  |  |  |  |  |
|                                                                                                               |                            | x(ft)                                 | y(ft)        | z(ft)                |          |                  |              |                        |       |       |  |  |  |  |  |
| Conc. At                                                                                                      |                            | 295                                   | 0            | 0                    |          |                  |              |                        |       |       |  |  |  |  |  |
| at                                                                                                            |                            | 3650 days =                           | 0.005        |                      |          |                  |              |                        |       |       |  |  |  |  |  |
|                                                                                                               |                            | mg/l                                  |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
| AREAL MODEL                                                                                                   |                            | CALCULATION DOMAIN                    |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
| Length (ft)                                                                                                   |                            | 600                                   |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
| Width (ft)                                                                                                    |                            | 100                                   |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
| 60                                                                                                            |                            | 120                                   | 180          | 240                  | 300      | 360              | 420          | 480                    | 540   | 600   |  |  |  |  |  |
| 100                                                                                                           | 0.009                      | 0.007                                 | 0.005        | 0.004                | 0.004    | 0.003            | 0.003        | 0.002                  | 0.002 | 0.002 |  |  |  |  |  |
| 50                                                                                                            | 0.017                      | 0.010                                 | 0.007        | 0.005                | 0.004    | 0.004            | 0.003        | 0.003                  | 0.002 | 0.002 |  |  |  |  |  |
| 0                                                                                                             | 0.020                      | 0.011                                 | 0.007        | 0.006                | 0.004    | 0.004            | 0.003        | 0.003                  | 0.002 | 0.002 |  |  |  |  |  |
| -50                                                                                                           | 0.017                      | 0.010                                 | 0.007        | 0.005                | 0.004    | 0.004            | 0.003        | 0.003                  | 0.002 | 0.002 |  |  |  |  |  |
| -100                                                                                                          | 0.009                      | 0.007                                 | 0.005        | 0.004                | 0.004    | 0.003            | 0.003        | 0.002                  | 0.002 | 0.002 |  |  |  |  |  |
| Field Data:                                                                                                   | Centerline C Concentration |                                       |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |
|                                                                                                               | Distance from Source       |                                       |              |                      |          |                  |              |                        |       |       |  |  |  |  |  |