

## BOEING RENTON FACILITY QUARTERLY REPORTS RCRA CORRECTIVE ACTION PROGRAM, 2017

#### Volume I

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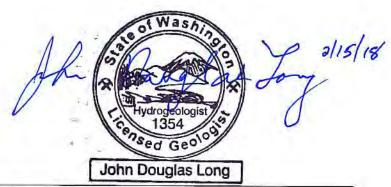
#### **BOEING RENTON FACILITY**

Quarterly Report RCRA Corrective Action Program Fourth Quarter 2017 Renton, Washington

February 15, 2018 Project No. 0088880100.2018

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### QUARTERLY REPORT RCRA CORRECTIVE ACTION PROGRAM FOURTH QUARTER 2017

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# QUARTERLY REPORT RCRA CORRECTIVE ACTION PROGRAM FOURTH QUARTER 2017

Boeing Renton Facility Renton, Washington

#### 1.0 INTRODUCTION

This report provides progress reporting in conformance with Section VII.B.1 of Agreed Order No. 8191 (Order) and summarizes cleanup actions and monitoring conducted at the Boeing Renton Facility (the Facility) during the fourth quarter 2017. This work is required under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program being performed at the Boeing Renton Facility in Renton, Washington. Corrective action activities are performed for those solid waste management units (SWMUs), areas of concern (AOCs), and other areas where cleanup actions are ongoing. Monitoring, cleanup activities, and reporting are being conducted as part of the final remedy implementation described in the Engineering Design Report (EDR) (AMEC, 2014). The groundwater monitoring program is detailed in the Second Addendum to the Compliance Monitoring Plan (Amec Foster Wheeler, 2017a) which contains changes to the revised Compliance Monitoring Plan (Amec Foster Wheeler, 2016a) that superseded the original plan presented in Appendix D of the EDR (AMEC, 2014).

Groundwater monitoring and final cleanup action implementation are being conducted at the following areas (the ongoing remedies for each of these areas are noted in parentheses):

- SWMU-168: (monitored natural attenuation [MNA]);
- SWMU-172 and SWMU-174: (bioremediation, soil vapor extraction [SVE] and monitored attenuation [MA]);
- Building 4-78/79 SWMU/AOC Group: (bioremediation, SVE, MNA, and MA);
- Former Fuel Farm AOC Group: (MNA);
- AOC-001 and AOC-002: (bioremediation and MA);
- AOC-003: (bioremediation and MA);
- AOC-004: (bioremediation and MA);
- AOC-034 and AOC-035: (MNA);



- AOC-060: (bioremediation and MA);
- AOC-090: (bioremediation and MA);
- Building 4-70: (bioremediation and MA);
- Lot 20/Former Building 10-71 Parcel: (bioremediation and MA); and
- Apron A: (bioremediation and MA).

The background and investigation history for each affected unit or group of units is described in the Cleanup Action Plan (CAP) (AMEC, 2012) and/or EDR (AMEC, 2014). It should be noted that monitoring for the Building 10-71 area and Building 4-70 area is included in this monitoring report to maintain continuity with the monitoring program that has been conducted for these areas for several years and as approved by the Washington State Department of Ecology (Ecology); these two areas are not addressed explicitly in the Compliance Monitoring Plan but are being addressed per Ecology's December 30, 2015, email to Boeing with comments on the revised Compliance Monitoring Plan. Monitoring for Apron A is also included, as semiannual monitoring began in this area starting in the fourth quarter of 2016, as reported in the Apron A Investigation Results report (Amec Foster Wheeler, 2016b).

#### This quarterly report:

- Describes work completed during the reporting quarter;
- Describes any deviations from corrective action tasks required under the Order and/or CAP:
- Describes revisions to the corrective action schedule;
- Describes work projected to occur during the next quarter, including any planned deviation from the CAP:
- Discusses remediation operation and maintenance activities conducted at the Facility during the reporting period;
- Documents monitoring activities conducted during the quarter;
- Describes and discusses trends in monitoring data;
- Assesses remediation at each area; and
- Assesses attainment of cleanup levels (CULs) at the conditional points of compliance (CPOCs).



This report presents this information for the fourth quarter of 2017, the period from October through December 2017.

#### 1.1 QUARTERLY PROGRESS REPORTING

In accordance with the requirements of the Order, corrective action activities were conducted at the Facility, as described in this report. As approved by Ecology in their letter dated November 18, 2015, progress reporting is conducted on a quarterly basis in conjunction with monitoring, operations, and maintenance activities conducted under the CAP.

#### 1.1.1 Work Completed in the Fourth Quarter 2017

The following work was completed during the fourth quarter of 2017, the period from October through December 2017:

- The SVE systems for the Building 4-78/79 area and for SWMU-172/174 continued operation until December 15, 2017, when both systems were shut down.
- Groundwater monitoring for the fourth quarter of 2017 was completed during November 2017.
- On behalf of Boeing, Amec Foster Wheeler submitted the Third Quarter 2017 Report to Ecology on November 15, 2017.
- On behalf of Boeing, Amec Foster Wheeler submitted the Second Addendum to the Compliance Monitoring Plan on December 8, 2017.
- Five injection wells (B78-17, B78-18, B78-19, B78-20, and B78-21) were installed on October 5, 2017 at the Building 4-78/79 SWMU/AOC Group. After development and baseline sampling, an initial round of nitrate/sulfate injections was completed in these wells, as well as in B78-11 and B78-13, on October 11, 2017. All work was performed in accordance with the Tech Memo submitted to Ecology in September 2017, except that the nitrate/sulfate injections were conducted in injection wells B78-11 and B78-13 since they were in the immediate treatment area.
- On behalf of Boeing, Amec Foster Wheeler submitted the Apron R Well Abandonment and Replacement Memo describing the impact to monitoring wells during Apron R construction on December 21, 1017.

#### 1.1.2 Deviations from Required Tasks

No deviations from tasks required in the Order occurred during this activity period.



#### 1.1.3 Deviations from CAP

There were no deviations from the CAP during this activity period, and there are no planned deviations from the CAP expected for the next activity period.

#### 1.1.4 Schedule Revisions

There were no significant revisions to the schedule for this reporting period and no revisions are expected for the next activity period.

#### 1.1.5 Work Projected for the Next Quarter

The following work is projected for the first quarter of 2018:

- Reporting will be completed in accordance with the Order, CAP, EDR, and any changes approved by Ecology.
- Groundwater sampling and analysis for the first quarter of 2018 will be completed.
- SVE rebound vapor sampling will continue at SWMU-172/174 and the Building 4-78/79
   Area as described in Section 3.2 of Appendix D of the Third Quarter Monitoring Report
   (Amec Foster Wheeler, 2017b).
- Substrate injections are planned for January 2018 for the Building 4-78/79 Area as described in Section 3.0 or Appendix D.
- CALIBRE will conduct additional investigations at the Building 4-78/79 Area to address the benzene concentrations observed in groundwater in accordance with their work plan proposal submitted on January 12, 2018.



#### 2.0 GROUNDWATER SAMPLING METHODOLOGY

Groundwater was sampled and analyzed as described in Appendix A. These procedures are in accordance with the methods specified in the soil and groundwater sampling methodology, which is described in more detail in the revised Compliance Monitoring Plan (Amec Foster Wheeler, 2016a). Table A-1 summarizes the current groundwater monitoring program and constituents of concern (COCs) specified in the CAP and revised in the Second Addendum to the Compliance Monitoring Plan (Amec Foster Wheeler, 2017a) for all Facility corrective action areas. Table A-1 also includes Building 4-70, Lot 20/Former Building 10-71, and Apron A, which were not included in the CAP. Table A-2 summarizes the current groundwater monitoring program for the corrective action areas that include MNA or MA as part of the cleanup remedy specified in the CAP. Table A-2 also includes Building 4-70 and Apron A, which were not specified in the CAP. Any changes or exceptions to the sampling or analytical methods cited in Appendix A during the quarter are described in the applicable subsections in Section 3. The field data sheets, which document the groundwater sample collection and field parameter monitoring for each well sampled during this quarter, are included in Appendix B.

The analytical methods, field duplicate, lab duplicate, and matrix spike/matrix spike duplicate frequencies are specified in the Quality Assurance Project Plan (Amec Foster Wheeler, 2016c). The full analytical reports provided by the laboratory are provided separately on compact disc. The data validation memoranda are included in Appendix C.



#### 3.0 CORRECTIVE ACTION ACTIVITIES COMPLETED DURING QUARTER

This section describes the corrective action activities conducted at the Facility during the fourth quarter of 2017. Operation of the SVE systems at the SWMU-172/174 area and the Building 4-78/79 SWMU/AOC Group continued during the fourth quarter. Quarterly compliance monitoring was also conducted in accordance with the Second Addendum to the Compliance Monitoring Plan (Amec Foster Wheeler, 2017a).

#### 3.1 SWMU-168

SWMU-168 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the fourth quarter of 2017.

#### 3.2 SWMU-172 AND SWMU-174

This section describes corrective action activities conducted at these two SWMUs. The cleanup remedy for SWMU-172 and SWMU-174 is a combination of bioremediation, SVE, and MA. Figure 1 shows the layout of the groundwater monitoring wells and the remediation system for these SWMUs.

#### 3.2.1 Cleanup Action Activities

#### 3.2.1.1 Installation/Construction Activities

No installation/construction activities were conducted for these SWMUs during the fourth quarter.

#### 3.2.1.2 Soil Vapor Extraction and Bioremediation Operations

The SVE system at SWMU-172 and SWMU-174 operated normally during the fourth quarter, until December 15, 2017, when it was shut down. Details for system operations are included in the SVE operations and monitoring report prepared by CALIBRE and included as Appendix D.

#### 3.2.2 Compliance Monitoring Plan Deviations

No deviations from the compliance monitoring plan occurred for this area during the fourth quarter.

#### 3.2.3 Water Levels

Groundwater elevations for the SWMU-172 and SWMU-174 area measured during the fourth quarter 2017 are summarized in Table 1 and shown on Figure 1. The contoured data for November 2017 show that groundwater generally flows east from SWMU-172 and SWMU-174 toward the Cedar River Waterway, with an approximate horizontal gradient of 0.01.



#### 3.2.4 Groundwater Monitoring Results

Groundwater in this area is monitored following the schedules presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators are presented in Table 2; results for the SWMU-172 and SWMU-174 area COCs are presented in Table 3.

#### 3.2.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 2. TOC concentrations ranged from 1.03 milligrams per liter (mg/L) to 11.3 mg/L for all SWMU-172 and SWMU-174 monitoring wells. The other natural attenuation parameter results indicate that geochemical conditions were generally uniform and appropriate for reductive dechlorination of chlorinated volatile organic compounds (VOCs). The pH in all monitoring wells were near neutral. The oxidation reduction potential (ORP) and dissolved oxygen (DO) results indicate reducing conditions were present.

#### 3.2.4.2 COC Results for Source and Downgradient Plume Areas

Table 3 lists fourth quarter 2017 analytical results for the SWMU-172 and SWMU-174 COCs. Figures 2 and 3 show historical trend plots for tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride (VC), and *cis*-1,2-dichloroethene (*cis*-1,2-DCE) in source area wells GW152S and GW153S, and in downgradient plume area wells GW172S and GW173S. Flow generally moves from the vicinity of source area well GW152S to downgradient plume area well GW172S, and from source area well GW153S to downgradient plume area well GW173S. PCE and TCE are the chlorinated solvents that were used at the Facility, and *cis*-1,2-DCE and VC are breakdown products resulting from biodegradation processes.

As shown in Table 3, *cis*-1,2-DCE, TCE, PCE, and VC concentrations exceeded the CULs in the groundwater collected from both source area and downgradient plume area wells. As shown in Figure 2, the concentrations of COCs in groundwater from source area wells have continued to generally decrease since the substrate injections were completed during the second quarter of 2016, except for PCE in groundwater collected from source area well GW152S, which increased during the fourth quarter. As shown in Figure 3, COC concentrations increased in the groundwater sample collected from downgradient plume area well GW172S during the third quarter, but overall, COC concentrations have decreased over time. Decreasing COC concentrations are also observed in groundwater from GW173S.

Arsenic was detected above the CUL in all source area and downgradient plume area wells. As shown in Figure 4, the arsenic concentrations in the groundwater from both source area and downgradient wells decreased during the fourth quarter sampling event. Copper was detected at



concentration above the CUL in the groundwater from downgradient wells GW173S and GW226S, and lead was detected above the CUL in the groundwater from source area well GW152S and in downgradient plume area wells GW172S and GW173S. The observed variations for metals concentrations are influenced by the naturally occurring reducing conditions and potentially by the conditions created to support reductive dechlorination of the chlorinated solvents. Additional evaluations of metals will be performed during the First Quarter 2018 sampling event to compare total and dissolved concentrations of arsenic in groundwater with the local and/or regional naturally occurring background concentrations of arsenic in groundwater. Arsenic occurs naturally in soil and groundwater; and is known to be regionally elevated; therefore, evaluations of total and dissolved arsenic in background concentrations may be warranted. Additionally, as site COCs are dropped it may be appropriate to re-evaluate CULs based on the total risk which could result in an arsenic CUL adjustment.

#### 3.2.4.3 COC Results for Conditional Point of Compliance Area

Results from the CPOC area wells are presented in Table 3 and trend charts for cis-1,2-DCE, TCE, and VC for all CPOC area wells are presented in Figure 5. As shown in Table 3, *cis*-1,2-DCE was detected at concentrations above the CUL, ranging from 0.0352 to 0.519 micrograms per liter (µg/L,) in the groundwater collected from all CPOC area wells; TCE was detected above the CUL in the groundwater from monitoring well GW235I; and VC was detected above the CUL in the groundwater from monitoring well GW232S. Concentrations of VC in well GW232S are expected to decrease over time, as concentrations in the immediate upgradient well GW173S continue to decrease. One option under consideration would be to convert GW173S to an injection well to more rapidly reduce VOCs at this location. PCE was not detected in the groundwater collected from the CPOC wells and is not shown in Figure 5. As shown on Figure 5, concentrations of cis-1,2-DCE have exceeded the CUL in the CPOC wells since compliance monitoring began, but are generally stable, except for the slight increase in concentration observed in the groundwater from GW232S. TCE and PCE concentrations exceed the CUL in the groundwater from CPOC wells GW235I and GW232S, respectively, and generally appear to be stable.

Arsenic was detected above the CUL in the groundwater from CPOC area wells GW232S, GW234S, and GW236S. Copper was detected above the CUL in the groundwater from monitoring well GW234S. Lead was detected above the CUL in the groundwater from monitoring wells GW234S and GW236S (Table 3). Figure 6 shows arsenic, copper, and lead trends since the beginning of compliance monitoring in groundwater from CPOC wells. As shown in Figure 6, though arsenic, copper and lead concentrations appear to vary over time, there are no increasing trends in the groundwater collected from CPOC wells.

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#### 3.3 BUILDING 4-78/79 SWMU/AOC GROUP

This section describes corrective action activities conducted at the Building 4-78/79 SWMU/AOC Group during the fourth quarter of 2017. The cleanup remedy for this SMWU/AOC group is bioremediation, SVE, MNA, and MA. Figure 7 shows the location of groundwater monitoring wells, bioremediation wells, and SVE wells for this area.

#### 3.3.1 Cleanup Action Activities

#### 3.3.1.1 Installation/Construction Activities

Five injection wells were installed on October 5, 2017 (B78-17, B78-18, B78-19, B78-20, and B78-21). All work was performed in accordance with the Tech Memo submitted to Ecology in September 2017.

#### 3.3.1.2 Soil Vapor Extraction and Bioremediation Operations

The SVE system at the Building 4-78/79 SWMU/AOC Group was in normal operation during the fourth quarter until December 15, 2017, when it was shut down. Details for system operations are included in the SVE operations and monitoring report prepared by CALIBRE and included as Appendix D.

#### 3.3.2 Compliance Monitoring Plan Deviations

No deviations from the compliance monitoring plan occurred for this area during the fourth quarter.

#### 3.3.3 Water Levels

Table 4 presents the groundwater elevations measured during the fourth quarter 2017 groundwater monitoring event at the Building 4-78/79 SWMU/AOC group. As shown in Figure 7, the observed direction of groundwater flow from the source area during November 2017 is generally to the west, with a hydraulic gradient of 0.001.

#### 3.3.4 Groundwater Monitoring Results

Results for primary geochemical indicators are presented in Table 5; results for the COCs for Building 4-78/79 SWMU/AOC Group are presented in Table 6. Groundwater at this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A.

#### 3.3.4.1 Natural Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 5. In general, source area, downgradient, and CPOC area wells had low levels of DO and ORP, indicating that reducing conditions are present over the area and are generally favorable for reductive dechlorination of chlorinated VOCs. The pH in all monitoring wells was above 6.0 standard units during the fourth quarter monitoring period. Results



for the other primary geochemical indicators were fairly consistent throughout this area. TOC concentrations in source area wells ranged from 4.03 to 16.2, indicating that additional substrates injections would be beneficial for continued enhanced bioremediation.

#### 3.3.4.2 COC Results for Source and Downgradient Plume Areas

Table 6 lists fourth quarter 2017 analytical results for the Building 4-78/79 SWMU/AOC Group COCs. The CULs established in the CAP are also presented on Table 6. Figures 8 and 9 are trend charts showing historical trends for COCs for four groundwater monitoring wells that have a history of frequent detections. Trend charts have not been prepared for groundwater monitoring wells or COCs that do not have a history of frequent detections.

As shown in Table 6, benzene, cis-1,2-DCE, TCE, and VC were detected in groundwater samples from several source area wells at concentrations above their respective CULs, except for groundwater from source area wells GW034S and GW039S, which had concentrations below CULs for all COCs. Total petroleum hydrocarbons in the gasoline range (TPH-G) was detected in the groundwater from source area well GW031S, at a concentration of 3,040  $\mu$ g/L (the field duplicate concentration was 2,940  $\mu$ g/L). TPH-G was also detected in the groundwater from source area wells GW033S and GW243I, at concentrations below the CUL.

Benzene was detected at a concentration of 8.45  $\mu$ g/L in the groundwater collected from downgradient plume area well GW210S and VC was detected in the groundwater collected from downgradient plume area wells GW038S and GW209S at concentrations of 0.25  $\mu$ g/L and 0.26  $\mu$ g/L, respectively. Benzene has been sporadically detected in the groundwater samples from GW210S and the concentration observed during the fourth quarter is consistent with historical concentrations of benzene in the groundwater from this well. The remaining COCs were below detection in the groundwater collected from downgradient plume area wells.

Figure 8 shows trends for selected COCs for source area wells GW031S and GW033S and Figure 9 shows trends for selected COCs for source area well GW034S and downgradient plume area well GW209S. COC concentrations in the groundwater collected from GW031S are generally consistent with historical results and trends. While the concentrations of TCE and benzene in the groundwater collected from source area well GW033S are generally consistent with historical results, the concentrations of *cis*-1,2-DCE and VC have continued the increasing trend first observed in the first quarter 2017 sampling event. Groundwater samples from GW033S historically had the highest concentrations of cis-1,2-DCE and VC prior to the Duct Bank dewatering project. COC concentrations in groundwater samples collected from source area well GW034S (Figure 9) are stable. Nitrate and

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sulfate injections described in Appendix D are continuing to be performed to address elevated benzene present between GW210S and GW031S.

Figure 9 shows a trend chart for downgradient plume area well GW209S, which was installed in 2008 and is located west of Building 4-79. Monitoring results for benzene and VC for GW209S decreased in 2015 and have remained low through the fourth quarter 2017 monitoring event, with VC detected at a concentration equal to the reporting limit and all other COCs below reporting limits.

#### 3.3.4.3 COC Results for Conditional Point of Compliance Area

Groundwater monitoring results from the fourth quarter for the CPOC area are summarized in Table 6. Trends for CPOC wells GW143S, GW237S and GW240D are shown in Figures 10 through 12. Benzene was detected above the CUL in GW237S at a concentration of 2.88  $\mu$ g/L in the groundwater sample from CPOC well GW237S; all other benzene results for the CPOC area were below detection. As shown in Figure 11, benzene has been sporadically detected in the groundwater from CPOC well GW237S and has not been detected in the groundwater samples from any other CPOC wells at concentrations above the CUL. The only other COCs detected in the groundwater samples from the CPOC area during the fourth quarter was TPH-G at a concentration of 1,780  $\mu$ g/L in the groundwater sample from CPOC well GW237S and *cis*-1,2-DCE at 0.23  $\mu$ g/L in well GW143S. As shown in Figure 12, TPH-G has been detected in the groundwater sample from CPOC GW237S well at sporadic concentrations since the fourth quarter of 2015.

#### 3.4 FORMER FUEL FARM AOC GROUP

The Former Fuel Farm AOC group is monitored semiannually in May and November. The fourth quarter 2017 monitoring event is the sixth monitoring event since the start of compliance monitoring. The final remedy for the Former Fuel Farm is MNA.

#### 3.4.1 Cleanup Action Activities

No installation/construction activities were conducted for this cleanup action area during the fourth quarter.

### 3.4.2 Compliance Monitoring Plan Deviations

No deviations from the compliance monitoring plan occurred for this area during the fourth quarter.



#### 3.4.3 Water Levels

Groundwater elevations for the Former Fuel Farm AOC Group measured during the fourth quarter 2017 are summarized in Table 7 and shown on Figure 13. Groundwater elevation contours are not shown on Figure 13 due to anomalous measurements.

#### 3.4.4 Groundwater Monitoring Results

Results for primary geochemical indicators are presented in Table 8; results for COCs for the Former Fuel Farm AOC Group are presented in Table 9. Groundwater in this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A.

#### 3.4.4.1 Monitored Natural Attenuation Indicators

The geochemical indicator results are presented in Table 8. Results in Table 8 indicate that geochemical conditions are generally consistent throughout the Former Fuel Farm AOC Group. The pH in CPOC area wells GW212S and GW224S was below 6.0 standard units; low pH may interfere with biological degradation of site COCs. The other geochemical indicators indicate that conditions are generally conducive to natural attenuation of the COCs for the Former Fuel Farm AOC Group.

#### 3.4.4.2 COC Results for Source Area

Table 9 lists fourth quarter 2017 analytical results for the Former Fuel Farm AOC Group COCs. The CULs established in the CAP are also presented on Table 9. As shown in Table 9, TPH in the diesel and Jet A ranges was not detected above the reporting limit in the groundwater from source area well GW255S.

#### 3.4.4.3 COC Results for Conditional Point of Compliance Area

CPOC area monitoring results are presented in Table 9. Figure 14 shows trend data for CPOC area wells GW211S, GW221S, and GW224S. Table 9 shows that COC concentrations were below their respective CULs for all CPOC area wells except GW211S, GW221S, and GW224S. Diesel range organics exceeded the CUL in the groundwater collected from all three wells and Jet A range petroleum hydrocarbons exceeded the CUL in the groundwater from CPOC wells GW221S and GW224S. Figure 14 shows that the fourth quarter results for these wells are consistent with the historical monitoring results since late 2013, except for the concentrations in the groundwater from CPOC well GW221S.

#### 3.5 AOC-001 AND AOC-002

This section describes corrective action activities conducted at these AOCs during the fourth quarter of 2017. The cleanup remedy for this corrective action area is bioremediation and MA. Bioremediation

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commenced for this area in late 2004, following source area excavation. Figure 15 shows the location of groundwater monitoring wells and the bioremediation injection system for AOC-001 and AOC-002, as well as the groundwater elevations measured during this monitoring event.

#### 3.5.1 Cleanup Action Activities

No installation/construction activities were conducted for this cleanup action area during the fourth quarter.

#### 3.5.2 Compliance Monitoring Plan Deviations

No deviations from the compliance monitoring plan occurred for this area during the fourth quarter.

#### 3.5.3 Water Levels

Table 10 presents the groundwater elevations measured during the fourth quarter 2017 monitoring event at AOC-001 and AOC-002. Figure 15 shows the groundwater elevations from this event.

Groundwater flow directions cannot be determined from the available groundwater elevation data.

#### 3.5.4 Groundwater Monitoring Results

Groundwater in this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A. Results for primary geochemical indicators are presented in Table 11; results for the AOC-001 and AOC-002 COCs are presented in Table 12.

#### 3.5.4.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 11. The pH was near neutral in all CPOC wells and is conducive to microbial activity. Table 11 also suggests that geochemical conditions are appropriate for reductive dechlorination of the COCs in the AOC-001 and AOC-002 CPOC area, as indicated by the reducing conditions, low DO levels, and generally appropriate TOC concentrations.

#### 3.5.4.2 COC Results for Source and Downgradient Plume Areas

Source area and downgradient wells are monitored semiannually in March and August; therefore, no monitoring for source area or downgradient plume wells was conducted in the fourth quarter.

#### 3.5.4.3 COC Results for Conditional Point of Compliance Area

As shown in Table 12, 1,1-dichloroethene, benzene, and TCE concentrations in the groundwater samples collected from CPOC wells were either below detection or below the CUL. Concentrations of *cis*-1,2-DCE and VC were above the CUL in the groundwater samples from all CPOC area wells except for GW194S and GW245S. Concentrations of *cis*-1,2-DCE in groundwater from the CPOC



wells ranged from 0.0352  $\mu$ g/L to 0.510  $\mu$ g/L, all greater than the CUL of 0.02  $\mu$ g/L. VC was detected above the CUL of 0.05  $\mu$ g/L at concentrations ranging from 0.0582 to 0.461  $\mu$ g/L.

As shown in Figure 16, aside from the increase in concentrations of *cis*-1,2-DCE and VC observed in the in the groundwater samples collected from GW185S in the second and third quarters of 2016; concentrations of cis-1,2-DCE and VC in the CPOC area monitoring wells have been generally stable since compliance monitoring began. COPC area wells GW194S and GW245S are not shown on Figure 16 because COCs are generally not detected in the groundwater samples from these wells. Similarly, the remaining COCs are generally below the CUL in the CPOC area monitoring wells and are not included on Figure 16.

#### 3.6 AOC-003

This section describes corrective action activities conducted at AOC-003 for the fourth quarter of 2017. The cleanup remedy for this AOC is bioremediation and MA. Figure 17 shows the location of groundwater monitoring and bioremediation wells at AOC-003, as well as the groundwater elevations measured during this monitoring event.

#### 3.6.1 Cleanup Action Activities

No installation/construction activities were conducted for this cleanup action area during the fourth quarter.

#### 3.6.2 Compliance Monitoring Plan Deviations

No deviations from the compliance monitoring plan occurred for this area during the fourth quarter.

#### 3.6.3 Water Levels

Table 13 presents the groundwater elevations measured during the fourth quarter 2017 monitoring event at AOC-003 and AOC-092. Figure 17 shows the groundwater elevations from this event. Groundwater flow directions cannot be determined from the available groundwater elevation data.

#### 3.6.4 Groundwater Monitoring Results

Groundwater at AOC-003 is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 14; results for the AOC-003 COCs are presented in Table 15.



#### 3.6.4.1 Monitored Attenuation//Geochemical Indicators

The geochemical indicator results are presented in Table 14. Results in Table 14 indicate that geochemical conditions are generally consistent throughout this AOC. The data indicate that conditions are generally conducive to biodegradation of the COCs for this AOC.

#### 3.6.4.2 COC Results for Source and Downgradient Plume Areas

Source area and downgradient wells are monitored semiannually in March and August; therefore, no monitoring for source area or downgradient plume wells was conducted in the fourth quarter.

#### 3.6.4.3 COC Results for Conditional Point of Compliance Area

Groundwater collected from the two CPOC monitoring wells did not have detections of PCE, TCE or *cis*-1,2-DCE above their respective CULs. VC was detected at concentrations above the CUL in the groundwater samples collected from CPOC wells GW247S and GW248I, at concentrations of 0.489 and 0.671 µg/L, respectively.

#### 3.7 AOC-004

AOC-004 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the fourth quarter of 2017.

#### 3.8 AOC-034 AND AOC-035

This section describes corrective action activities conducted at AOC-034 and AOC-035 during the fourth quarter of 2017. The cleanup remedy for these AOCs is MNA. Figure 18 shows the locations of the groundwater monitoring wells at AOC-034 and AOC-035, as well as the groundwater elevations measured during this sampling event.

#### 3.8.1 Cleanup Action Activities

No construction or operations work was conducted for this AOC during the fourth quarter.

#### 3.8.2 Compliance Monitoring Plan Deviations

No deviations from the compliance monitoring plan occurred for this area during the fourth quarter.

#### 3.8.3 Water Levels

Table 16 presents the groundwater elevations measured during the fourth quarter 2017 monitoring event at AOC-034 and AOC-035. Figure 18 shows the groundwater elevation contours based on the groundwater elevations. Based on these contours, groundwater in the vicinity of AOC-034 and



AOC-035 flows to the west-northwest, toward the Cedar River Waterway/Lake Washington, with a horizontal hydraulic gradient of approximately 0.0005.

#### 3.8.4 Groundwater Monitoring Results

Groundwater at this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A. Results for geochemical indicators are presented in Table 17; results for COCs are presented in Table 18.

#### 3.8.4.1 Monitored Natural Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 17. In general, the results indicate uniform conditions are present across this corrective action area and that conditions are conducive to natural attenuation of chlorinated VOCs, as indicated by the pH, ORP, and DO measurements.

#### 3.8.4.2 COC Results for Source and Downgradient Plume Areas

Table 18 presents the fourth quarter 2017 analytical results for the AOC-034 and AOC-035 groundwater COCs. Trend charts have not been developed for this area, because the COCs are not commonly detected in the AOC-034 and AOC-035 groundwater monitoring wells. As shown in Table 18, neither *cis*-1,2-DCE nor VC were detected in the groundwater collected from source area well GW217S or cross-gradient plume area well GW216S.

#### 3.8.4.3 COC Results for Conditional Point of Compliance Area

Table 18 shows that COC concentrations in groundwater samples from the CPOC area wells were below reporting limits and CULs for the fourth quarter of 2017. This is the sixth consecutive semiannual monitoring event with COC concentrations below CULs in the CPOC area well samples.

#### 3.9 AOC-060

AOC-060 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the fourth quarter of 2017.

#### 3.10 AOC-090

AOC-090 is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the fourth quarter of 2017.

#### 3.11 Building 4-70 Area

The Building 4-70 Area is monitored semiannually during the first and third quarters; therefore, no monitoring was conducted for this area during the fourth quarter of 2017.

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#### 3.12 Lot 20/Former Building 10-71 Parcel

This section describes corrective action activities conducted for this area during the fourth quarter 2017. Figure 19 shows the locations of the groundwater monitoring wells and the bioremediation injection system at the Lot 20/Former Building 10-71 Parcel, as well as the groundwater elevations measured during the fourth quarter. The Lot 20/Former Building 10-71 Parcel was not included in the EDR, but was later added to the Compliance Monitoring Plan (Amec Foster Wheeler, 2016a) and has been regularly monitored in conjunction with the Facility corrective action areas. The cleanup remedy for the Lot 20/Former Building 10-71 Parcel is bioremediation and MA. This area is monitored semiannually in the second and fourth quarters, in accordance with Table A-1 in Appendix A.

#### 3.12.1 Cleanup Action Activities

No construction or operations work was conducted for the Lot 20/Former Building 10-71 Parcel during the fourth quarter.

#### 3.12.2 Water Levels

The groundwater elevations measured during the fourth quarter at the Lot 20/Former Building 10-71 Parcel are presented in Table 19 and on Figure 19. Groundwater contours are not shown on Figure 19 because the three monitoring wells measured are arranged nearly in a straight line and do not provide enough water level data to prepare contours. Based on the fourth quarter water level measurements, the apparent groundwater flow appears to be generally to the northwest.

#### 3.12.3 Groundwater Monitoring Results

Results for primary geochemical indicators for groundwater from the Lot 20/Former Building 10-71 Parcel monitoring wells are presented in Table 20; results for COCs for the Lot 20/Former Building 10-71 Parcel monitoring wells are presented in Table 21. Groundwater in this area is monitored following the schedule presented in Tables A-1 in Appendix A.

#### 3.12.3.1 Monitored Attenuation/Geochemical Indicators

The geochemical indicator results are presented in Table 20. The pH in groundwater from the Lot 20/Former Building 10-71 Parcel monitoring wells was near neutral and the remaining parameters appear uniform in the groundwater samples collected from these monitoring wells.

#### 3.12.3.2 COC Results

Fourth quarter analytical results for the Lot 20/Former Building 10-71 Parcel COCs are presented in Table 21. The concentrations of all of the COCs—*cis*-1,2-DCE, toluene, TCE, and VC—in the



groundwater samples collected from Lot 20/Former Building 10-71 Parcel monitoring wells were below detection.

#### 3.13 APRON A AREA

This section describes corrective action activities conducted at the Apron A area during the fourth quarter 2017. The cleanup remedy proposed for the Apron A area is bioremediation and MA. Figure 20 shows the locations of the groundwater monitoring wells in the Apron A area.

#### 3.13.1 Cleanup Action Activities

No construction or operations work was conducted in the Apron A area during the fourth guarter.

#### 3.13.2 Water Levels

The depth to groundwater measured during the fourth quarter at Apron A are presented in Table 22 and on Figure 20. Groundwater elevations are not available because the top of casing elevations were never surveyed.

#### 3.13.3 Groundwater Monitoring Results

Results for primary geochemical indicators for groundwater from groundwater monitoring wells GW262S and GW264S are presented in Table 23; results for COCs from these wells are presented in Table 24. Groundwater in this area is monitored following the schedule presented in Tables A-1 and A-2 in Appendix A.

#### 3.13.3.1 Monitored Attenuation/Geochemical Indicators

Geochemical parameters are presented in Table 23. TOC concentrations in the monitoring wells were slightly elevated during the fourth quarter 2017 monitoring event. The other primary geochemical indicators show that reducing conditions were present and that conditions were conducive to biological degradation of the chlorinated VOCs.

#### 3.13.3.2 COC Results

Table 24 lists fourth quarter analytical results for the Apron A COCs: cis-1,2-DCE and VC. Cis-1,2-DCE was not detected in the groundwater samples collected from either GW262S or GW264S. VC was detected in the groundwater samples collected from monitoring well GW264S at a concentration of 0.97  $\mu$ g/L. The reporting limits reported for monitoring well GW262S were elevated. The laboratory stated that a dilution was performed due to sample foaming.



#### 4.0 REFERENCES

- AMEC Environment & Infrastructure, Inc. (AMEC), 2012, Draft Cleanup Action Plan, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, September.
- AMEC, 2014, Draft Engineering Design Report, Boeing Renton Cleanup Plan Implementation, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, July.
- Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016a, Compliance Monitoring Plan, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, February.
- Amec Foster Wheeler, 2016b, Apron A Investigation Results, Renton Municipal Airport Boeing Apron A Renton, Washington, June.
- Amec Foster Wheeler, 2016c, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for The Boeing Company, February.
- Amec Foster Wheeler, 2017a, Quarterly Monitoring Report, RCRA Corrective Action Program, Third Quarter 2017, Boeing Renton Facility, Renton Washington: Prepared for the Boeing Company, November.
- Amec Foster Wheeler, 2017b, Second Addendum to the Compliance Monitoring Plan, Boeing Renton Facility, Renton Washington: Prepared for the Boeing Company, December.



TABLE 1

### SWMU-172 and SWMU-174 GROUP GROUNDWATER ELEVATION DATA NOVEMBER 13, 2017

Boeing Renton Facility Renton, Washington

Well ID <sup>1</sup>	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>2</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>2</sup>
GW081S	5 to 20 <sup>3</sup>	25.91	8.71	17.20
GW152S	5 to 20 <sup>3</sup>	26.98	9.07	17.91
GW153S	5 to 20 <sup>3</sup>	27.47	9.55	17.92
GW172S	8 to 18 <sup>3</sup>	26.44	9.70	16.74
GW173S	8 to 18 <sup>3</sup>	26.51	9.73	16.78
GW226S	5 to 20 <sup>3</sup>	26.86	8.90	17.96
GW232S	4 to 14	24.45	7.90	16.55
GW233I	15 to 25	24.35	7.49	16.86
GW234S	3 to 13	24.95	8.16	16.79
GW235I	15 to 25	24.90	7.70	17.20
GW236S	5 to 15	24.36	7.30	17.06

#### Notes

- 1. S = shallow well; I = intermediate well.
- 2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.
- 3. Screen intervals are approximate and based on database listings of the screen interval depths for these wells.

#### **Abbreviations**

bgs = below ground surface TOC = top of casing

## SWMU-172 AND SWMU-174 GROUP CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS<sup>1, 2</sup> NOVEMBER 13, 2017

Boeing Renton Facility Renton, Washington

		Well ID <sup>3</sup>										
		Source Area	a	Downgradient Plume Area				CPOC Area				
		GW152S	_									
	GW152S	(field dup.)	GW153S	GW081S	GW172S	GW173S	GW226S	GW232S	GW233I	GW234S	GW235I	GW236S
Specific Conductivity (µS/cm)	78	78	120	180	199	377	183	520	195	109	140	309
Dissolved Oxygen (mg/L)	0.71	0.71	1.81	1.21	2.43	0.71	2.51	6.84	0.48	4.90	1.09	4.83
Oxidation/Reduction Potential (mV)	54.8	54.8	21.8	-5.10	-29.6	-18.7	-12.9	-92.2	-7.80	44.2	13.4	-37.8
pH (standard units)	6.17	6.17	6.34	6.41	6.50	6.48	6.46	6.26	6.92	6.39	6.66	6.51
Temperature (degrees C)	12.90	12.90	12.20	14.00	12.20	12.70	13.70	12.40	14.10	12.70	12.30	9.90
Total Organic Carbon (mg/L)	2.84	2.60	2.38	4.67	3.26	8.42	7.62	11.3	4.56	3.63	1.03	1.76

#### Notes

- 1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
- 2. Data qualifiers are as follows:
- U = The analyte was not detected at the reporting limit indicated.
- 3. S = shallow well; I = intermediate well.

#### **Abbreviations**

μS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate
mg/L = milligrams per liter
mV = millivolts

### SWMU-172 AND SWMU-174 GROUP CONCENTRATIONS OF CONSTITUENTS OF CONCERN $^{\!1,\,2}$ NOVEMBER 13, 2017

Boeing Renton Facility Renton, Washington

			Well ID <sup>3</sup>										
			Source Area	ı	D	Downgradient Plume Area				CPOC Area			
	Cleanup		GW152S										
	Level <sup>4</sup>	GW152S	(field dup.)	GW153S	GW081S	GW172S	GW173S	GW226S	GW232S	GW233I	GW234S	GW235I	GW236S
/olatile Organic Compounds (µg/L)													
cis-1,2-Dichloroethene	0.03	0.203	0.188	0.025	0.0360	0.130	0.027	0.020 U	0.519	0.0765	0.0352	0.167	0.0468
Tetrachloroethene	0.02	0.529	0.589	0.830	0.020 U	0.0349	0.0355	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Trichloroethene	0.02	0.146	0.149	0.127	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.0352	0.020 U
Vinyl Chloride	0.11	0.0449 J	0.0409 J	0.020 U	0.020 U	0.286 J	0.0705 J	0.0483	0.621	0.020 U	0.020 U	0.020 U	0.020 U
Metals (µg/L)													
Arsenic	1.0	1.56	1.69	2.08	1.94	6.71	9.85	4.73	7.43	0.329	1.43	0.228	2.78
Copper	3.5	2.95	3.14	2.70	0.900	1.89	4.53	5.24	1.23	0.500 U	3.53	0.736	3.36
Lead	1.0	1.54	1.79	0.338	0.105	1.58	1.99	0.933	0.232	0.100 U	1.94	0.217	7.38

#### Notes

- 1. Data qualifiers are as follows:
- U = The analyte was not detected at the reporting limit indicated.
- J = The value is an estimate.
- 2. Bolded values exceed the cleanup levels.
- 3. S = shallow well; I = intermediate well.
- 4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

#### <u>Abbreviations</u>

µg/L = micrograms per liter
CPOC = conditional point of compliance
field dup. = field duplicate
NA = not analyzed

**TABLE 4** 

#### BUILDING 4-78/79 SWMU/AOC GROUP GROUNDWATER ELEVATION DATA NOVEMBER 13 AND 14, 2017

Boeing Renton Facility Renton, Washington

Well ID <sup>1</sup>	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>2</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>2</sup>
GW031S	5 to 25	19.44	5.05	14.39
GW033S	5 to 25	19.49	5.23	14.26
GW034S	5 to 25	19.65	5.30	14.35
GW038S	5 to 25	19.68	5.40	14.28
GW039S	3.5 to 13.5	19.30	5.14	14.16
GW143S	10 to 15	19.81	5.62	14.19
GW209S	3.5 to 13.3	19.37	5.15	14.22
GW210S	3.5 to 13.3	19.19	4.54	14.65
GW237S	5 to 15	18.85	4.70	14.15
GW238I	5 to 20	18.94	4.77	14.17
GW239I	15 to 20	19.69	5.51	14.18
GW240D	22 to 27	19.81	5.04	14.77
GW241S	4 to 14	20.28	6.05	14.23
GW242I	15 to 20	20.44	6.15	14.29
GW243I	5 to 20	19.49	5.21	14.28
GW244S	5 to 15	19.53	5.22	14.31

#### **Notes**

- 1. S = shallow well; I = intermediate well; D = deep well.
- 2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

#### **Abbreviations**

bgs = below ground surface

TOC = top of casing

### BUILDING 4-78/79 SWMU/AOC GROUP CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS<sup>1</sup> NOVEMBER 13 AND 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID <sup>2</sup>											
		Source Area Downgradient Plun											
		GW031S											
	GW031S	(field dup.)	GW033S	GW034S	GW039S	GW243I	GW244S	GW038S	GW209S	GW210S			
Specific Conductivity (µS/cm)	259	259	277	397	87	323	492	257	378	254			
Dissolved Oxygen (mg/L)	4.29	4.29	0.80	0.45	1.63	0.2	0.40	2.77	4.38	1.14			
Oxidation/Reduction Potential (mV)	-17.0	-17	-10.5	-10.1	54.7	-16.4	25.7	-82.5	88.0	254			
pH (standard units)	6.17	6.17	6.42	6.60	6.32	6.35	6.17	6.49	6.40	6.60			
Temperature (degrees C)	14.20	14.2	15.50	14.53	16.50	15.10	13.59	16.30	14.40	12.80			
Total Organic Carbon (mg/L)	14.4	14.8	16.2	8.74	4.03	9.69	14.4	8.71	11.5	10.1			

				Well ID <sup>2</sup>								
		CPOC Area										
	GW143S	GW237S	GW238I	GW239I	GW240D	GW241S	GW242I					
Specific Conductivity (µS/cm)	290	237	381	269	324	297	262					
Dissolved Oxygen (mg/L)	0.31	1.90	4.24	0.43	0.73	3.90	4.56					
Oxidation/Reduction Potential (mV)	-31.7	-2.80	-94.5	-21.4	-24.2	-51.0	-35.0					
pH (standard units)	6.57	6.51	6.44	6.49	6.48	6.32	6.31					
Temperature (degrees C)	15.50	14.40	13.50	13.70	12.20	13.10	12.30					
Total Organic Carbon (mg/L)	8.14	6.75	9.70	10.0	9.96	NA	NA					

#### Notes

1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.

2. S = shallow well; I = intermediate well; D = deep well.

#### <u>Abbreviations</u>

µS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
field dup. = field duplicate

mg/L = milligrams per liter mV = millivolts NA = not analyzed

#### **BUILDING 4-78/79 SWMU/AOC GROUP** CONCENTRATIONS OF CONSTITUENTS OF CONCERN 1, 2 **NOVEMBER 13 AND 14, 2017**

**Boeing Renton Facility** Renton, Washington

			Well ID <sup>3</sup> Source Area									
	Cleanup Level⁴	GW031S	GW031S (field dup.)	GW033S	GW034S	GW039S	GW243I	GW244S				
Volatile Organic Compounds (µg/L)												
Benzene	0.80	59.9 J	59.2 J	5.76	0.20 U	0.20 U	1.61	7.28				
cis-1,2-Dichloroethene	0.70	0.47 J	0.38 J	754	0.23	0.20 U	0.20 U	2.46				
Trichloroethene	0.23	0.20 U	0.20 U	0.28	0.20 U	0.20 U	0.20 U	0.73				
Vinyl Chloride	0.20	0.20 J	0.20 U	676	0.20 U	0.20 U	0.53	0.20 U				
Total Petroleum Hydroca	Total Petroleum Hydrocarbons (µg/L)											
NWTPH-Gx (C7-C12)	800	3,040	2,940	282	100 U	100 U	151	100 U				

		Well ID <sup>3</sup>							
	Cleanup	Downgradient Plume Area							
	Level <sup>4</sup>	GW038S	GW209S	GW210S					
Volatile Organic Compounds (µg/L)									
Benzene	0.80	0.20 U	0.20 U	8.45					
cis-1,2-Dichloroethene	0.70	0.20 U	0.20 U	0.20 U					
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U					
Vinyl Chloride	0.20	0.25	0.26	0.20 U					
Total Petroleum Hydrocarbons (μg/L)									
NWTPH-Gx (C7-C12)	800	100 U	100 U	100 U					

	Cleanup	Well ID <sup>3</sup> CPOC Area									
	Level <sup>4</sup>	GW143S	GW237S	GW238I	GW239I	GW240D	GW241S	GW242I			
Volatile Organic Compounds (µg/L)											
Benzene	0.80	0.20 U	2.88	0.20 U							
cis-1,2-Dichloroethene	0.70	0.23	0.20 U								
Trichloroethene	0.23	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U			
Vinyl Chloride	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U			
Total Petroleum Hydrocarbons (µg/L)											
NWTPH-Gx (C7-C12)	800	100 U	1,780	100 U							

- Notes

  1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
  - J = The value is an estimate.
- 2. Bolded values exceed the cleanup levels.
- 3. S = shallow well; I = intermediate well; D = deep well.
- 4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

#### **Abbreviations**

 $\mu$ g/L = micrograms per liter

CPOC = conditional point of compliance

field dup. = field duplicate

NA = not analyzed

NWTPH-Gx = total petroleum hydrocarbons as gasoline

### FORMER FUEL FARM GROUNDWATER ELEVATION DATA NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

Well ID <sup>1</sup>	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>2</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>2</sup>
GW183S	5.5 to 15	26.58	8.70	17.88
GW184S	5.6 to 15	27.14	9.28	17.86
GW211S	4.8 to 14.7	27.77	9.91	17.86
GW212S	4.9 to 14.8	28.06	10.19	17.87
GW221S	5 to 15	27.93	9.95	17.98
GW224S	5 to 15	27.98	10.50	17.48
GW225I	5 to 15	27.07	9.11	17.96
GW255S	6 to 16	27.49	9.95	17.54
GW256S	7 to 16	27.22	8.82	18.40
GW257S	8 to 16	27.87	9.35	18.52
GW258S	9 to 16	25.51	7.73	17.78

#### <u>Notes</u>

- 1. S = shallow well, I = intermediate well
- 2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

#### **Abbreviations**

bgs = below ground surface

TOC = top of casing

#### FORMER FUEL FARM CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS<sup>1</sup> **NOVEMBER 14, 2017**

**Boeing Renton Facility** Renton, Washington

	Well ID <sup>2</sup>										
	Source Area	CPOC Area									
	GW255S	GW183S	GW184S	GW211S	GW212S	GW221S	GW224S	GW225I	GW256S	GW257S	GW258S
Specific Conductivity (µS/cm)	157	145	163	274	281	216	328	127	147	145	263
Dissolved Oxygen (mg/L)	3.95	1.10	1.14	0.36	0.34	3.57	0.88	3.24	4.01	4.14	0.45
Oxidation/Reduction Potential (mV)	41.5	60.3	56.3	52.4	132.7	12.7	146.3	66.2	40.1	94.4	32.3
pH (standard units)	6.07	6.43	6.64	6.24	5.25	6.18	4.52	6.44	6.17	6.41	6.44
Temperature (degrees C)	11.90	12.10	13.90	13.39	10.47	12.40	10.55	9.30	11.90	12.20	13.00

#### **Notes**

- Primary geochemical indicators are measured in the field.
   S = shallow well; I = intermediate well.

#### **Abbreviations**

 $\mu$ S/cm = microsiemens per centimeter CPOC = conditional point of compliance degrees C = degrees Celsius field dup. = field duplicate mg/L = milligrams per liter mV = millivolts

## FORMER FUEL FARM CONCENTRATIONS OF CONSTITUENTS OF CONCERN 1, 2 NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

				Well ID <sup>3</sup>									
		Source Area		CPOC Area									
	Cleanup								GW224S				
	Level <sup>4</sup>	GW255S	GW183S	GW184S	GW211S	GW212S	GW221S	GW224S	(field dup.)	GW225I	GW256S	GW257S	<b>GW258S</b>
Total Petroleum Hydrocarbons (mg	/L)												
DRO (C12-C24)	0.5	0.100 U	0.100 U	0.100 U	0.903	0.100 U	3.63	1.84	1.72	0.100 U	0.100 U	0.100 U	0.100 U
Jet A	0.5	0.100 U	0.100 U	0.100 U	0.245	0.100 U	2.12	1.97	1.72	0.100 U	0.100 U	0.100 U	0.100 U

#### **Notes**

- 1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
- 2. **Bolded** values exceed the cleanup levels.
- 3. S = shallow well: I = intermediate well.
- 4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

#### **Abbreviations**

CPOC = conditional point of compliance DRO = diesel range organics field dup. = field duplicate mg/L = milligrams per liter

## AOC-001 AND AOC-002 GROUNDWATER ELEVATION DATA NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

Well ID <sup>1</sup>	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>2</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>2</sup>
GW185S	4.5 to 14.5	16.27	2.30	13.97
GW190S	3.0 to 13.0	17.30	NM	NM
GW191D	26.5 to 36.0	17.53	NM	NM
GW192S	5.0 to 9.5	17.54	NM	NM
GW193S	3.0 to 12.8	18.67	NM	NM
GW194S	7.3 to 12.0	16.79	3.85	12.94
GW195S	7.3 to 12.0	16.34	2.56	13.78
GW196D	26.8 to 36.8	16.46	2.55	13.91
GW197S	7.8 to 12.5	16.52	2.23	14.29
GW245S	3.0 to 13.0	16.08	2.40	13.68

#### **Notes**

- 1. S = shallow well; D = deep well.
- 2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

#### Abbreviations

bgs = below ground surface

NM = not measured

TOC = top of casing

## AOC-001 and -002 CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		CPOC Area								
	GW185S	GW194S	GW194S (field dup.)	GW195S	GW196D⁴	GW197S	GW245S <sup>5</sup>			
Specific Conductivity (µS/cm)	659	602	602	641	366	956	229			
Dissolved Oxygen (mg/L)	0.17	6.16	6.16	0.10	3.96	0.12	1.79			
Oxidation/Reduction Potential (mV)	-46.7	-66.0	-66	-42.0	-60.0	-94.4	-61.0			
pH (standard units)	6.64	6.19	6.19	6.55	6.39	7.17	6.79			
Temperature (degrees C)	16.10	15.60	15.60	15.40	13.90	15.70	13.50			
Total Organic Carbon (mg/L)	13.4	14.7	14.6	18.2	8.94	15.5	4.98			

#### Notes

- 1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
- 2. S = shallow well; D = deep well.
- 3. GW191D is installed in a cluster with GW192S, and is screened below a silt layer at 26.5 to 36 feet in depth.
- 4. GW196D is installed in a cluster with GW195S, and is screened below a silt layer at 26.8 to 36.8 feet in depth.
- 5. GW245S is both the source area and CPOC well for AOC-093.

#### Abbreviations

μS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts

## AOC-001 AND AOC-002 CONCENTRATIONS OF CONSTITUENTS OF CONCERN<sup>1, 2</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

			CPOC Area <sup>3</sup>						
	Cleanup Level <sup>4</sup>	GW185S	GW194S	GW194S (field dup.)	GW195S	GW196D <sup>5</sup>	GW197S	GW245S	
Volatile Organic Compoun	ds (µg/L)								
1,1-Dichloroethene	0.057	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
Benzene	8.0	0.41	0.20 U	0.20 U	0.20 U	0.20 U	0.28	0.20 U	
cis-1,2-Dichloroethene	0.02	0.510	0.020 U	0.020 U	0.0722	0.0352	0.107	0.020 U	
Trichloroethene	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
Vinyl Chloride	0.05	0.461 J	0.020 U	0.020 U	0.137 J	0.0582 J	0.0843 J	0.0210	

#### Notes

- 1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
  - J = The value is an estimate.
- 2. Bolded values exceed the cleanup levels.
- 3. S = shallow well; D = deep well.
- 4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.
- 5. GW196D is installed in a cluster with GW195S, and is screened below a silt layer at 26.8 to 36.8 feet in depth.

#### Abbreviations

μg/L = micrograms per liter

CPOC = conditional point of compliance

### AOC-003 GROUNDWATER ELEVATION DATA NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

Well ID <sup>1</sup>	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>2</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>2</sup>
GW188S	3.5 to 13.5	18.78	NM	NM
GW247S	4 to 14	18.91	3.90	15.01
GW248I	10 to 20	18.78	3.68	15.10
GW249S	4 to 14	18.85	NM	NM

#### **Notes**

- 1. S = shallow well; I = intermediate well.
- 2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.
- 3. Depth to water measurement not collected at GW188S during the second quarter 2017.

## <u>Abbreviations</u>

bgs = below ground surface

NM = not measured

TOC = top of casing

# AOC-003 CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID <sup>2</sup>					
	Source Downgradient Area Plume Area CPOC			` Aroo			
	Area GW249S	Plume Area GW188S	GW247S	GW248I			
Specific Conductivity (µS/cm)	NS	NS	383	408			
Dissolved Oxygen (mg/L)	NS	NS	4.14	1.06			
Oxidation/Reduction Potential (mV)	NS	NS	-54.0	4.1			
pH (standard units)	NS	NS	6.48	6.41			
Temperature (degrees C)	NS	NS	12.50	11.90			
Total Organic Carbon (mg/L)	NS	NS	10.7	11.4			

#### **Notes**

- 1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
- 2. S = shallow well; I = intermediate well.

#### **Abbreviations**

 $\mu$ S/cm = microsiemens per centimeter CPOC = conditional point of compliance degrees C = degrees Celsius mg/L = milligrams per liter mV = millivolts NS = not sampled

# AOC-003 CONCENTRATIONS OF CONSTITUENTS OF CONCERN<sup>1, 2</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID <sup>3</sup>					
	Cleanup	Source	Downgradient Plume Area	CDOC	` A		
	Level <sup>4</sup>	Area GW249S	GW188S	GW247S	GW248I		
Volatile Organic Compounds (µg/L)							
cis-1,2-Dichloroethene	0.78	NS	NS	0.145	0.020 U		
Tetrachloroethene	0.02	NS	NS	0.020 U	0.020 U		
Trichloroethene	0.16	NS	NS	0.0402	0.020 U		
Vinyl Chloride	0.24	NS	NS	0.489 J	0.671 J		

#### Notes

- 1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
  - J = The value is an estimate.
- 2. **Bolded** values exceed the cleanup levels.
- 3. S = shallow well; I = intermediate well.
- 4. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

#### Abbreviations

μg/L = micrograms per liter

CPOC = conditional point of compliance

NS = not sampled

# AOC-034 AND AOC-035 GROUNDWATER ELEVATION DATA NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

Well ID <sup>1</sup>	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>2</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>2</sup>
GW001S	2 to 12	18.28	4.36	13.92
GW004S	2 to 12	16.66	2.86	13.80
GW005S <sup>3</sup>	2 to 12	18.20	NM	NM
GW216S	4.4 to 14.2	18.90	4.47	14.43
GW217S	3.5 to 13.4	19.20	4.80	14.40
GW218S	3.6 to 13.5	18.01	3.66	14.35
GW251S	4 to 14	17.98	3.55	14.43

#### Notes

- 1. S = shallow well
- 2. Elevations in feet relative to National Geodetic Vertical Datum of 1929.
- 3. Access to this well was blocked due to construction.

#### Abbreviations

bgs = below ground surface

NM = not measured

TOC = top of casing

### AOC-034 AND AOC-035 CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS<sup>1</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID <sup>2</sup>					
	Downgradient   Source Area   Plume Area   CPOC Area						
	GW217S GW216S GW218S GW						
Specific Conductivity (µS/cm)	110	238	142	113			
Dissolved Oxygen (mg/L)	0.26	0.38	0.34	4.48			
Oxidation/Reduction Potential (mV)	-7.9	-8.3	54.2	-3.0			
pH (standard units)	6.48	6.85	6.76	7.02			
Temperature (degrees C)	16.20	14.10	14.28	11.40			

#### **Notes**

- 1. Primary geochemical indicators are measured in the field.
- 2. S = shallow well.

#### **Abbreviations**

 $\mu$ S/cm = microsiemens per centimeter CPOC = conditional point of compliance degrees C = degrees Celsius mg/L = milligrams per liter mV = millivolts

### AOC-034 AND AOC-035 CONCENTRATIONS OF CONSTITUENTS OF CONCERN<sup>1</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID <sup>2</sup>				
		Source	<b>Cross-Gradient</b>			
	Cleanup	Area	Plume Area	CPC	OC Area	
	Level <sup>3</sup>	GW217S	GW216S	GW218S	GW251S	
Volatile Organic Compounds (µg	/L)					
cis-1,2-Dichloroethene	0.65	0.2 U	0.2 U	0.2 U	0.2 U	
Vinyl Chloride	0.29	0.2 U	0.2 U	0.2 U	0.2 U	

#### **Notes**

- 1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
- 2. S = shallow well
- 3. Cleanup levels obtained from Table 2 of the Cleanup Action Plan.

#### **Abbreviations**

μg/L = micrograms per liter

CPOC = conditional point of compliance

### LOT 20/FORMER BUILDING 10-71 PARCEL GROUNDWATER ELEVATION DATA NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

Well ID	Screen Interval Depth (feet bgs)	TOC Elevation (feet) 1	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>1</sup>
10-71-MW-1	7 to 17	30.07	8.33	21.74
10-71-MW-2	7 to 17	29.88	8.60	21.28
10-71-MW-3	5 to 15	29.13	NM	NM
10-71-MW-4	6 to 16	28.97	8.42	20.55

#### **Notes**

1. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

#### **Abbreviations**

bgs = below ground surface

NM = not measured

TOC = top of casing

# LOT 20/FORMER BUILDING 10-71 PARCEL PRIMARY GEOCHEMICAL INDICATORS<sup>1</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID	
	10-71-MW1	10-71-MW2	10-71-MW4
Specific Conductivity (µS/cm)	223	232	331
Dissolved Oxygen (mg/L)	0.25	0.18	0.33
Oxidation/Reduction Potential (mV)	72.9	61.8	57.6
pH (standard units)	6.12	6.18	6.21
Temperature (degrees C)	13.81	15.49	14.41

#### **Notes**

1. Primary geochemical indicators are measured in the field.

#### **Abbreviations**

μS/cm = microsiemens per centimeter
CPOC = conditional point of compliance
degrees C = degrees Celsius
mg/L = milligrams per liter
mV = millivolts

# LOT 20/FORMER BUILDING 10-71 PARCEL CONCENTRATIONS OF CONSTITUENTS OF CONCERN <sup>1, 2</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

		Well ID			
	10-71-MW1	10-71-MW2	10-71-MW4		
Volatile Organic Compounds (μg/L)					
cis-1,2-Dichloroethene	0.20 U	0.20 U	0.20 U		
Toluene	0.20 U	0.20 U	0.20 U		
Trichloroethene	0.20 U	0.20 U	0.20 U		
Vinyl Chloride	0.20 U	0.20 U	0.20 U		

#### **Notes**

- 1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
- 2. No cleanup standards have been established for the Building 10-71 Parcel.

#### **Abbreviations**

μg/L = micrograms per liter

## APRON A GROUNDWATER ELEVATION DATA NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

Well ID	Screen Interval Depth (feet bgs)	TOC Elevation (feet) <sup>1</sup>	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) <sup>1</sup>
GW262S	8 to 18	NA	4.93	NA
GW263S	8 to 18	NA	5.37	NA
GW264S	8 to 18	NA	5.79	NA

#### **Notes**

1. Elevations in feet relative to National Geodetic Vertical Datum of 1929.

#### **Abbreviations**

bgs = below ground surface NA = not available TOC = top of casing

## APRON A CONCENTRATIONS OF PRIMARY GEOCHEMICAL INDICATORS<sup>1</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

	Wel	Well ID <sup>2</sup>	
	GW262S	GW264S	
Specific Conductivity (µS/cm)	552	849	
Dissolved Oxygen (mg/L)	0.36	0.21	
Oxidation/Reduction Potential (mV)	78.2	56.3	
pH (standard units)	6.26	6.19	
Temperature (degrees C)	16.01	17.35	
Total Organic Carbon (mg/L)	38.6	37.3	

#### **Notes**

- 1. Primary geochemical indicators are measured in the field, with the exception of total organic carbon, which is measured in the laboratory.
- 2. S = shallow well.

#### Abbreviations

μS/cm = microsiemens per centimeter degrees C = degrees Celsius mg/L = milligrams per liter mV = millivolts

# APRON A CONCENTRATIONS OF CONSTITUENTS OF CONCERN<sup>1</sup> NOVEMBER 14, 2017

Boeing Renton Facility Renton, Washington

	Well ID <sup>2</sup>			
	GW262S	GW264S		
Volatile Organic Compounds (μg/L)				
cis-1,2-Dichloroethene	1.00 U	0.20 U		
Vinyl Chloride	1.00 U	0.97		

#### Notes

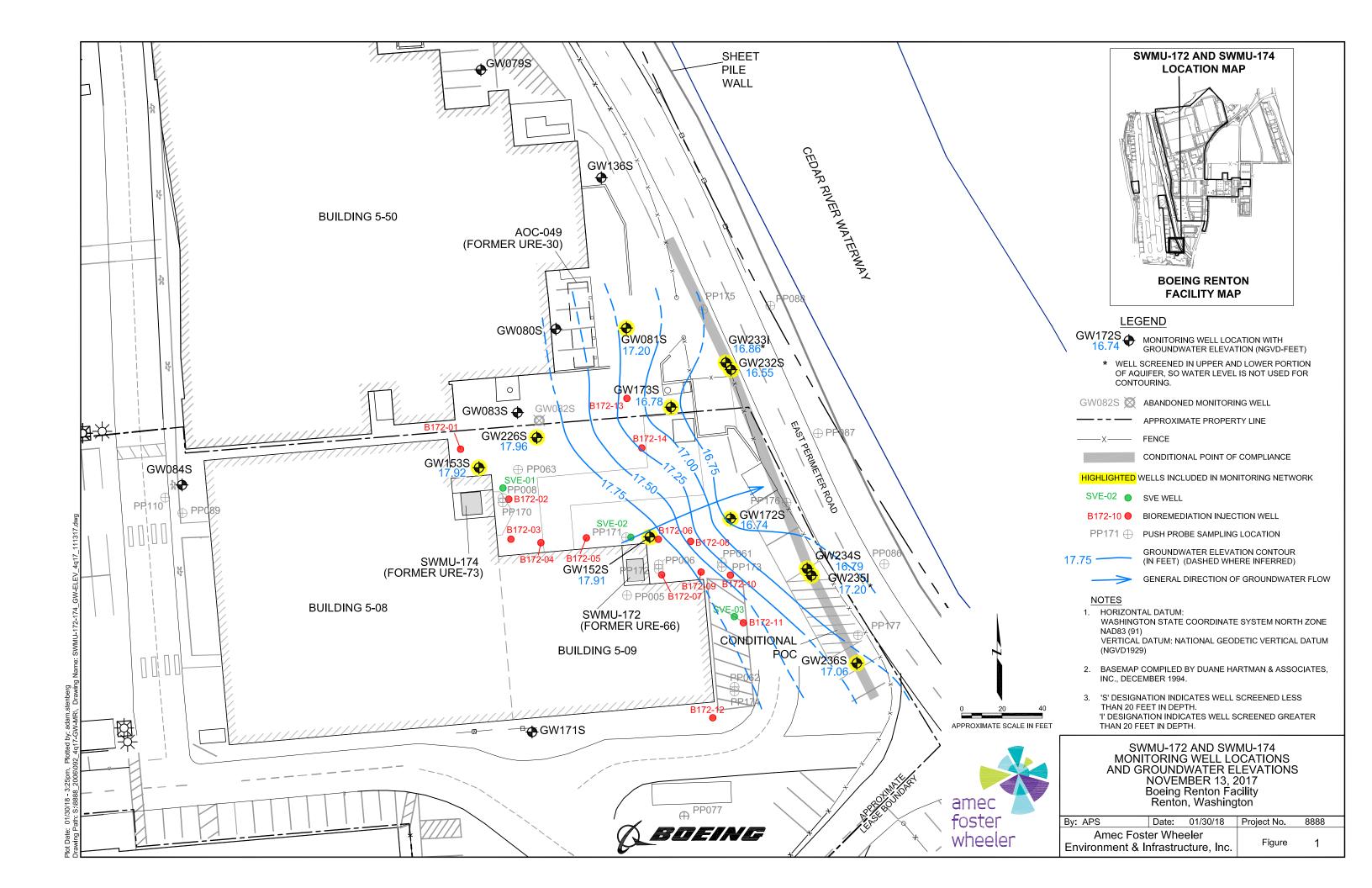
- 1. Data qualifiers are as follows:
  - U = The analyte was not detected at the reporting limit indicated.
- 2. S = shallow well.

#### **Abbreviations**

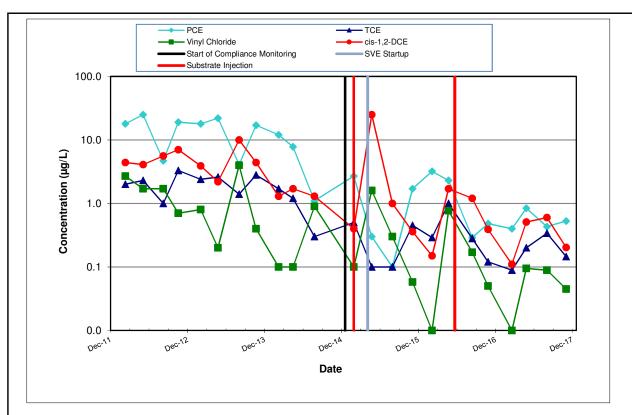
μg/L = micrograms per liter



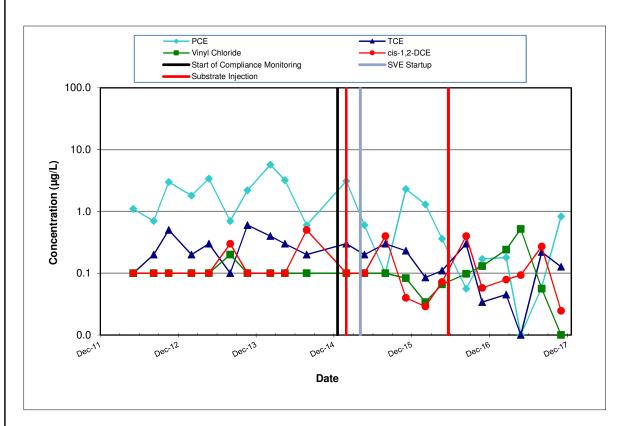
**FIGURES** 







#### **SOURCE AREA WELL GW152S**



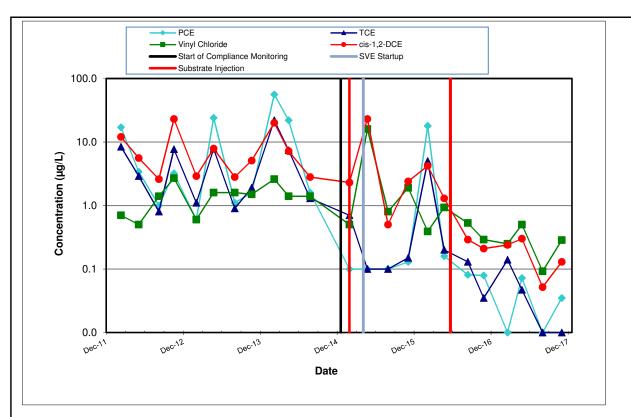
Note: non-detected values shown at one-half the reporting limit

#### **SOURCE AREA WELL GW153S**

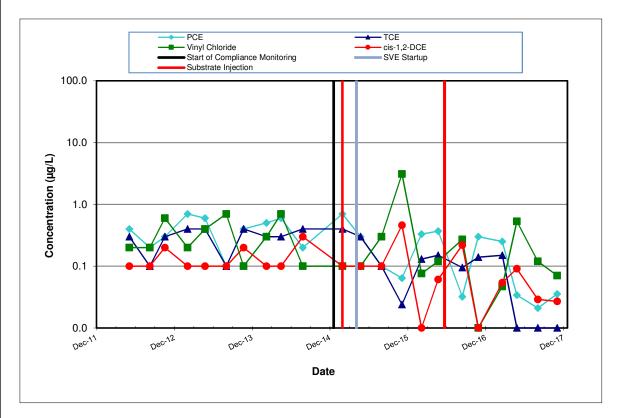


SWMU-172 AND SWMU-174 TREND PLOTS FOR SOURCE AREA WELLS GW152S AND GW153S Boeing Renton Facility Renton, Washington Project No. 8888





#### **DOWNGRADIENT PLUME AREA WELL GW172S**

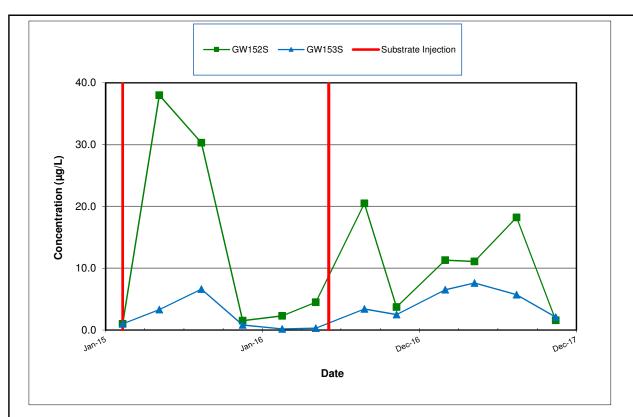


Note: non-detected values shown at one-half the reporting limit

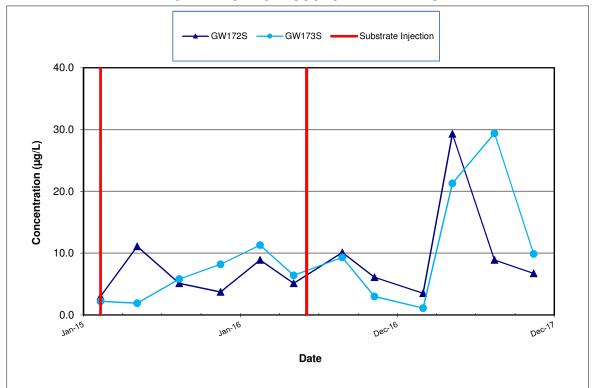
#### **DOWNGRADIENT PLUME AREA WELL GW173S**



SWMU-172 AND SWMU-174 TREND PLOTS FOR DOWNGRADIENT PLUME AREA WELLS GW172S AND GW173S Boeing Renton Facility Renton, Washington Project No. 8888



#### **TOTAL ARSENIC IN SOURCE AREA WELLS**



#### TOTAL ARSENIC IN DOWNGRADIENT PLUME AREA WELLS

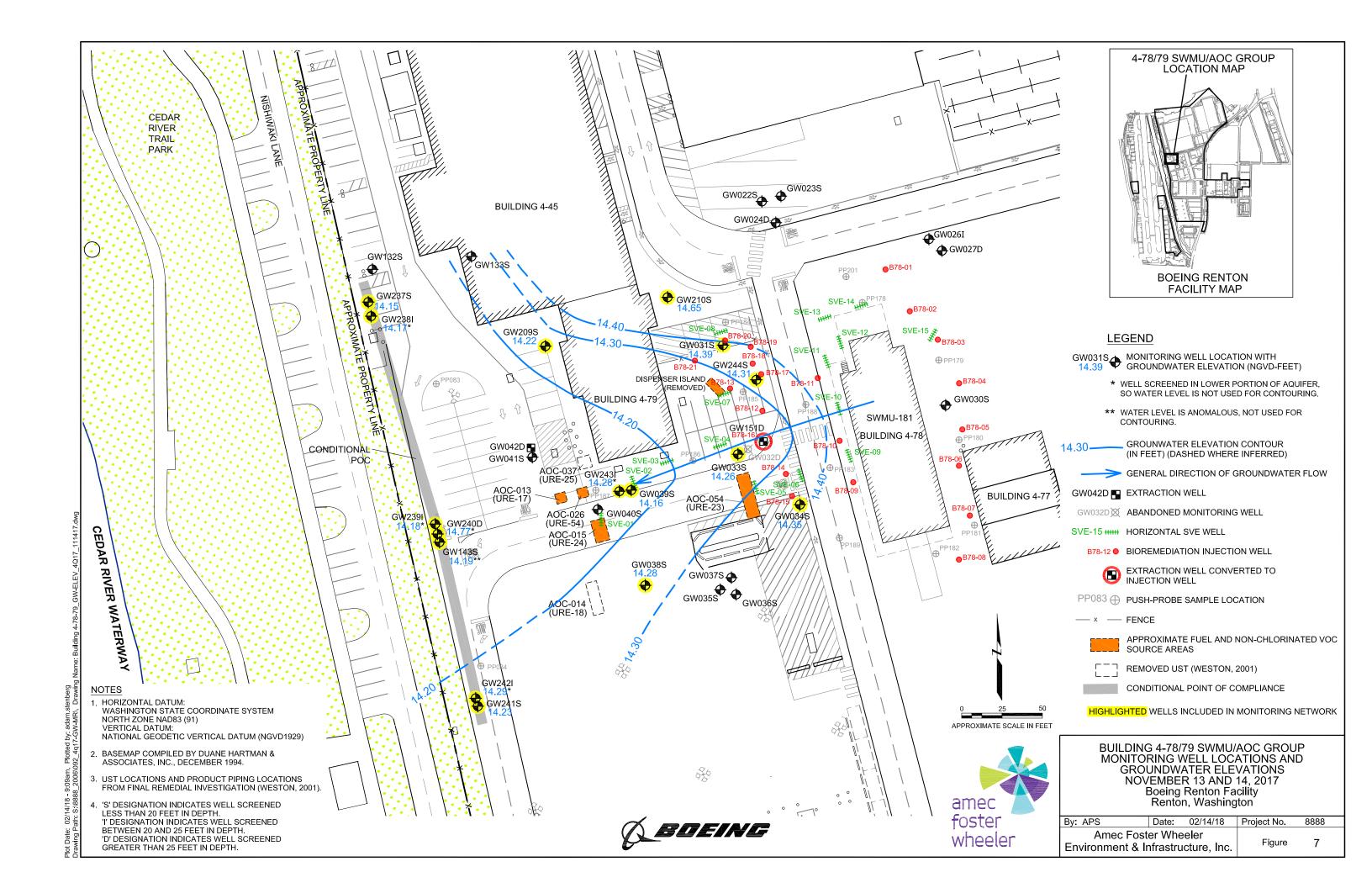
Note: non-detected values shown at one-half the reporting limit

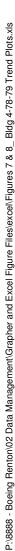


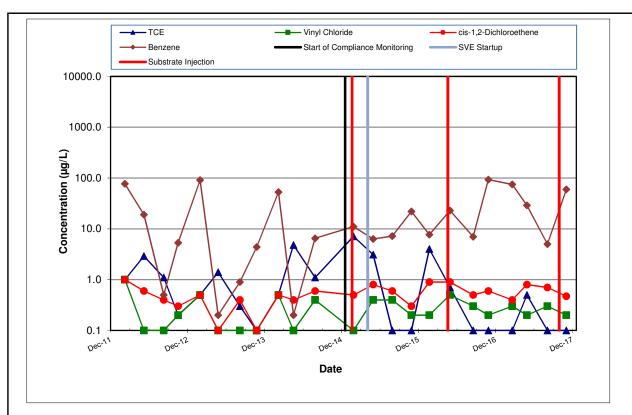
SWMU-172 AND SWMU-174 TREND PLOTS FOR ARSENIC IN SELECT SOURCE AREA AND DOWNGRADIENT PLUME AREA WELLS **Boeing Renton Facility** 

Project No. 8888

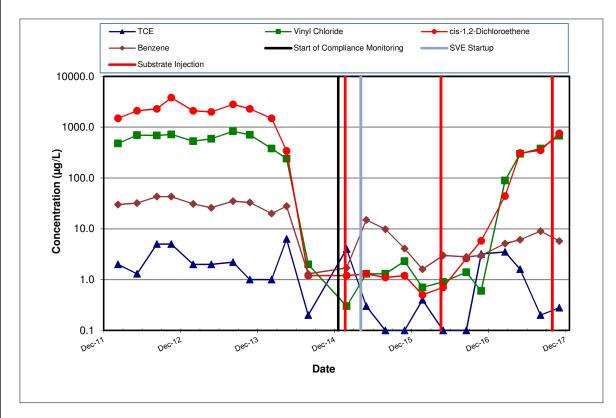
P:\8888 - Boeing Renton\02 Data Management\Grapher and Excel Figure Files\exce\Figures 3 & 4\_SWMU\_172-174 Trend Plots.xls







#### **SOURCE AREA WELL GW031S**



Note: non-detected values shown at one-half the reporting limit

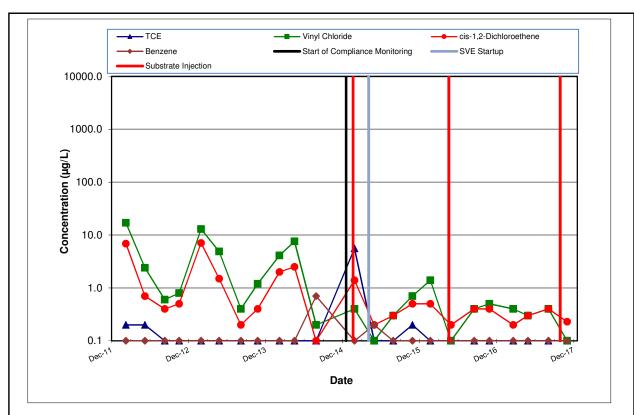
#### **SOURCE AREA WELL GW033S**



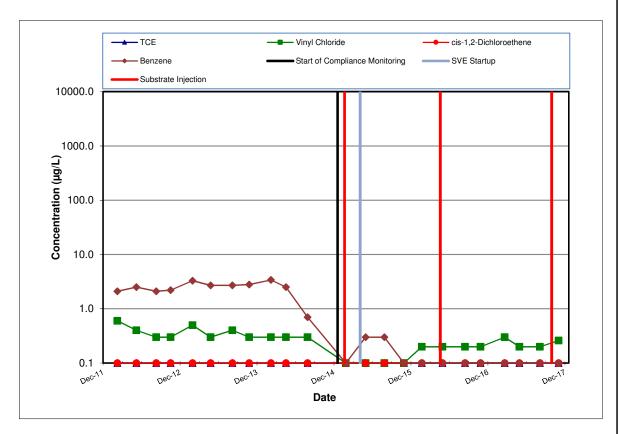
BUILDING 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR SOURCE AREA WELLS GW031S AND GW033S Boeing Renton Facility Renton, Washington

Project No. 8888





#### **SOURCE AREA WELL GW034S**

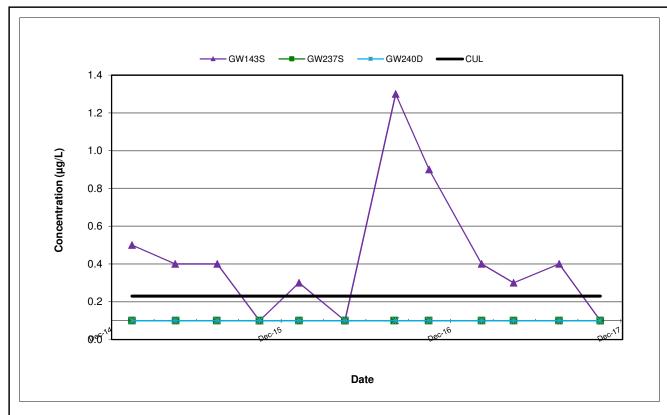


Note: non-detected values shown at one-half the reporting limit

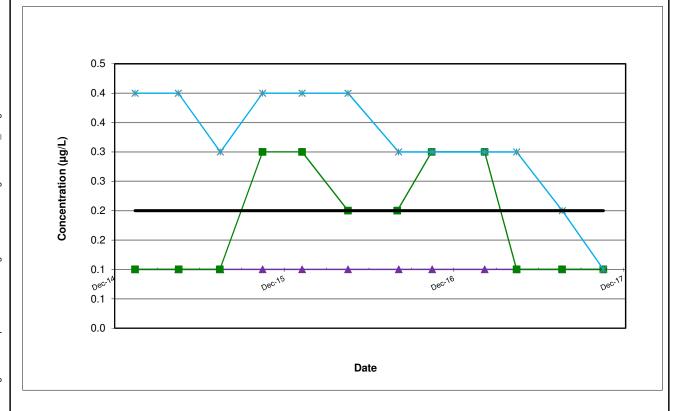
#### **DOWNGRADIENT PLUME AREA WELL GW209S**



BLDG 4-78/79 SWMU/AOC GROUP TREND PLOTS FOR SOURCE AREA WELL GW034S AND DOWNGRADIENT PLUME AREA WELL GW209S Boeing Renton Facility Renton, Washington Project No. 8888

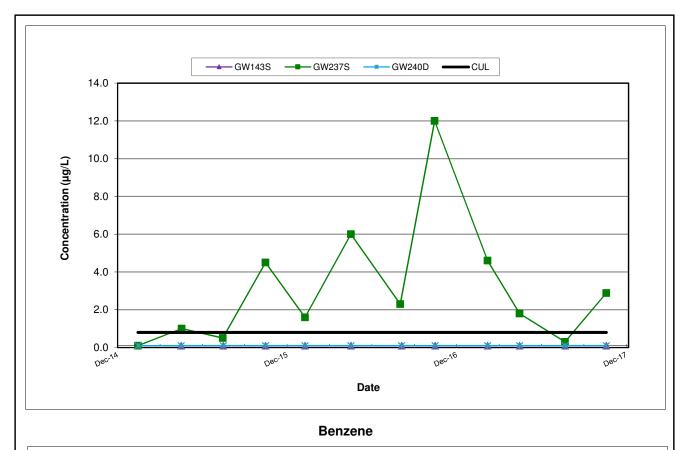


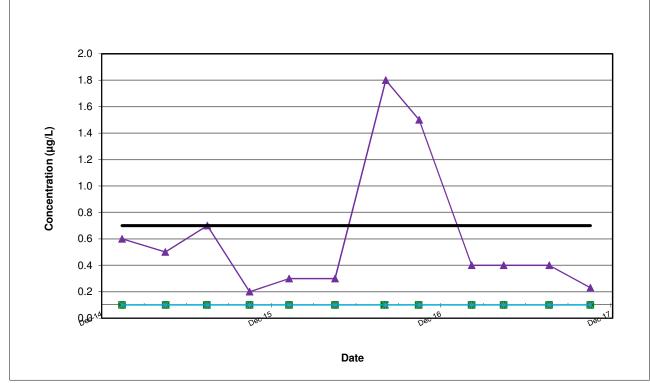
#### **Trichloroethene**



non-detected values shown at one-half the reporting limit **Vinyl Chloride** 





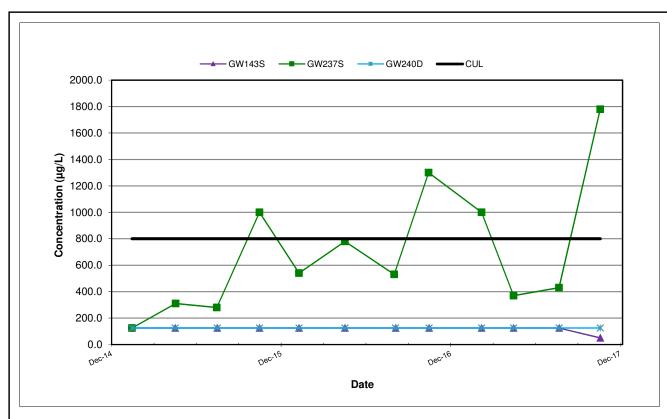


non-detected values shown at one-half the reporting limit

cis-1,2-Dichloroethene



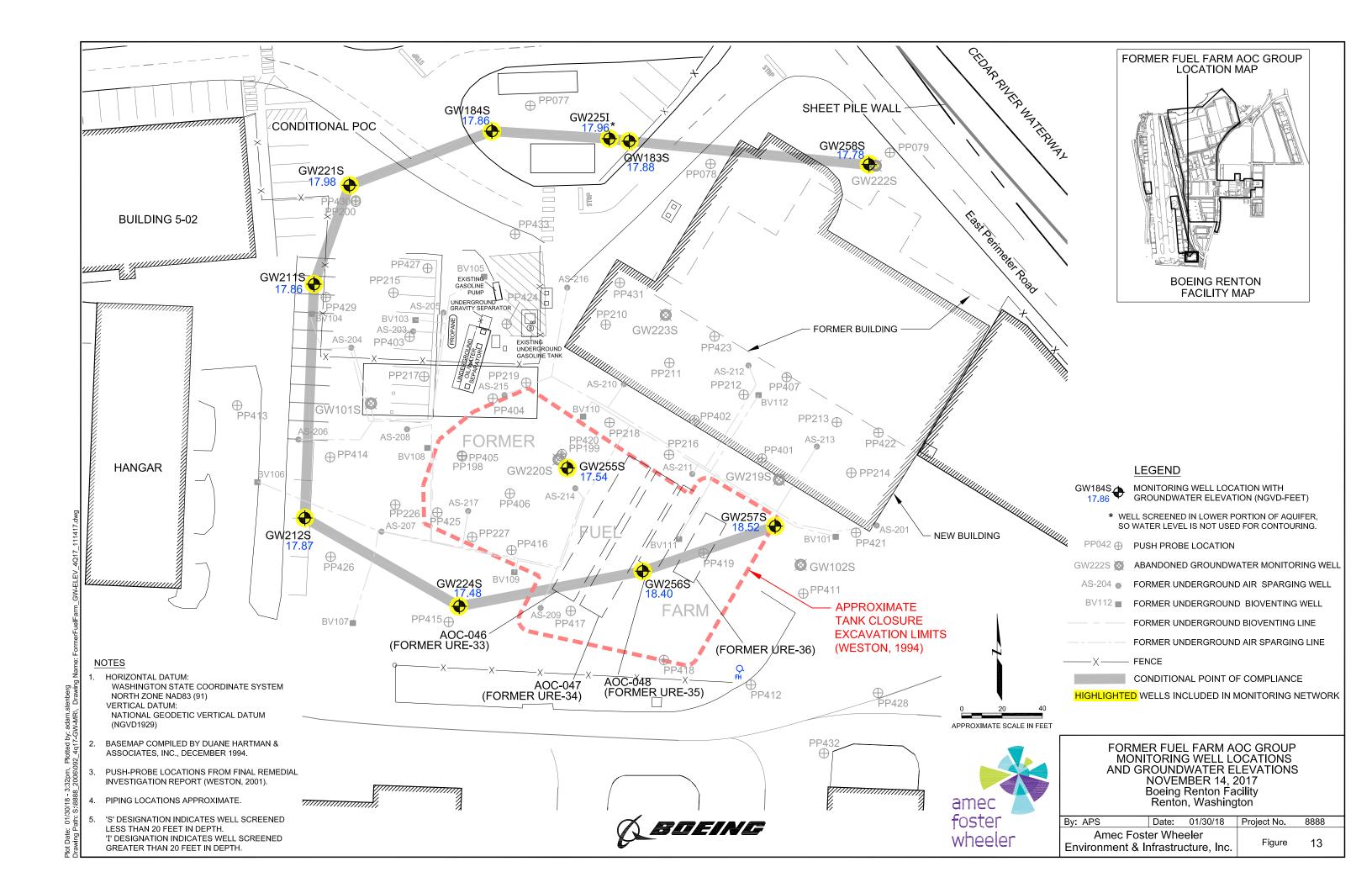


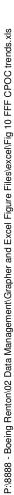


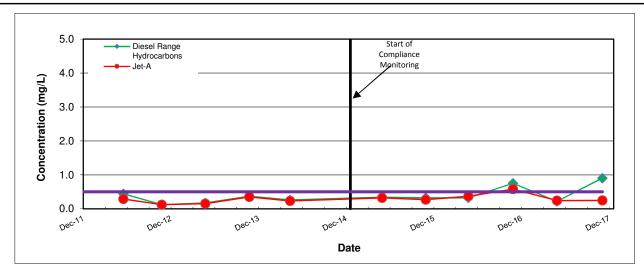
**TPH** as Gasoline

non-detected values shown at one-half the reporting limit

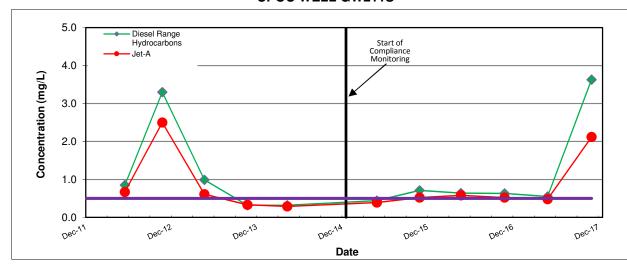




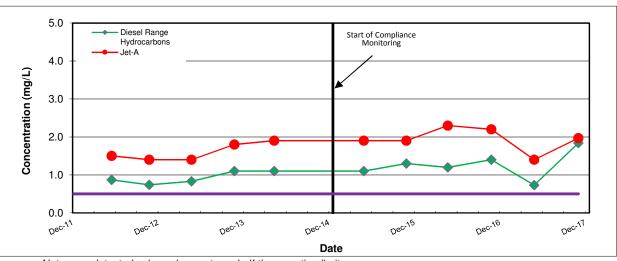




#### **CPOC WELL GW211S**



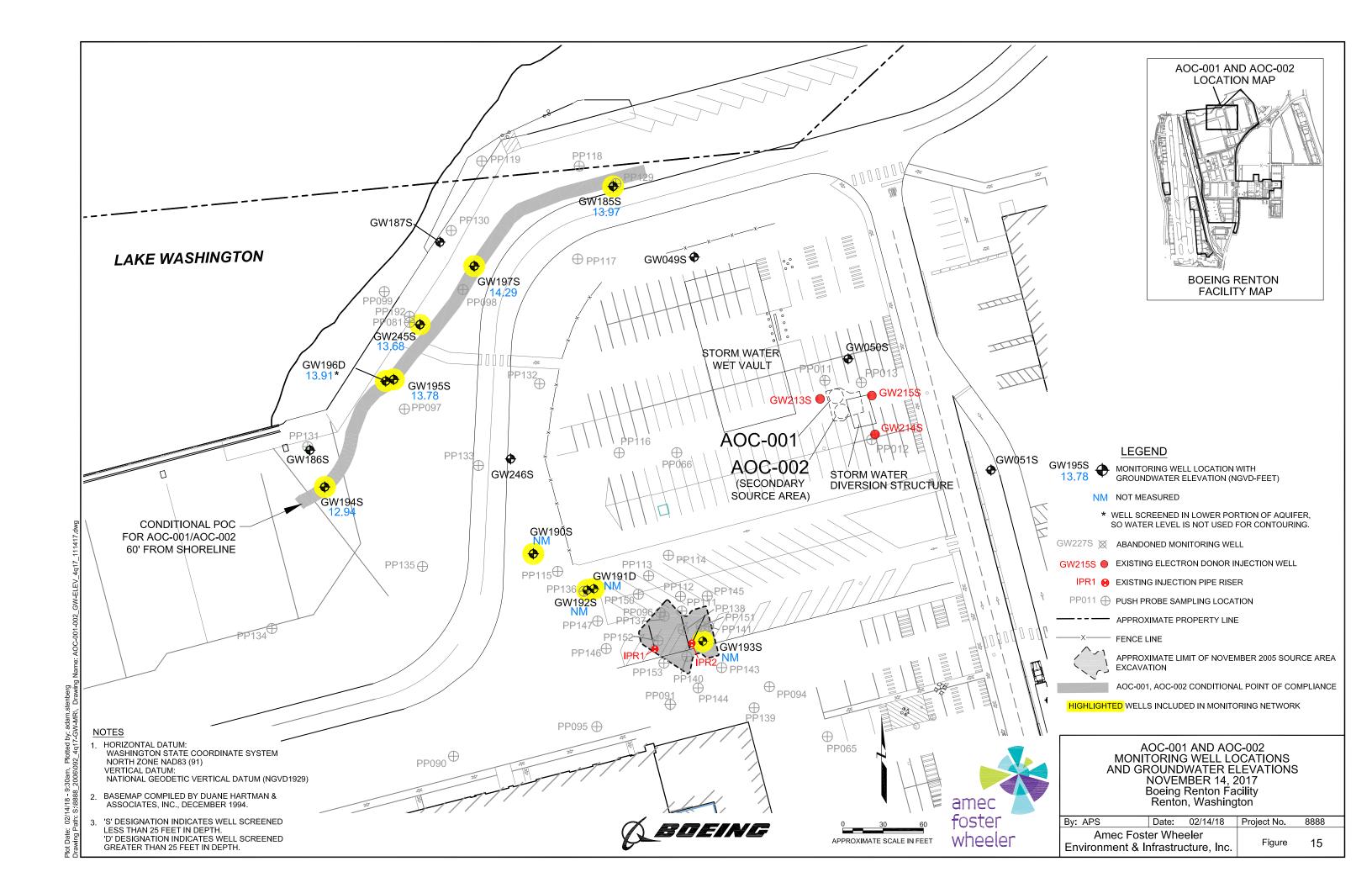
#### **CPOC WELL GW221S**



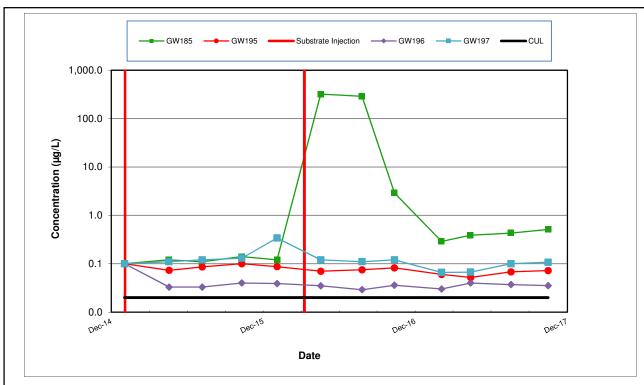
Note: non-detected values shown at one-half the reporting limit

#### **CPOC WELL GW224S**

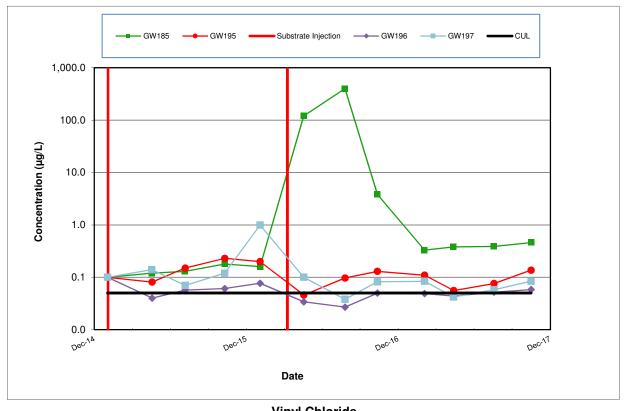








cis-1,2-Dichloroethene

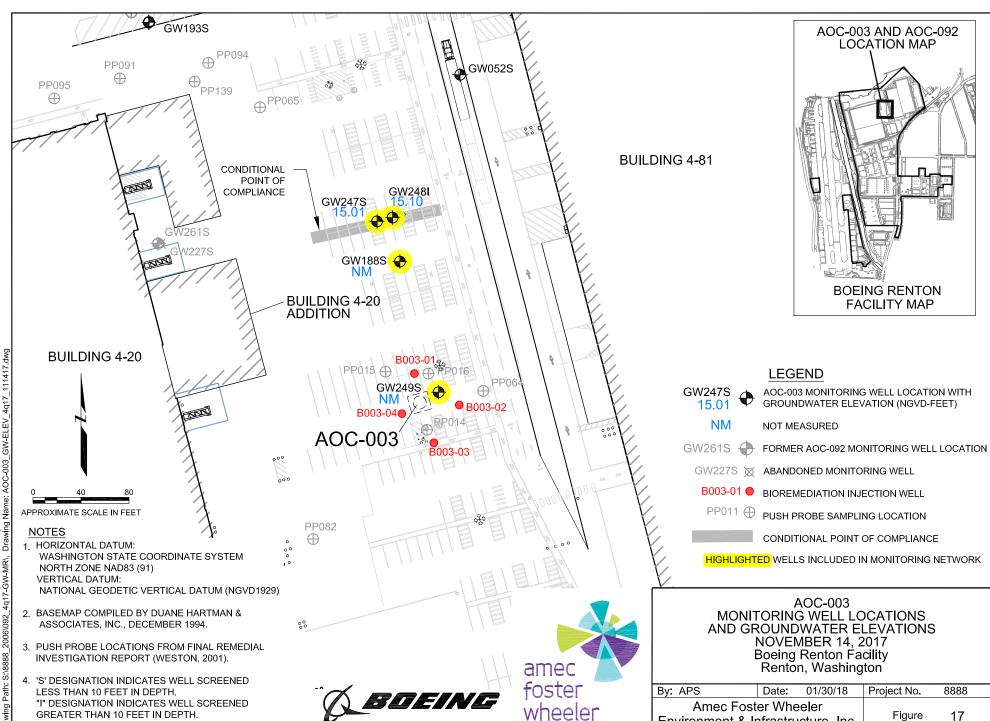


#### **Vinyl Chloride**

Note: non-detected values shown at one-half the reporting limit

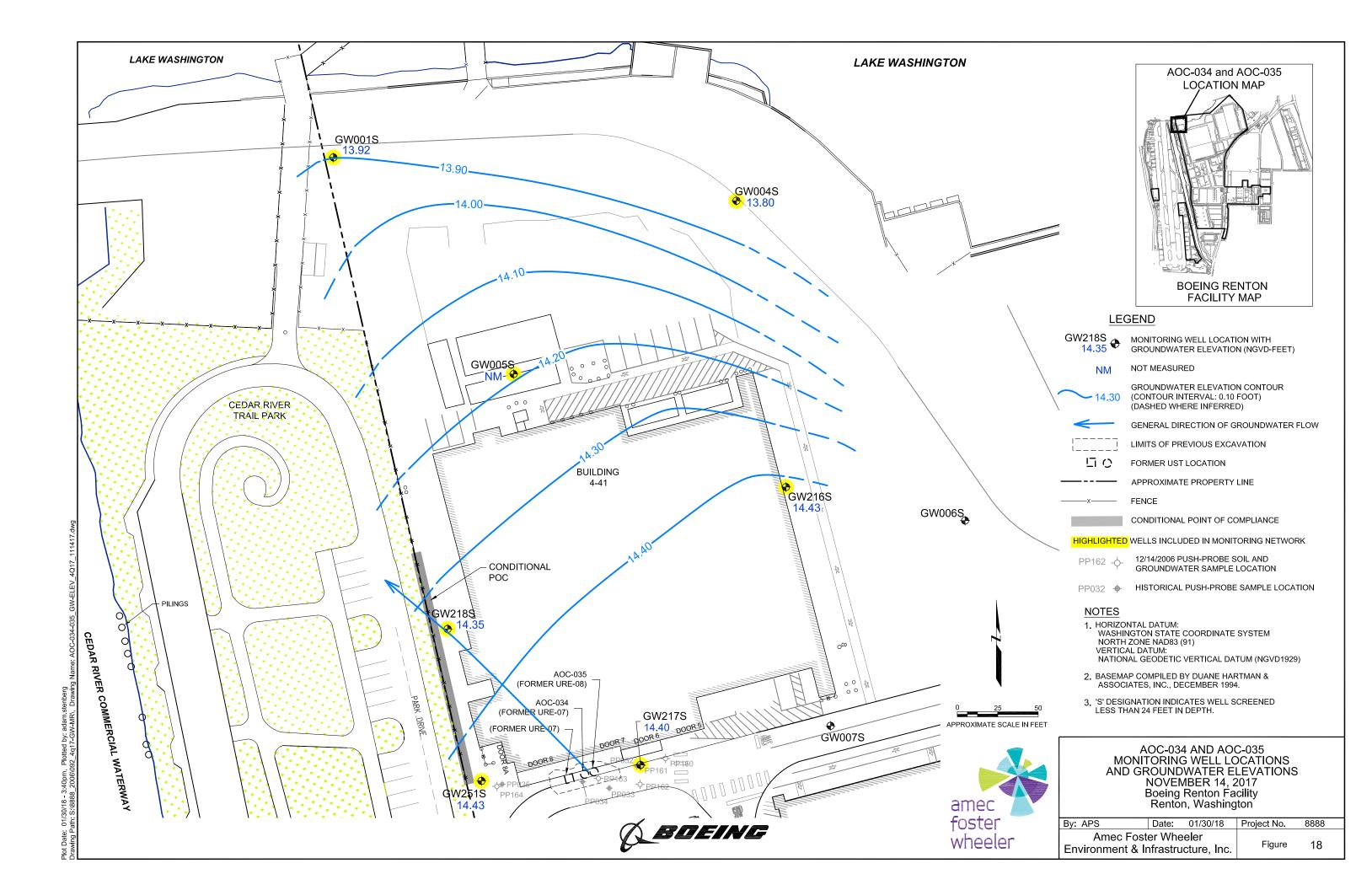


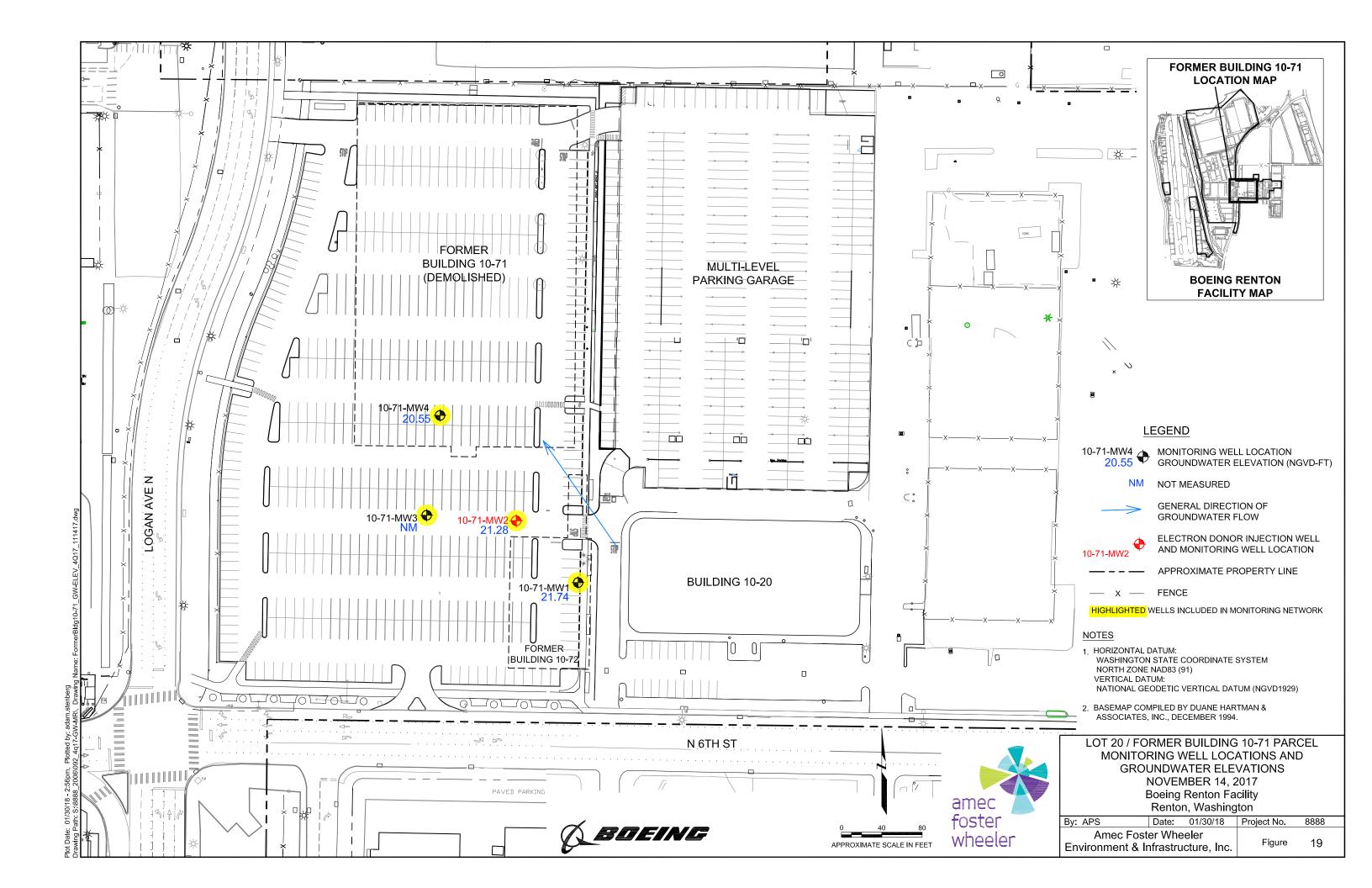
AOC-001 AND 002 TREND PLOTS FOR cis-1,2-DICHLOROETHENE AND VINYL CHLORIDE IN CPOC AREA WELLS Boeing Renton Facility Renton, Washington



Environment & Infrastructure, Inc.

Date: 01/30/18 - 3:36pm, wing Path: S:\8888 2006\0







#### APPENDIX A

Summary of Groundwater Sampling Methodology

#### **TABLE A-1**

#### **GROUNDWATER COMPLIANCE MONITORING SCHEDULE**

Boeing Renton Facility Renton, Washington

Cleanup Action	Monitoring	Frequency <sup>1</sup>		Groundwate	r Monitoring Wells <sup>2</sup>		Additional Water Level		
Area	Quarterly	Semiannual	Cross-Gradient Wells	Source Area Wells	Downgradient Plume Wells	CPOC Wells	Monitoring Wells <sup>3</sup>	Constituents of Concern <sup>4</sup>	Analyses <sup>5</sup>
SWMU-168		X (1,3)	NA	GW228S <sup>7</sup>	NA	GW229S, GW230I, and GW231S		VC	SW8260C SIM
SWMU-172/SWMU-174	Х		NA	GW152S and GW153S	GW081S, GW172S, GW173S, and GW226S	GW232S, GW233I, GW234S, GW235I, and GW236S		cis-1,2-DCE, PCE, TCE, VC Arsenic, copper, and lead	SW8260C SIM <sup>6</sup> EPA 6020A
Building 4-78/79 SWMU/AOC Group	Х		NA	GW031S, GW033S, GW034S, GW039S, GW243I, and	GW038S, GW209S, and GW210S	GW143S, GW237S, GW238I, GW239I, GW240D, GW241S,		VC, TCE, cis-1,2-DCE, benzene	SW8260C <sup>6</sup>
3VVIVIO/ACC GIOUP				GW244S	GW2103	and GW242I		TPH-gasoline	NWTPH-Gx
Former Fuel Farm SWMU/AOC Group		X (2,4)	NA	GW255S, GW256S, and GW257S	NA	GW183S, GW184S, GW211S,GW212S, GW221S, GW224S, and GW258S		TPH-jet fuel, TPH-diesel	NWTPH-Dx
AOC 001/AOC 000	Х	X (1,3) (all	NA	GW193S	GW190S, GW191D, GW192S,	GW185S, GW194S, GW195S,		Benzene	SW8260C <sup>6</sup>
AOC-001/AOC-002	(CPOC wells)	other wells)	INA	GW 1935	and GW246S	GW196D, GW197S, and GW245S		TCE, cis-1,2-DCE, 1,1-dichloroethene, VC	SW8260C SIM <sup>6</sup>
AOC-003	X (CPOC wells)	X (1,3) (all other wells)	NA	GW249S	GW188S	GW247S and GW248I		PCE, TCE cis-1,2-DCE, VC	SW8260C SIM <sup>6</sup>
AOC-004		X (1,3)	NA	GW250S	NA	GW174S		Lead	EPA 6020A
AOC-034/AOC-035		X (2,4)	GW216S	GW217S	NA	GW218S and GW251S	GW001S, GW004S, and GW005S	VC, <i>cis</i> -1,2-DCE	SW8260C <sup>6</sup>
AOC-060		X (1,3)	GW012S and GW014S	GW009S	GW147S	GW149S, GW150S, GW252S, GW253I, and GW254S	GW010S and GW011D	VC TCE, <i>cis-</i> 1,2-DCE	SW8260C SIM <sup>6</sup>
						GW163I, GW165I, GW177I,		1,1,2-Trichloroethane, acetone, benzene, toluene, carbon tetrachloride, chloroform, <i>cis</i> -1,2-DCE, <i>trans</i> -1,2-DCE, methylene chloride	SW8260C <sup>6</sup>
AOC-090		X (1,3)	NA	GW189S	GW175I and GW176S	GW178S, GW179I, GW180S, GW207S, and GW208S		1,1-Dichloroethene, 1,1,2,2-tetrachloroethane, VC, PCE, TCE	SW8260C SIM <sup>6</sup>
								TPH-gasoline	NWPTH-Gx
								TPH-diesel, TPH-motor oil	NWTPH-Dx
Building 4-70 Area		X (1,3)	NA	NA	NA	GW259S and GW260S		TCE, cis-1,2-DCE, VC	SW8260C <sup>6</sup>
Lot 20/Former Building 10-71		X (2,4)	NA	10-71-MW1, 10-71-MW2, and 10-71-MW4	NA	NA		Toluene, cis-1,2-DCE, TCE, VC	SW8260C <sup>6</sup>
Apron A		X (2,4)	NA	GW262S and GW264S	NA	NA		cis-1,2-DCE and VC	SW8260C <sup>6</sup>

#### Notes

- 1. The EDR presents the groundwater monitoring frequency for each SWMU/AOC. For sites with semiannual monitoring frequency, specific quarters when monitoring will be conducted is indicated by 1 for quarter 1, 2 for quarter 2, etc.
- 2. Groundwater monitoring wells are also monitored for groundwater levels.
- 3. Additional wells are monitored for groundwater levels only.
- 4. In addition to COCs, primary geochemical indicators will be monitored during each regular monitoring event. Geochemical indicators are listed in Table A-2.
- 5. Details of analytical methods are specified in the Quality Assurance Project Plan, which is Appendix E to the Cleanup Action Plan (AMEC, 2012).
- 6. SIM methods will be used if the cleanup level is lower than the reporting limit achieved by the conventional 8021, 8260 or 8270 method. If cleanup levels become higher or if the conventional 8021, 8260 or 8270 methods are updated and able to achieve reporting limits below the cleanup levels, then the conventional method rather than the SIM method will be used.
- 7. GW228S will not be monitored on a semiannual basis only the CPOC wells will be monitored on a semiannual basis for SWMU-168.

#### Abbreviations:

AOC = area of concern cis-1,2-DCE = cis-1,2 dichloroethene COCs = constituents of concern CPOC = conditional point of compliance Cr = chromium

EDR = Engineering Design Report EPA = Environmental Protection Agency

NA = not applicable

PCE = tetrachloroethene
SIM = selected ion monitoring
SWMU = solid waste management unit
TCE = trichloroethene

TPH = total petroleum hydrocarbons trans-1,2-DCE = trans-1,2 dichloroethene

VC = vinyl chloride

VOCs = volatile organic compounds

#### **TABLE A-2**

#### MONITORED NATURAL ATTENUATION/MONITORED ATTENUATION SCHEDULE

Boeing Renton Facility Renton, Washington

					Primary Geochemical Para	meters <sup>2</sup>	
Cleanup Action		Groundwater	Monitoring Wells		•		g Frequency <sup>3</sup>
Area	Cross-Gradient Wells	Source Area Wells	Downgradient Plume Wells	CPOC Wells	Indicators	Quarterly	Semiannual
SWMU-168	NA	GW228S <sup>4</sup>	NA	GW229S, GW230I, and GW231S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (1,3)
SWMU-172/SWMU-174	NA	GW152S and GW153S	GW081S, GW172S, GW173S, and GW226S	GW232S, GW233I, GW234S, GW235I, and GW236S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC	X	
Building 4-78/79 SWMU/AOC Group	NA	GW031S, GW033S, GW034S, GW039S, GW243I, and GW244S	GW038S, GW209S, and GW210S	GW143S, GW237S, GW238I, GW239I, GW240D, GW241S, and GW242I	Dissolved oxygen, pH, ORP, temperature, specific conductance in all wells, TOC in all wells except GW241S and GW242I	Х	
Former Fuel Farm SWMU/AOC Group	NA	GW255S, GW256S, and GW257S	NA	GW183S, GW184S, GW211S,GW212S, GW221S, GW224S, and GW258S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (2,4)
AOC-001/AOC-002	NA	GW193S	GW190S, GW191D, GW192S, and GW246S	GW185S, GW194S, GW195S, GW196D, GW197S, and GW245S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC	X (CPOC wells)	X (1,3) (all other wells)
AOC-003	NA	GW249S	GW188S	GW247S and GW248I	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC	X (CPOC wells)	X (1,3) (all other wells)
AOC-004	NA	GW250S	NA	GW174S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (1,3)
AOC-034/AOC-035	GW216S	GW217S	NA	GW218S and GW251S	Dissolved oxygen, pH, ORP, temperature, specific conductance		X (2,4)
AOC-060	GW012S and GW014S	GW009S	GW147S	GW149S, GW150S, GW252S, GW253I, and GW254S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC		X (1,3)
AOC-090	NA	GW189S	GW175I and GW176S	GW163I, GW165I, GW177I, GW178S, GW179I, GW180S, GW207S, and GW208S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC <sup>5</sup>		X (1,3)
Building 4-70 Area	NA	NA	NA	GW259S and GW260S	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC		X (1,3)
Apron A	NA	GW262S and GW264S	NA	NA	Dissolved oxygen, pH, ORP, temperature, specific conductance, TOC		X (2,4)

#### Notes:

- 1. In addition to COCs listed in Table A-1, primary geochemical indicators will be monitored during each regular monitoring event.
- 2. All primary geochemical indicators except TOC are monitored in the field during sampling. TOC is analyzed in the laboratory following methods specified in the Quality Assurance Project Plan, which is Appendix E to the Cleanup Action Plan (AMEC, 2012).

  The primary geochemical indicators differ slightly depending on whether the site is a fuel-related site or a solvent-related site.

  At a fuel related site, TOC is not necessary; at a solvent-related site, TOC is a measure of how much electron donor remains present.
- 3. The EDR presents the groundwater monitoring frequency for each SWMU/AOC. For sites with semiannual monitoring frequency, specific quarters when monitoring will be conducted is indicated by 1 for quarter 1, 2 for quarter 2, etc.
- 4. Primary geochemical parameters will not be collected at GW228S only at CPOC wells that are sampled semiannually.

#### Abbreviations:

AOC = area of concern

COCs = constituents of concern

CPOC = conditional point of compliance

EDR = Engineering Design Report

NA = not applicable

ORP = oxidation reduction potential

SWMU = solid waste management unit

TOC = total organic carbon



#### APPENDIX B

Field Forms



Project Nan	ne:	Boeing Ren	iton		Project Number	er:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/ 14/2017 @	1221		
Sample Nur	nber:	RGW185S			Weather:	40'S, CLOUDY			
Landau Rep	resentative:	JHA							
WATER LE	VEL/WELL/P	URGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	2.3	Time:	1151	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
	Date/Time:		@ 1155	End Purge:	=	11/ 14 /2017 @	1208	Gallons Purged:	
Purge water of	disposed to:		55-gal Drum		Storage Tank	Ground		SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablizatio +/- 3%		ters for three +/- 0.1 units		dings within the fo	ollowing limits < 0.3 ft	>/= 1 flow through cell	
1150						* 0***		O	
1158		656	0.25	6.60				<0.25	
1201		658	0.18	6.64					_
1204	16.1	659	0.18	6.65			2.3	<0.25	
1207	16.1	659	0.17	6.64	-46.7				
	_				-	· <del></del>			
SAMPLE CO	DLLECTION I	DATA							
Sample Colle	ected With:		Bailer		Pump/Pump Type	DED Geotech blace	dder pump		
Made of:		Stainless Ste	el	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Procee	dure:	Alconox Wa	sh	Tap Rinse	DI Water	Dedicated			
(By Numerica	al Order)	Other							
Sample Desc	ription (color,	turbidity, odor	, sheen, etc.):	CLEAR, CC	LORLESS, NO/I	NS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	16.1	659	0.17	6.65	-47.1				
2	16.1	659	0.17	6.65	-47.1				
3	16.1	659	0.17	6.65	-47.3				
4	16.1	659	0.17	6.65	-47.3				
Average:	16.1	659	0.17	6.65	-47.2	#DIV/0!			
		NAT VOIC A		D DOTTE					
QUANTITY 5					TPH-Gx) (BTE	oplicable or write i	non-standard ar	WA   WA	OR 🗆
						(8141) (Oil & G	rease)	WA □	OR 🗆
						(HCO3/CO3) (C			
1	(COD) (TO	C) (Total PO	4) (Total Kie	dahl Nitroger	n) (NH3) (NO3	/NO2)			
		le) (WAD Cy							
						(Pb) (Mg) (Mn) (I			
			o) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (TI) (V	) (Zn) (Hg) (K) (N	la) (Hardness) (Silic
	VOC (Boein	ane Ethene A	retylene						
	Michigane Ell	mic Ethelle A	cotyrone						
	others								
D 11 : C	1 N ( )								
Duplicate Sar Comments:	mpie No(s):								
			JHA			Date:	11/14/2017		
Signature:									



Project Nam	e:	Boeing Ren	iton		Project Numbe	er:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/14 /2017 @	1215		
Sample Nun	ber:	RGW194S	_		Weather:	40s/50s PC			
Landau Repr	resentative:	SRB			•				
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	3.85	Time:	_	Flow through ce			GW Meter No.(s	S HERON 3
Begin Purge:				End Purge:	_	11/ 14 /2017 @	1213	Gallons Purged:	
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground		SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	pm	(mV)	(NTU)	(ft)	Volume (gal)	Observations
						dings within the fo		>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1153	15.8	647	0.80	6.18	-38.0		2.8		
1156	15.7	605	5.71	6.19	-64.0		2.8		
1159	15.6	603	6.08	6.19	-65.0		2.8		
1202	15.6	602	6.16	6.19	-66.0				
							-		
SAMPLE CO	LI ECTION I	<u></u>							
Sample Collection			Bailer		Pump/Pump Type	DED Geotech blace	ider pump		
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	_	Tap Rinse	DI Water	Dedicated			
(By Numerica		Other			<u> </u>				
Sample Descr	iption (color, t		, sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	15.6	599	6.30	6.20	-66.0				
2	15.6	598	6.47	6.19	-66.6				
3	15.5	595	6.66	6.20	-67.1				
4	15.5	593	6.79	6.20	-68.0				
Average:	15.6	596	6.56	6.20	-66.9	#DIV/0!	-		-
						oplicable or write r	ıon-standard aı		
5					TPH-Gx) (BTE			WA □ WA □	OR  OR
						(8141) (Oil & Gill) (HCO3/CO3) (C			OR 🗆
1					n) (NH3) (NO3)		(104) (110	(1)	
			anide) (Free		(-1.2.2)				
		•			(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	g) (K) (Na)
	(Dissolved M	etals) (As) (St	o) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	(Zn) (Hg) (K) (N	Na) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene A	cetylene						
	others								
	ouleis								
Duplicate San	nple No(s):	Duplicate Lo	ocation (RGW	DUP4)					
Comments:									
Signature:	SRB					Date:	11/14/2017		



							<b>_</b>		
Project Nam	ıe <u>:</u>	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly Au	_		Date/Time:	11/ 14/2017 @	1306		
Sample Nun		RGW195S	171114		Weather:	40'S, CLOUDY			
Landau Repr	resentative:	JHA							
WATER LEV	/EL/WELL/PI	URGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	2.56	Time:	1242	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/ 14/2017	@ 1245	End Purge:	Date/Time:	11/ 14 /2017 @ 13	304	Gallons Purged:	0.5
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	_					dings within the fo	~	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1248	15.3	687	0.12	6.74	-46.7	LOW		<0.25	
1251	15.4	671	0.11	6.67	-44.7		2.56	< 0.25	
1254	15.4	657	0.11	6.61	-43.2			0.25	
1257	15.4	649	0.11	6.59	-42.7		2.56		
1300	15.3	642	0.11	6.55	-42.2				
1303		641	0.10	6.55	-42.0				
1303	13.4	041	0.10	0.33	-42.0				
	. ———								
CANDIE CO	I I DOWN I								
Sample Collection	LLECTION I		Bailer		Dumn/Dumn Tyne	DED Geotech blad	lder numn		
Made of:	cted Willi.	Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
			_		—		i Other	Dedicated	
Decon Proced (By Numerica)		Alconox Was	п Ш	Tap Rinse	DI Water	Dedicated			
, ,	*	_	chaan ata ):	CLEAD CO	LODI ESS NOV	IC .			
Sample Desci	ipuon (color,	iurbiuity, odor,	sneen, etc.)	CLEAR, CO	LORLESS, NO/N	13			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	15.4	641	0.11	6.55	-42.0				
2	15.4	641	0.11	6.55	-42.0				
3	15.4	640	0.11	6.55	-42.0				
4	15.4	640	0.10	6.55	-41.9				
			0.11	6.55	-42.0	#DIV/0!			
Average:	15.4	041	0.11	0.55	-42.0	#D1V/U!			
QUANTITY						plicable or write n	on-standard ar		
5		M) (8010) (8				/			OR 🗆
						(8141) (Oil & Gr	•		OR 🗆
1					nty) (Alkalinity) n) (NH3) (NO3)	(HCO3/CO3) (C	.1) (SO4) (NO	(NO2) (F)	
1		le) (WAD Cya			i) (NII3) (NO3/	NO2)			
					(Cr) (Cu) (Fe) (	(Pb) (Mg) (Mn) (N	Ji) (Ag) (Se) (	T1) (V) (Zn) (Hg	) (K) (Na)
									(Ia) (Hardness) (Silica
	VOC (Boein			· · · · · · · · · · · · · · · · · · ·			<u></u>		7,4
		ane Ethene Ac	etylene						
	others								
Dunlingto Com	1. N(-).								
Difficate San	nnie Noisi.								
Duplicate San Comments:	npie No(s):								
Comments: Signature:	npie No(s):		JHA			Date:	11/14/2017		



D ' . NT		D ' D '			D : .N 1		0005015 000 0	20	
Project Nam	e <u>:</u>	Boeing Rent			Project Number		0025217.099.0	99	
Event:		Quarterly Au	_		Date/Time:	11/14 /2017 @	1325		
Sample Num	-	RGW196D	171114		Weather:	40s/50s PC			
Landau Repr	resentative:	SRB							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	2.55	Time:	1243	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/14 /2017	1301	End Purge:	Date/Time:	11/ 14 /2017 @	1323	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATMI	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	P	(mV)	(NTU)	(ft)	Volume (gal)	Observations
						dings within the fol	~	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1304	14.3	367	1.22	6.38	-41.0		2.55		
1307	14.0	366	3.62	6.38	-53.0		2.55		
1310	14.0	366	3.70	6.38	-55.0		2.55		
1313	13.9	366	3.96	6.39	-60.0				
1313	13.9		3.90	0.39	-00.0				
SAMPLE CO	LLECTION D	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blad	der pump		
Made of:		Stainless Stee	ı	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	h 🗖	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other	_	_		_			
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):	CLEAR COI	LORLESS NO/NS	<u> </u>			
	•	•							
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.9								
2		365	3.99	6.39	-61.0				
	13.9	365	3.99 4.01	6.39	-61.0 -62.4				
3		365	4.01	6.40	-62.4				
3	13.9	365 365	4.01	6.40	-62.4 -63.0				
4	13.9	365 365 365	4.01 4.04 4.06	6.40 6.40 6.40	-62.4 -63.0 -64.0				
	13.9	365 365	4.01	6.40	-62.4 -63.0	#DIV/0!			
4 Average:	13.9 13.8 13.9	365 365 365 365	4.01 4.04 4.06 4.03	6.40 6.40 6.40 6.40	-62.4 -63.0 -64.0 -62.6	#DIV/0!	on-standard ar	nalysis below)	
4 Average:	13.9 13.8 13.9 TYPICAL A	365 365 365 365	4.01 4.04 4.06 4.03 LOWED PE	6.40 6.40 6.40 6.40	-62.4 -63.0 -64.0 -62.6	plicable or write n	on-standard ar	_	OR 🗆
4 Average: QUANTITY	13.9 13.8 13.9 TYPICAL A (8260C & SIN	365 365 365 365 NALYSIS AL M) (8010) (80	4.01 4.04 4.06 4.03 LOWED PE 020) (NWT	6.40 6.40 6.40 6.40 R BOTTLE PH-G) (NW	-62.4 -63.0 -64.0 -62.6  TYPE (Circle ap	plicable or write n		WA □	OR □
4 Average: QUANTITY	13.9 13.8 13.9 <b>TYPICAL A</b> (8260C & SIN (8270D) (PA	365 365 365 365 NALYSIS AL VI) (8010) (81 H) (NWTPH	4.01 4.04 4.06 4.03 LOWED PE 020) (NWT	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPH	-62.4 -63.0 -64.0 -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)	oplicable or write n	ease)	WA □ WA □	
4 Average: QUANTITY	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (TOO	365 365 365 365 NALYSIS AL M) (8010) (8010) (8010) (8010) (8010) (8010) (8010) (8010) (8010) (7010)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B	6.40 6.40 6.40 6.40 R BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen	-62.4 -63.0 -64.0 -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)	oplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C	ease)	WA □ WA □	
4 Average: QUANTITY 5	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (TOO (Total Cyanid	365 365 365 365 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya	4.01 4.04 4.06 4.03  LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie unide) (Free	6.40 6.40 6.40 6.40 R BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	oplicable or write n X) (8141) (Oil & Gro (HCO3/CO3) (C	ease) I) (SO4) (NO	WA  WA  WA  WO	OR 🗆
4 Average: QUANTITY 5	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals)	365 365 365 365 NALYSIS AL M) (8010) (80 H) (NWTPH lectivity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (E	4.01 4.04 4.06 4.03 LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie unide) (Free Ba) (Be) (Ca	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) (Alkalinity) (NH3) (NO3/(Cr) (Cu) (Fe) (	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M	365 365 365 365 NALYSIS AL M) (8010) (80 H) (NWTPH lectivity) (TDS C) (Total PO4 e) (WAD Cya e) (As) (Sb) (Eetals) (As) (Sb) (Sb)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie unide) (Free Ba) (Be) (Ca	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	365 365 365 365 NALYSIS AL M) (8010) (80 H) (NWTPH lectivity) (TDS C) (Total PO4 e) (WAD Cya e) (As) (Sb) (Eetals) (As) (Sb) (Sb)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average:  QUANTITY 5	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR 🗆
4 Average:  QUANTITY 5  1  Duplicate San	13.9 13.8 13.9  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	365 365 365 365 NALYSIS AL M (8010) (80 M) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (Eetals) (As) (Sb) g short list)	4.01 4.04 4.06 4.03 LOWED PE 020) (NWTF-D) (NWTF-D) (TSS) (B) (Total Kiestanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	6.40 6.40 6.40 6.40 CR BOTTLE PH-G) (NW PH-Dx) (TPHOD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-62.4  -63.0  -64.0  -62.6  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)  lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  (i) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)



Project Nam	e <u>:</u>	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly Au	_		Date/Time:	11/ 14/2017 @	1241		
Sample Nun	-	RGW197S	171114		Weather:	40'S, CLOUDY			
Landau Rep	resentative:	JHA							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	2.23	Time:	1213	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/ 14/2017	@ 1215	End Purge:	Date/Time:	11/ 14 /2017 @ 12	.28	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	P	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	_					dings within the fol	~	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1218	15.6	962	0.12	7.03	-76.8	LOW		<0.25	
1221	15.7	962	0.13	7.14	-91.3				
1224	15.7	958	0.11	7.16	-93.3		2.23	0.25	
1227	15.7	956	0.12	7.17	-94.4		_	<0.50	
				,,,,				40.00	
								<del></del>	
SAMPLE CO	LLECTION D	DATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blad	der pump	<u>-</u>	
Made of:		Stainless Stee	1 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	h 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other	_						
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):	CLOUDY, C	COLORLESS, NO	)/NS			
		•							
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	15.7	954	0.11	7.18	-95.1				
2	15.7	952	0.11	7.18	-95.3				
3	15.7	950	0.11	7.19	-97.6				
4	15.7	949	0.12	7.19	-98.0				
	•					WDW MOL			
Average:	15.7	951	0.11	7.19	-96.5	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle ap	plicable or write n	on-standard ar	nalysis below)	
5		<b>√</b> 1) (8010) (8				/			OR 🗆
	(8270D) (PA	AH) (NWTPH				(8141) (Oil & Gro	•		OR 🗆
			(TOO) (D	OD) (Turki	lity) (Alkalinity)	(UCO2/CO2) (C	I) (SO4) (NO	3) (NO2) (F)	
		ctivity) (TDS					i) (304) (NO	E) (110 <b>2</b> ) (1)	
1	(COD) (TOO	C) (Total PO4	(Total Kie	dahl Nitrogen	) (NH3) (NO3/		I) (304) (NO	<i>b)</i> (1102) (1)	
1	(COD) (TOO (Total Cyanid	e) (WAD Cya	(Total Kied anide) (Free	dahl Nitrogen Cyanide)	(NH3) (NO3/	NO2)			
1	(COD) (TOO (Total Cyanid (Total Metals	C) (Total PO4 e) (WAD Cya ) (As) (Sb) (I	(Total Kiedanide) (Free Ba) (Be) (Ca	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M	(C) (Total PO4 de) (WAD Cya de) (As) (Sb) (I detals) (As) (Sb)	(Total Kiedanide) (Free Ba) (Be) (Ca	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	(C) (Total PO4 le) (WAD Cya l) (As) (Sb) (Hetals) (As) (Sb) g short list)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	(C) (Total PO4 de) (WAD Cya de) (As) (Sb) (I detals) (As) (Sb)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	(C) (Total PO4 le) (WAD Cya l) (As) (Sb) (Hetals) (As) (Sb) g short list)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	(C) (Total PO4 le) (WAD Cya l) (As) (Sb) (Hetals) (As) (Sb) g short list)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	(C) (Total PO4 le) (WAD Cya l) (As) (Sb) (Hetals) (As) (Sb) g short list)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
1 Duplicate Sam	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	(C) (Total PO4 le) (WAD Cya l) (As) (Sb) (Hetals) (As) (Sb) g short list)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	(C) (Total PO4 le) (WAD Cya l) (As) (Sb) (Hetals) (As) (Sb) g short list)	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	
Duplicate San	(COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	e) (Total PO4 e) (WAD Cya ) (As) (Sb) (I etals) (As) (Sb) g short list) ane Ethene Ac	(Total Kiedanide) (Free Ba) (Be) (Ca) (Ba) (Be) (Ca)	dahl Nitrogen Cyanide) ) (Cd) (Co)	(Cr) (Cu) (Fe) (	NO2) Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Πl) (V) (Zn) (Hg	(K) (Na) (a) (Hardness) (Silica



Project Nam	e <u>:</u>	Boeing Rent			Project Number		0025217.099.0	99	
Event:		Quarterly A	_		Date/Time:	11/14 /2017 @	1300		
Sample Num	-	RGW245S	171114		Weather:	40s/50s PC			
Landau Repr	resentative:	SRB							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	2.4	Time:	1233	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/14 /2017	1235	End Purge:	Date/Time:	11/ 14 /2017 @	1257	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATMI	ENT SYSTEM
_	Tomp	Cond.	D.O.	»II	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	Temp (°F/°C)	(uS/cm)	(mg/L)	pН	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa		n of Parame			dings within the fol	_	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1238	15.4	207.0	0.29	6.88	-48.0		2.4		
1241	14.8	208.0	0.61	6.85	-52.0		2.4		
1244	14.1	211.0	1.23	6.82	-55.0		2.4		
							2.1		
1247	13.9	213.0	1.39	6.81	-56.0				
1250	13.8	220.0	1.56	6.81	-58.0				
1253	13.6	223.6	1.68	6.79	-59.0				
1256	13.5	228.6	1.79	6.79	-61.0				
SAMPLE CO	LLECTION D	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blad	der pump		
Made of:		Stainless Stee	1 🗖	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	h 🗖	Tap Rinse	DI Water	Dedicated	<u>—</u>	_	
(By Numerica	l Order)	Other		1					
Sample Descr	iption (color, t	—	sheen, etc.):	CLEAR COL	LORLESS NO/NS	<u> </u>			
1	1 ( )	• • • • • • • • • • • • • • • • • • • •	· · · · ·						
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.5	229.5	1.83	6.79	-61.4				
2	12.5				01.7				
2	13.5	230.0	1.85	6.79	-61.8				
.)					-61.8				
3	13.5	230.7	1.87	6.79	-61.8 -62.2				
4	13.5	230.7	1.87 1.89	6.79 6.79	-61.8 -62.2 -62.4				
	13.5	230.7	1.87	6.79	-61.8 -62.2	#DIV/0!			
4 Average:	13.5 13.5 13.5	230.7 230.8 230.3	1.87 1.89 1.86	6.79 6.79 6.79	-61.8 -62.2 -62.4 -62.0	#DIV/0!	on-standard aı	nalysis below)	
4 Average:	13.5 13.5 13.5 <b>TYPICAL A</b> (8260C & SIN	230.7 230.8 230.3 NALYSIS AL M) (8010) (8	1.87 1.89 1.86 <b>LOWED PE</b> 020) (NWT	6.79 6.79 6.79 ER BOTTLE PH-G) (NW	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE	oplicable or write n		WA □	OR 🗆
4 Average: QUANTITY	13.5 13.5 13.5 <b>TYPICAL A</b> (8260C & SIN (8270D) (PA	230.7 230.8 230.3 NALYSIS AL VI) (8010) (8	1.87 1.89 1.86 LOWED PE 020) (NWT -D) (NWTF	6.79 6.79 6.79 ER BOTTLE PH-G) (NW PH-Dx) (TPH	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)	oplicable or write n X) (8141) (Oil & Gr	ease)	WA □ WA □	OR □ OR □
4 Average: QUANTITY 5	13.5 13.5 13.5 <b>TYPICAL A</b> (8260C & SIN (8270D) (PA (pH) (Condu	230.7 230.8 230.3 NALYSIS AL VI) (8010) (8 AH) (NWTPH activity) (TDS	1.87 1.89 1.86 LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity)	oplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C	ease)	WA □ WA □	
4 Average: QUANTITY	13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (TOO	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 hH) (NWTPH activity) (TDS	1.87 1.89 1.86 LOWED PE 020) (NWT (-D) (NWTF (-D) (TSS) (B (	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbio dahl Nitrogen	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081)	oplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C	ease)	WA □ WA □	
4 Average: QUANTITY 5	13.5 13.5 13.5  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (TOO (Total Cyanid	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cys	1.87 1.89 1.86 LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie anide) (Free	6.79 6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	oplicable or write n X) (8141) (Oil & Gro (HCO3/CO3) (C	ease) l) (SO4) (NO	WA  WA  WA  WO	OR 🗆
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals)	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 NH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya ) (As) (Sb) (I	1.87 1.89 1.86 LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M	230.7 230.8 230.3  NALYSIS AL  (M) (8010) (8  (AH) (NWTPH  (activity) (TDS  (C) (Total PO4  (e) (WAD Cya  () (As) (Sb) (I  (etals) (As) (Sb)	1.87 1.89 1.86 LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (I etals) (As) (Sb) g short list)	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	230.7 230.8 230.3  NALYSIS AL  (M) (8010) (8  (AH) (NWTPH  (activity) (TDS  (C) (Total PO4  (e) (WAD Cya  () (As) (Sb) (I  () (Etals) (As) (Sb	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (I etals) (As) (Sb) g short list)	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (I etals) (As) (Sb) g short list)	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 13.5  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (I etals) (As) (Sb) g short list)	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)
4 Average: QUANTITY 5	13.5 13.5 13.5 13.5 13.5  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (I etals) (As) (Sb) g short list)	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)
4 Average:  QUANTITY 5  1	13.5 13.5 13.5 13.5 13.5  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	230.7 230.8 230.3 NALYSIS AL M) (8010) (8 AH) (NWTPH activity) (TDS C) (Total PO4 e) (WAD Cya d) (As) (Sb) (I etals) (As) (Sb) g short list)	1.87 1.89 1.86 LOWED PE 020) (NWTF-) (NWTF-) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (Ca	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPH OD) (Turbic dahl Nitrogen Cyanide) () (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle ap TPH-Gx) (BTE I-HCID) (8081) lity) (Alkalinity) ) (NH3) (NO3/	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  1) (SO4) (NO  (ii) (Ag) (Se) (	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR 🗆
4 Average:  QUANTITY 5  1  Duplicate San Comments: Signature:	13.5 13.5 13.5 13.5 13.5 13.5  TYPICAL A (8260C & SIN (8270D) (PA (pH) (Condu (COD) (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth others  mple No(s):	230.7 230.8 230.3  NALYSIS AL  W) (8010) (8  AH) (NWTPH activity) (TDS  C) (Total PO4  e) (WAD Cya  ) (As) (Sb) (I  etals) (As) (Sb  g short list)  ane Ethene Ac	1.87 1.89 1.86  LOWED PE 020) (NWT -D) (NWTF ) (TSS) (B ) (Total Kie anide) (Free Ba) (Be) (Ca ) (Ba) (Be) (C	6.79 6.79 6.79 CR BOTTLE PH-G) (NW PH-Dx) (TPF OD) (Turbic dahl Nitrogen Cyanide) (Cd) (Co) Ca) (Cd) (Co)	-61.8 -62.2 -62.4 -62.0  TYPE (Circle apprendict of the control of	pplicable or write n X) (8141) (Oil & Gr (HCO3/CO3) (C NO2)	ease)  l) (SO4) (NO  li) (Ag) (Se) (Ag) (Se) (Tl) (V	WA □ WA □ 3) (NO2) (F) □ □ (V) (Zn) (Hg	OR □ ) (K) (Na)



Project Nam	e:	Boeing Ren	ton		Project Number	er:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/14 /2017 @	1110		
Sample Num	ber:	RGW247S	-		Weather:	40s/50s PC			
Landau Repr		SRB							
WATER LEV	'EL/WELL/PI	URGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	3.9	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
Begin Purge:					_	11/ 14 /2017 @	1107	Gallons Purged:	
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa	ds: Stablizatio +/- 3%	on of Parame +/- 10%	ters for three +/- 0.1 units		dings within the fo +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
1048	14.5	435.0	0.17	6.42	-20.5	,, 20,70	4	g.:	
1051	13.3	411.4	0.34	6.45	-41.8				
1054	12.8	393.0	3.14	6.46	-48.0		1		
1057				6.47	-49.0				
	12.8	392.0	3.50						
1100	12.6	387.0	3.92	6.48	-52.2				
1103	12.5	386.0	4.02	6.48	-53.0				
1106	12.5	383.0	4.14	6.48	-54.0				
CAMPLE CO	LICTION							·	
Sample Collection			Bailer		Pump/Pump Type	e DED Geotech blac	lder pump		
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🗖	Tap Rinse	DI Water	Dedicated		_	
(By Numerica	l Order)	Other	_	1	ш	_			
Sample Descr	iption (color,	turbidity, odor	sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
	<b>T</b>	- C 1	D. O.		ODD	m 1.11.	DANA	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	(Fe II)	Observations
1	12.5	382.4	4.19	6.48	-54.0				
2	12.5	382.2	4.22	6.48	-54.7				
3	12.5	382.1	4.27	6.48	-55.4				
4	12.6	382.0	4.32	6.48	-55.7				
Average:	12.5	382.2	4.25	6.48	-55.0	#DIV/0!			
								1:11	
QUANTITY 3		(8010) (802				oplicable or write r	ion-standard ai	WA $\square$	OR 🗆
		H) (NWTPH-				(8141) (Oil & Grea	ase)	WA □	OR 🗆
						(HCO3/CO3) (C		3) (NO2) (F)	
1					n) (NH3) (NO3	/NO2)			
		le) (WAD Cy			(0) (0) (7)	(DI) (A1) (A1) (A	T) (A ) (G ) (	TI) (I) (I) (II)	\ (II) (AL)
						(Pb) (Mg) (Mn) (Ni) (h) (Mg) (Mn) (Ni) (			g) (K) (Na) Na) (Hardness) (Silica
	VOC (Boein		) (Da) (Dc) (C	<i>(Cu)</i> ( <i>Co)</i>	(C1) (Cu) (1°C) (1	b) (Mg) (Mii) (M) (	Ag) (3c) (11) (v	) (Zii) (Tig) (K) (T	va) (Hardiess) (Silica
		ane Ethene A	etylene						
	-41								
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:	SRB					Date:	11/14/2017		



							•		
Project Nam	e <u>:</u>	Boeing Ren			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/ 14/2017 @	1116		
Sample Num	nber:	RGW248I	171114		Weather:	40'S, CLOUDY			
Landau Repr	resentative:	JHA							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	3.68	Time:	1046	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
		11/ 14/2017	@ 1050	End Purge:	_	11/ 14 /2017 @ 1	103	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		SITE TREATM	
C	Т		_		_		<del></del>		
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
				ters for three		dings within the fo		>/= 1 flow	0.0000
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1053	12.3	408.6	0.90	6.42	11.9	low	3.68		
1056	12.3	408.0	1.02	6.41	8.3				
1059	12.0	407.8	1.05	6.41	5.2				
1102	11.9	407.5	1.06	6.41	4.1				
SAMPLE CO	LI ECTION I	)ATA							
Sample Collect			Bailer		Pump/Pump Type	DED Geotech blac	lder pump		
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	_	Tap Rinse	DI Water	Dedicated			
(By Numerica		Other	" <u>"</u>	rap Kilise	□ Di watei	Dedicated			
			cheen etc.):	CLOUDY (	COLORLESS, NO	MNS			
Sample Descr	iption (color, i	urbianty, odor,	sheen, etc.).	CLOUD1, C	COLORELSS, IVC	7/115			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
_	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	_	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	11.9	407.3	1.06	6.41	3.8				
2.	11.9	407.3	1.05	6.41	3.8				
3	·								
	11.9	407.1	1.04	6.41	3.8				
4	11.9	407.2	1.05	6.41	3.8				
Average:	11.9	407.2	1.05	6.41	3.8	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle at	oplicable or write 1	non-standard ar	nalysis below)	
3		(8010) (802						_	OR 🗆
	`	, , ,	, ·	, ,		(8141) (Oil & Grea	ase)		OR 🗆
	(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbio	dity) (Alkalinity)	(HCO3/CO3) (C	Cl) (SO4) (NO	3) (NO2) (F)	
1	(COD) (TO	C) (Total PO4	(Total Kie	dahl Nitroger	) (NH3) (NO3)	NO2)			
	(Total Cyanid	e) (WAD Cy	anide) (Free	Cyanide)					
	(Total Metals	(As) (Sb) (l	Ba) (Be) (Ca	(Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (1	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
			) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	o) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	a) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene						
	.1								
	others								
Duplicate San	nple No(s):	MSMSD Loc	ation						
Comments:	1	200							
Signature:			JHA			Date:	11/14/2017		
-	8888 - Boeing B			17∖4Q2017∖I an	dau Field Sheets\A(	Date. DC1&2&3 11.14.17 J		Lan	dau Associates



Project Nan Event:					D ' (M 1		0005015 000 0	00	
HVenr.	ne:	Boeing Rei			Project Number		0025217.099.0	99	
		RGW001S	August 2017		Date/Time: Weather:	11/ 14 /2017 @ 40'S, CLOUDY			
Sample Nur	resentative:	JHA	1/1114		weamer.	403, CLOUD I			
		1			•				
	VEL/WELL/P			D1 (1	/EC NO)	Describes			
Well Conditi		Secure (YES		Damaged (Y		Describe:			
	Purging (ft)	4.36	Time:		Flow through ce			GW Meter No.(s	
	Date/Time:	N/A	551 D	End Purge:		N/A Ground	D Other	Gallons Purged:	
Purge water of	arsposed to:	₩	55-gal Drum	ليا	Storage Tank	□ Ground	Other		
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Time				ters for thre		dings within the fol		>/= 1 flow	Observations
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
	-	$\mathbf{W}$	ATEŀ	(LE	VEL O	NLY			
	_	•							
					· <del></del>				
AMPLE CO	OLLECTION I	DATA							
By Numerica ample Desc	al Order)	Other							
	1 '	turbidity, odoi	r, sheen, etc.):						
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	рН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
Replicate	Temp	Cond.	D.O.	pН		•			
	Temp	Cond.	D.O.	рН		•			
1	Temp	Cond.	D.O.	pН		•			
1 2	Temp	Cond.	D.O.	рН		•			
1 2 3 4	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)		(mV)	(NTU)			
1 2 3 4 Average:	Temp (°F/°C) #DIV/0!	Cond. (uS/cm)	D.O. (mg/L) #DIV/0!	#DIV/0!	(mV)	(NTU) #DIV/0!	(ft)	(Fe II)	
1 2 3 4 Average:	Temp (°F/°C) #DIV/0!	Cond. (uS/cm) #DIV/0!	D.O. (mg/L) #DIV/0!	#DIV/0!	#DIV/0!	(NTU)	(ft)	(Fe II)	Observations
1 2 3 4 Average:	#DIV/0!  TYPICAL A (8260) (801	#DIV/0!  **NALYSIS A 0) (8020) (1	#DIV/0!  LLOWED PE	#DIV/0! CR BOTTLE NWTPH-Gx	#DIV/0! CTYPE (Circle a ) (BTEX)	#DIV/0!	(ft)	(Fe II)	Observations OR
1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801)  (8270) (PAI	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH	#DIV/0!  LLOWED PENWTPH-G) (	#DIV/0! CR BOTTLE NWTPH-Gx I-Dx) (TPH	#DIV/0! CTYPE (Circle a ) (BTEX) -HCID) (8081)	#DIV/0!  pplicable or write n  (8141) (Oil & Grea	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations
1 2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801 (8270) (PAI (pH) (Conde	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH  uctivity) (TD	#DIV/0!  LLOWED PENWTPH-G) (NWTPH-GS) (TSS) (B	#DIV/0! CR BOTTLE NWTPH-Gx I-Dx) (TPH-OD) (Turbi	#DIV/0! CTYPE (Circle a ) (BTEX) -HCID) (8081)	#DIV/0!  pplicable or write n  (8141) (Oil & Great) (HCO3/CO3) (C	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations OR
1 2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801 (8270) (PAI (pH) (Conde) (COD) (TO	#DIV/0!  #NALYSIS A 0) (8020) (I H) (NWTPH uctivity) (TD C) (Total PO	#DIV/0!  LLOWED PENWTPH-G) (NWTPH-GS) (TSS) (B	#DIV/0! CR BOTTLE NWTPH-Gx I-Dx) (TPH-OD) (Turbi dahl Nitroge	#DIV/0!  ETYPE (Circle a  ) (BTEX)  -HCID) (8081)  idity) (Alkalinity	#DIV/0!  pplicable or write n  (8141) (Oil & Great) (HCO3/CO3) (C	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations OR
1 2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801 (8270) (PAI (pH) (Cond) (COD) (TO (Total Cyanic	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH- uctivity) (TD  C) (Total PO  de) (WAD C)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) 04) (Total Kieyanide) (Free	#DIV/0!  CR BOTTLE  NWTPH-Gx  I-Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide)	#DIV/0!  ETYPE (Circle a ) (BTEX)  -HCID) (8081)  dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  pplicable or write n  (8141) (Oil & Great) (HCO3/CO3) (C	non-standard and ase)	(Fe II)  malysis below)  WA   WA   WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR
1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801)  (8270) (PAI)  (COD) (TO)  (Total Cyanic)  (Total Metals)	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH  uctivity) (TD  C) (Total PO  de) (WAD C	#DIV/0!  #DIV/0!  LLOWED PE  NWTPH-G) ( -D) (NWTPH  S) (TSS) (B  4) (Total Kie  yanide) (Free  (Ba) (Be) (Ca	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Grea ) (HCO3/CO3) (C	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801)  (8270) (PAI)  (COD) (TO)  (Total Cyanic)  (Total Metals)	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH- uctivity) (TD  C) (Total PO de) (WAD C)  (As) (Sb)  fetals) (As) (S	#DIV/0!  #DIV/0!  LLOWED PE  NWTPH-G) ( -D) (NWTPH  S) (TSS) (B  4) (Total Kie  yanide) (Free  (Ba) (Be) (Ca	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Great ) (HCO3/CO3) (C) /NO2)  (Pb) (Mg) (Mn) (N	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	#DIV/0!  #DIV/0!  /* TYPICAL A  (8260) (801  (8270) (PAI  (pH) (Conduction (COD) (TO  (Total Cyanical Metals) (Dissolved M  VOC (Boein	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH- uctivity) (TD  C) (Total PO de) (WAD C)  (As) (Sb)  fetals) (As) (S	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH-OS) (TSS) (B) (House) (Free (Ba) (Be) (Ca) (Ba) (Be) (Ca)	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Great ) (HCO3/CO3) (C) /NO2)  (Pb) (Mg) (Mn) (N	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR   OR   OR   OR   OR   (i) (K) (Na)
1 2 3 4 Average:	#DIV/0!  #DIV/0!  /* TYPICAL A  (8260) (801  (8270) (PAI  (pH) (Conduction (COD) (TO  (Total Cyanical Metals) (Dissolved M  VOC (Boein	#DIV/0!  #NALYSIS A 0) (8020) (I H) (NWTPH activity) (TD C) (Total PO de) (WAD C s) (As) (Sb) detals) (As) (S ng short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH-OS) (TSS) (B) (House) (Free (Ba) (Be) (Ca) (Ba) (Be) (Ca)	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Great ) (HCO3/CO3) (C) /NO2)  (Pb) (Mg) (Mn) (N	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR   OR   OR   OR   OR   (i) (K) (Na)
1 2 3 4 Average:	#DIV/0!  #DIV/0!  TYPICAL A  (8260) (801)  (8270) (PAI)  (pH) (Cond)  (COD) (TO)  (Total Cyanic)  (Total Metals)  (Dissolved M  VOC (Boein)  Methane Eth	#DIV/0!  #NALYSIS A 0) (8020) (I H) (NWTPH activity) (TD C) (Total PO de) (WAD C s) (As) (Sb) detals) (As) (S ng short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH-OS) (TSS) (B) (House) (Free (Ba) (Be) (Ca) (Ba) (Be) (Ca)	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Great ) (HCO3/CO3) (C) /NO2)  (Pb) (Mg) (Mn) (N	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
2 3 4 Average:	#DIV/0!  #DIV/0!  /* TYPICAL A  (8260) (801  (8270) (PAI  (pH) (Conduction (COD) (TO  (Total Cyanical Metals) (Dissolved M  VOC (Boein	#DIV/0!  #NALYSIS A 0) (8020) (I H) (NWTPH activity) (TD C) (Total PO de) (WAD C s) (As) (Sb) detals) (As) (S ng short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH-OS) (TSS) (B) (House) (Free (Ba) (Be) (Ca) (Ba) (Be) (Ca)	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Great ) (HCO3/CO3) (C) /NO2)  (Pb) (Mg) (Mn) (N	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	#DIV/0!  #DIV/0!  TYPICAL A  (8260) (801)  (8270) (PAI)  (pH) (Cond)  (COD) (TO)  (Total Cyanic)  (Total Metals)  (Dissolved M  VOC (Boein)  Methane Eth	#DIV/0!  #NALYSIS A 0) (8020) (I H) (NWTPH activity) (TD C) (Total PO de) (WAD C s) (As) (Sb) detals) (As) (S ng short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH-OS) (TSS) (B) (House) (Free (Ba) (Be) (Ca) (Ba) (Be) (Ca)	#DIV/0! CR BOTTLE NWTPH-Gx (-Dx) (TPH-OD) (Turbidahl Nitroger Cyanide) () (Cd) (Co)	#DIV/0!  ETYPE (Circle a ) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write n  (8141) (Oil & Great ) (HCO3/CO3) (C) /NO2)  (Pb) (Mg) (Mn) (N	non-standard and asse) El) (SO4) (NO	(Fe II)  malysis below)  WA   WA   ON O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR



Project Nar	me:	Boeing Ren	nton		Project Number	er:	0025217.099.0	99	_
Event:		Quarterly A	August 2017		Date/Time:	11/ 14/2017 @			
Sample Nu	mber:	RGW004S	171114		Weather:	40'S, CLOUDY			
Landau Rep	presentative:	JHA							
WATER LE	VEL/WELL/P	URGE DATA	L						
Well Conditi	ion:	Secure (YES	S or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	e Purging (ft)	2.86	Time:	1342	Flow through ce	ell vol.		GW Meter No.(s	HERON 3
Begin Purge:	: Date/Time:	N/A		End Purge:	Date/Time:	N/A		Gallons Purged:	
Purge water	disposed to:		55-gal Drum		Storage Tank	Ground	Other		
m.	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C) Purge Goa	(uS/cm) ds: Stablizati	(mg/L) on of Paramet	ers for three	(mV) e consecutive rea	(NTU) dings within the fo	(ft) llowing limits	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
	_								
		****				<b>NIT N</b> 7			
		W.	ATER	(LE	VEL O	NLY			
	_	•							
		· <del></del>							
		· <del></del>			-	· ———			
		· <del></del>							
G + 1 (F) F G	OV L POPULOVI								
Sample Colle	OLLECTION I	DATA 🗔	Bailer		Pumn/Pumn Tyn	e DED Geotech blac	lder numn		
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	☐ Dedicated	
Decon Proce	odura:	Alconox Wa	_	Tap Rinse	DI Water	Dedicated	ш ошег	Dedicated	
Decoil I loce	duic.								
(Ry Numeric	ral Order)			rup remse	□ Di Water	Dedicated			
(By Numeric		Other		Tup Kinse	DI Water	Бешсатей			
	cal Order)	Other		Tup Rinse	DI Water	Dedicated			
	Temp	Other turbidity, odor	r, sheen, etc.):_	рН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Sample Desc	cription (color,	Other turbidity, odor	r, sheen, etc.):				DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
Sample Desc	Temp	Other turbidity, odor	r, sheen, etc.):_		ORP	Turbidity			
Sample Desc Replicate	Temp	Other turbidity, odor	r, sheen, etc.):_		ORP	Turbidity			
Sample Description Replicate	Temp	Other turbidity, odor	r, sheen, etc.):_		ORP	Turbidity			
Replicate  1 2	Temp	Other turbidity, odor	r, sheen, etc.):_		ORP	Turbidity			
Replicate  1 2 3	Temp	Other turbidity, odor	r, sheen, etc.):_		ORP	Turbidity			
Replicate  1 2 3 4 Average:	Temp (°F/°C) #DIV/0!	Cond. (uS/cm)  #DIV/0!	D.O. (mg/L)  #DIV/0!	pH #DIV/0!	ORP (mV)	Turbidity (NTU)  #DIV/0!	(ft)	(Fe II)	
Replicate  1 2 3 4 Average:	Temp (°F/°C) #DIV/0!	Cond. (uS/cm)  #DIV/0!	#DIV/0!	pH  #DIV/0!  R BOTTLE	ORP (mV)  #DIV/0!	Turbidity (NTU)	(ft)	(Fe II)	
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801)	Cond. (uS/cm)  #DIV/0!  NALYSIS A. 0) (8020) (1	#DIV/0!  LLOWED PE	pH  #DIV/0!  R BOTTLE  NWTPH-Gx	ORP (mV)  #DIV/0!  TYPE (Circle a) (BTEX)	Turbidity (NTU)  #DIV/0!	(ft)	(Fe II)	Observations
Replicate  1 2 3 4 Average:	#DIV/0! #TYPICAL A (8260) (801) (8270) (PAI	Cond. (uS/cm)  #DIV/0!  NALYSIS A (0) (8020) (1) H) (NWTPH	#DIV/0! LLOWED PE NWTPH-G) (NWTPH	#DIV/0!  R BOTTLE  NWTPH-Gx  -Dx) (TPH-	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081)	Turbidity (NTU)  #DIV/0!	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI) (pH) (Condu	#DIV/0!  **NALYSIS A: 0) (8020) (PH) (NWTPH- cuctivity) (TD	#DIV/0! LLOWED PE NWTPH-G) (I -D) (NWTPH S) (TSS) (B	#DIV/0!  R BOTTLE  NWTPH-Gx -Dx) (TPH-OD) (Turbi	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081)	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (C	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801) (8270) (PAI) (pH) (Cond) (COD) (TO) (Total Cyanic	#DIV/0!  **NALYSIS A: 0) (8020) (I: H) (NWTPH- uctivity) (TD C) (Total PO de) (WAD C)	#DIV/0!  #DIV/0!  LLOWED PE  NWTPH-G) (I -D) (NWTPH S) (TSS) (B 14) (Total Kiewyanide) (Free	#DIV/0!  R BOTTLE  NWTPH-Gx -Dx) (TPH-OD) (Turbidahl Nitroger Cyanide)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse)	MA  WA  NO2) (F)	Observations  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0! #DIV/0! #TYPICAL A (8260) (801) (8270) (PAI (pH) (Condu (COD) (Total Cyanic (Total Metals)	#DIV/0!  #DIV/0!  #NALYSIS A  (0) (8020) (I)  H) (NWTPH- uctivity) (TD  C) (Total PO  de) (WAD C)  (S) (As) (Sb)	#DIV/0!  #DIV/0!  LLOWED PE NWTPH-G) (I -D) (NWTPH S) (TSS) (B 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0! #TYPICAL A (8260) (801) (8270) (PAI) (COD) (TOd) (COD) (Total Cyanic) (Total Metals) (Dissolved M	#DIV/0!  #DIV/0!  #NALYSIS A  0) (8020) (I  H) (NWTPH- uctivity) (TD  C) (Total PO  de) (WAD C) (s) (As) (Sb) (setals) (As) (Si)	#DIV/0!  #DIV/0!  LLOWED PE NWTPH-G) (I -D) (NWTPH S) (TSS) (B 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI) (pH) (Cond) (COD) (TOd) (Total Cyanic (Total Metals) (Dissolved M	#DIV/0!  #DIV/0!  #DIV/0!  **NALYSIS A  **O) (8020) (I  **H) (NWTPH- **uctivity) (TD  C) (Total PO  de) (WAD C)  (Etals) (As) (Sb) (Section of the section o	#DIV/0! LLOWED PE NWTPH-G) (I) -D) (NWTPH S) (TSS) (B) 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI) (pH) (Cond) (COD) (TOd) (Total Cyanic (Total Metals) (Dissolved M	#DIV/0!  #DIV/0!  #NALYSIS A  0) (8020) (I  H) (NWTPH- uctivity) (TD  C) (Total PO  de) (WAD C) (s) (As) (Sb) (setals) (As) (Si)	#DIV/0! LLOWED PE NWTPH-G) (I) -D) (NWTPH S) (TSS) (B) 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI) (pH) (Cond) (COD) (TOd) (Total Cyanic (Total Metals) (Dissolved M	#DIV/0!  #DIV/0!  #DIV/0!  **NALYSIS A  **O) (8020) (I  **H) (NWTPH- **uctivity) (TD  C) (Total PO  de) (WAD C)  (Etals) (As) (Sb) (Section of the section o	#DIV/0! LLOWED PE NWTPH-G) (I) -D) (NWTPH S) (TSS) (B) 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI) (pH) (Cond) (COD) (TOd) (Total Cyanic (Total Metals) (Dissolved M	#DIV/0!  #DIV/0!  #DIV/0!  **NALYSIS A  **O) (8020) (I  **H) (NWTPH- **uctivity) (TD  C) (Total PO  de) (WAD C)  (Etals) (As) (Sb) (Section of the section o	#DIV/0! LLOWED PE NWTPH-G) (I) -D) (NWTPH S) (TSS) (B) 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0! #DIV/0! #TYPICAL A (8260) (801- (8270) (PAI (pH) (Conda (COD) (Total Cyanic (Total Metals (Dissolved M VOC (Boeir Methane Eth	#DIV/0!  #DIV/0!  #DIV/0!  **NALYSIS A  **O) (8020) (I  **H) (NWTPH- **uctivity) (TD  C) (Total PO  de) (WAD C)  (Etals) (As) (Sb) (Section of the section o	#DIV/0! LLOWED PE NWTPH-G) (I) -D) (NWTPH S) (TSS) (B) 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0! #DIV/0! #TYPICAL A (8260) (801- (8270) (PAI (pH) (Conda (COD) (Total Cyanic (Total Metals (Dissolved M VOC (Boeir Methane Eth	#DIV/0!  #DIV/0!  #DIV/0!  **NALYSIS A  **O) (8020) (I  **H) (NWTPH- **uctivity) (TD  C) (Total PO  de) (WAD C)  (Etals) (As) (Sb) (Section of the section o	#DIV/0! LLOWED PE NWTPH-G) (I) -D) (NWTPH S) (TSS) (B) 4) (Total Kiedyanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0!  R BOTTLE  NWTPH-GX  -Dx) (TPH-OD) (Turbidahl Nitroger  Cyanide) ) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX)  -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (Control of the control	non-standard and asse) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR



Signature: JHA

-	ne:	Boeing Re	nton		Project Number	er:	0025217.099.0	99	
Event:		Quarterly A	August 2017		Date/Time:	11/ /2017 @			
Sample Nui	mber:	RGW005S	1711		Weather:				
Landau Rep	presentative:	JHA/DSB/	SRB		•				<del>-</del>
WATER LE	VEL/WELL/P	URGE DATA	1						
Well Conditi	on:	Secure (YES	S or NO)	Damaged (Y	(ES or NO)	Describe:			
DTW Before	Purging (ft)	N/A	Time:		Flow through ce	l <u>l</u> vol.		GW Meter No.(s)	)
Begin Purge:	Date/Time:	11/ /2017	@	End Purge:	Date/Time:	11/ /2017 @		Gallons Purged:	
Purge water	disposed to:		55-gal Drum		Storage Tank	Ground	Other		
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	ters for thre	(mV)	(NTU) dings within the fo	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
		•							
	_	W	ATEF	R LE	VEL O	NLY			
	_	i							_
	_								
			. ———						
		·			-		-		_
			·				· - <u></u>		
	OLLECTION I	DATA 🗔	D "		. D. T.	DED C . 111	1.1		
Sample Colle	ected with:	Q 1 Q.	Bailer	_	<u> </u>	DED Geotech bla		<b>□ □ □</b> • · · · ·	
Made of:	. 💾	Stainless Sta		PVC	Teflon	Polyethylene	Other	☐ Dedicated	
Decon Proce		Alconox Wa		Tap Rinse	DI Water	☐ Dedicated			
(By Numerica	,	Other							
Sample Desc	eription (color,	HIPDIAILV OOO	r. sneen, etc.):						
Replicate		tarorany, odo	, , , . <u> </u>						
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	Temp (°F/°C)		_		ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1		Cond.	D.O.						
1 2		Cond.	D.O.						
		Cond.	D.O.						
2 3		Cond.	D.O.						
2 3 4	(°F/°Č)	Cond. (uS/cm)	D.O. (mg/L)	рН	(mV)	(NTU)			
2 3 4 Average:	(°F/°C)  #DIV/0!	Cond. (uS/cm)	D.O. (mg/L) #DIV/0!	pH #DIV/0!	(mV)	(NTU)  #DIV/0!	(ft)	(Fe II)	
2 3 4 Average:	(°F/°Ĉ)  #DIV/0!	Cond. (uS/cm) #DIV/0!	D.O. (mg/L) #DIV/0!	pH  #DIV/0!  ER BOTTLE	#DIV/0!	(NTU)	(ft)	(Fe II)	Observations
2 3 4 Average:	#DIV/0!  / TYPICAL A (8260) (801)	#DIV/0!  NALYSIS A 0) (8020) (1	D.O. (mg/L) #DIV/0! LLOWED PE	#DIV/0! ER BOTTLE NWTPH-Gx	#DIV/0! CTYPE (Circle a) (BTEX)	#DIV/0!	(ft)	nalysis below)	Observations OR
2 3 4 Average:	#DIV/0! <b>TYPICAL A</b> (8260) (801) (8270) (PAI	#DIV/0!  **NALYSIS A  0) (8020) (1  H) (NWTPH	#DIV/0!  LLOWED PE NWTPH-G) ( -D) (NWTPH	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH	#DIV/0! CTYPE (Circle a ) (BTEX) -HCID) (8081)	#DIV/0! pplicable or write (8141) (Oil & Green)	non-standard an	(Fe II)  nalysis below)  WA  WA  WA	Observations
2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801) (8270) (PAI (pH) (Condu	#DIV/0!  **NALYSIS A 0) (8020) (1 1) (NWTPH activity) (TD	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH S) (TSS) (B	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity	#DIV/0!  pplicable or write:  (8141) (Oil & Gree) (HCO3/CO3) (Control of the control of the cont	non-standard an	(Fe II)  nalysis below)  WA  WA  WA	Observations OR
2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801- (8270) (PAI  (pH) (Conduction)	#DIV/0!  **MALYSIS A 0) (8020) (1) H) (NWTPH activity) (TD C) (Total PC	#DIV/0!  #LOWED PENWTPH-G) ( -D) (NWTPH PS) (TSS) (B) 14) (Total Kie	#DIV/0!  ER BOTTLE  NWTPH-Gx  I-Dx) (TPH  GOD) (Turb  dahl Nitroge	#DIV/0! CTYPE (Circle a ) (BTEX) -HCID) (8081)	#DIV/0!  pplicable or write:  (8141) (Oil & Gree) (HCO3/CO3) (Control of the control of the cont	non-standard an	(Fe II)  nalysis below)  WA  WA  WA	Observations OR
2 3 4 Average:	#DIV/0!  / TYPICAL A (8260) (801) (8270) (PAI) (pH) (Cond) (COD) (TO) (Total Cyanic	#DIV/0!  #NALYSIS A 0) (8020) (I H) (NWTPH LICTIVITY) (TE C) (Total PC le) (WAD C	#DIV/0!  #DIV/0!  LLOWED PE NWTPH-G) ( -D) (NWTPH DS) (TSS) (B) 04) (Total Kie yanide) (Free	#DIV/0!  ER BOTTLE  NWTPH-Gx  I-Dx) (TPH  GOD) (Turbi  dahl Nitroge  Cyanide)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  pplicable or write:  (8141) (Oil & Gree) (HCO3/CO3) (Control of the control of the cont	non-standard anase)	(Fe II)  malysis below)  WA   WA   WA   3) (NO2) (F)	Observations  OR  OR  OR
2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801)  (8270) (PAI  (pH) (Condu  (COD) (TOu  (Total Cyanic  (Total Metals)	#DIV/0!  **NALYSIS A  0) (8020) (1  H) (NWTPH  clictivity) (TE  C) (Total PC  de) (WAD C	#DIV/0!  #DIV/0!  LLOWED PE  NWTPH-G) ( -D) (NWTPH  OS) (TSS) (B)  OH) (Total Kie  yanide) (Free  (Ba) (Be) (Ca	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR
2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801- (8270) (PAI  (pH) (Condu  (COD) (TOu  (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boeir	#DIV/0!  **MALYSIS A 0) (8020) (1 H) (NWTPH activity) (TD C) (Total PC de) (WAD C c) (As) (Sb)  (etals) (As) (S g short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH OS) (TSS) (B) 04) (Total Kie yanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801- (8270) (PAI  (pH) (Condu  (COD) (TOu  (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boeir	#DIV/0!  **NALYSIS A  0) (8020) (I  H) (NWTPH  activity) (TE C) (Total PC  de) (WAD C  a) (As) (Sb)  fetals) (As) (S	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH OS) (TSS) (B) 04) (Total Kie yanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801- (8270) (PAI  (pH) (Condu  (COD) (TOu  (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boeir	#DIV/0!  **MALYSIS A 0) (8020) (1 H) (NWTPH activity) (TD C) (Total PC de) (WAD C c) (As) (Sb)  (etals) (As) (S g short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH OS) (TSS) (B) 04) (Total Kie yanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
2 3 4 Average:	#DIV/0!  #DIV/0!  / TYPICAL A  (8260) (801)  (8270) (PAI  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boeir  Methane Eth	#DIV/0!  **MALYSIS A 0) (8020) (1 H) (NWTPH activity) (TD C) (Total PC de) (WAD C c) (As) (Sb)  (etals) (As) (S g short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH OS) (TSS) (B) 04) (Total Kie yanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801- (8270) (PAI  (pH) (Condu  (COD) (TOu  (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boeir	#DIV/0!  **MALYSIS A 0) (8020) (1 H) (NWTPH activity) (TD C) (Total PC de) (WAD C c) (As) (Sb)  (etals) (As) (S g short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH OS) (TSS) (B) 04) (Total Kie yanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
2 3 4 Average:	#DIV/0!  #DIV/0!  / TYPICAL A  (8260) (801)  (8270) (PAI  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boeir  Methane Eth	#DIV/0!  **MALYSIS A 0) (8020) (1 H) (NWTPH activity) (TD C) (Total PC de) (WAD C c) (As) (Sb)  (etals) (As) (S g short list)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH OS) (TSS) (B) 04) (Total Kie yanide) (Free (Ba) (Be) (Ca) b) (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH GOD) (Turbi dahl Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) idity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write:  (8141) (Oil & Green) (HCO3/CO3) (Oil MCO2)  (Pb) (Mg) (Mn) (Oil MCO3/CO3)	non-standard and ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   3) (NO2) (F)	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR



D :		D : D			D 1 . N 1				
Project Nam	ie:	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	_		Date/Time:	11/ 14 /2017 @	1411		
Sample Nun	-	RGW216S	171114		Weather:	40'S, CLOUDY			
Landau Rep	resentative:	JHA							
WATER LEV	/EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	4.47	Time:	1345	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/ 14 /2017	@ 1350	End Purge:	Date/Time:	11/ 14 /2017 @ 14	410	Gallons Purged:	0.5
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Tomm		_		_		<del>_</del>		
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
	Purge Goa	ls: Stablizatio	n of Paramet		consecutive rea	dings within the fol	llowing limits	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1353	14.3	329.9	1.45	6.90	-3.3	LOW		·	
1356	14.3	289.2	0.69	6.95	-10.8		4.53	< 0.25	
1359	14.1	275.6	0.62	6.94	-11.8		4.53		
							1.55	0.25	
1402		264.1	0.54	6.91	-11.0			0.25	
1405	14.1	251.8	0.45	6.89	-9.9				
1408	14.1	245.9	0.41	6.87	-8.8				
1410	14.1	237.8	0.38	6.85	-8.3				
,									
SAMPLE CO	LLECTION D	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED GEOTECH I	BLADDER		
Made of:		Stainless Stee	ı 🗖	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	h 🗖	Tap Rinse	DI Water	Dedicated	<del>_</del>	<del></del>	
(By Numerica	ıl Order)	Other	_	1					
		_	sheen, etc.):	CLEAR, CO	LORLESS, NO/N	IS			
1	1 ( )	<b>3</b> , ,	· · · · -	,	,				
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	14.0	237.5	0.36	6.85	-8.2				
2	14.0	237.3	0.36	6.85	-8.0				
3	14.0	237.0	0.34	6.85	-7.9				
4	14.0	236.8	0.34	6.85	-7.9				
						WDW 101			
Average:	14.0	237.2	0.35	6.85	-8.0	#DIV/0!		<del></del>	
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle ap	plicable or write n	on-standard ar	nalysis below)	
3		10) (8020) (							OR 🗆
						(8141) (Oil & Grea			OR 🗆
						(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
		•			) (NH3) (NO3)	NO2)			
		e) (WAD Cy			(G) (G) (F)	M) 01) 01) 0	T'\ (A \ (G \ (	TI) (I) (I) (I)	(II) (II)
						(Pb) (Mg) (Mn) (Ng) (Mg) (Ng) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (M			
	VOC (Boein		) (Ba) (Be) (C	a) (Ca) (Co)	(Cr) (Cu) (Fe) (Pi	5) (Mg) (Mn) (M) (A	Ag) (Se) (11) (V	) (ZII) (Hg) (K) (N	a) (Hardness) (Silica
		ane Ethene Ac	etylene						
	1.10diane Edi	e Differe /10	,10110						
	others								
•									
Duplicate San	mple No(s):								
Duplicate San Comments:	mple No(s):								
Comments: Signature:			ЈНА			Date: 0C-034&35 11.14.17	11/14/2017		dau Associates



Project Nam	ıe:	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	_		Date/Time:	11/14 /2017 @	1400		
Sample Nun	-	RGW217S	171114		Weather:	40s/50s PC			
Landau Repr	resentative:	SRB							
WATER LEV	/EL/WELL/PU	URGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	4.8	Time:	1330	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/14 /2017	1335	End Purge:	Date/Time:	11/ 14 /2017 @	1358	Gallons Purged:	0.5
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATMI	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	pm	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	~					lings within the fol	_	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1338	15.9	150.0	1.25	6.50	8.0		4.8		
1341	16.1	117.0	0.49	6.49	2.3		4.8		
1344	16.2	109.8	0.26	6.47	-4.3		4.8		
1347	16.3	110.0	0.26	6.48	-6.6				
1350		110.0	0.26	6.48	-7.9				
1330	10.2	110.0	0.20	0.40	-1.9				
	·								
	LLECTION E								
Sample Collec	cted With:		Bailer			DED BLADDER			
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	h 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	ıl Order)	Other							
Sample Descr	ription (color, t	turbidity, odor,	sheen, etc.):	CLEAR CO	LORLESS NO/NS	8			
					OPP		TO MINING	E	G
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1				6.40	` ′	(1120)	(10)	(1011)	Observations
1	16.2	110.0	0.27	6.49	-8.8			·	
2	16.2	110.0	0.28	6.47	-8.3				
3	16.2	110.0	0.26	6.48	-9.3				
4	16.2	110.0	0.26	6.49	-10.2				
Average:	16.2	110.0	0.27	6.48	-9.2	#DIV/0!			
QUANTITY	TVDICALA	NAI VCIC AI	I OWED DE	D DOTTI E	TVDE (Circle or	plicable or write n	on standard ar	alveie below)	
3		10) (8020) (				pricable of write in	on-standaru ar		OR 🗆
						(8141) (Oil & Grea	ise)		OR 🗆
						(HCO3/CO3) (C			OR —
					i) (NH3) (NO3/		-) (= = 1) (= 1 =	-) () (-)	
		le) (WAD Cya			, , , , , , , , , , , , , , , , , , ,				
	(Total Metals	) (As) (Sb) (I	Ba) (Be) (Ca	(Cd) (Co)	(Cr) (Cu) (Fe) (	Pb) (Mg) (Mn) (N	li) (Ag) (Se) (	Γl) (V) (Zn) (Hg	(K) (Na)
	(Dissolved M	etals) (As) (Sb)	) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (Pt	o) (Mg) (Mn) (Ni) (A	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	la) (Hardness) (Silica
	VOC (Boein	g short list)							
	Methane Eth	ane Ethene Ac	etylene						
	others								
Duplicate San	nple No(s):								
Comments:	r(5).								
Signature:	SRB					Date:	11/14/2017		



Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.09	99	
Event:		Quarterly A			Date/Time:	11/ 14 /2017 @		1417	
Sample Num	ber:	RGW218S	_		Weather:	OC			
Landau Repr	resentative:	DSB			•				
WATER LEV	'EL/WELL/PU	JRGE DATA							
Well Conditio		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	3.66	Time:	1351	Flow through ce	ll vol.		GW Meter No.(s	2
Begin Purge:		11/ 14 /2017	1352	End Purge:	=	11/ 14 /2017 @	1412	Gallons Purged:	0.25
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other I	REATMENT CE	ENTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	+/- 3%	ls: Stablizatio +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the fo +/- 10%	< 0.3 ft	>/= 1 flow through cell	
1355	14.67	143	0.83	6.75	76.5		3.66	8	
1358	14.65	142	0.65	6.78	68.5		3.66		
1401	14.48	142	0.43	6.77	59.6		3.66		
							3.00		
1404	14.41	142	0.40	6.76	57.9				
1407	14.34	142	0.38	6.76	55.8				
1410	14.28	142	0.34	6.76	54.2				
Sample Collection			Bailer		Pump/Pump Type	DIADDED			
Made of:	ica wini.	Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure.	Alconox Was	_	Tap Rinse	DI Water	Dedicated		Dedicated	
(By Numerica		Other	··· 🖳	rup runse	<i>D1</i> a.c.i	* Dedicated			
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):		ORANGE MOD	ERATE TRUBIDI	ΓY NONS		
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	14.27	142	0.34	6.76	53.9				
2	14.26	142	0.33	6.76	53.6				
3	14.25	142	0.33	6.76	53.3				
4	14.24	141	0.33	6.76	53.1				
Average:	14.26	142	0.33	6.76	53.5	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TVPE (Circle a	oplicable or write r	on-standard ar	nalysis helow)	
3		10) (8020) (				, priemoze 01 (1110 1		WA □	OR 🗆
						(8141) (Oil & Grea	ase)	WA □	OR □
	(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbio	dity) (Alkalinity)	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
					n) (NH3) (NO3)	/NO2)			
		le) (WAD Cy			(C <sub>2</sub> ) (C <sub>2</sub> ) (E <sub>2</sub> )	(DL) (M-) (M-) (	Ti) (A -) (C -) (	FI) (M) (7) (H-	) (IZ) (NI-)
						(Pb) (Mg) (Mn) (Ni) (b) (Mg) (Mn) (Ni) (			Va) (Hardness) (Silica
	VOC (Boein		) (Bu) (Be) (C	ou) (eu) (ee)	(C1) (C4) (10) (1	<i>b)</i> (111 <b>g</b> ) (1111) (111) (	(15) (5c) (11) ( v	) (Zii) (11g) (11) (1	(u) (Hardiness) (Silied
		ane Ethene Ac	etylene						
	d								
	others								
Duplicate San Comments:	nple No(s):								
Signature:		DSB				Date:	11/14/2017		



Purge water	During Mana		Daring Dan			Due in a Manual a		0025217.000.0	00	
Sample Number   Fig.   Sample Number   Sampl	•	.e:				9			99	
Landau Representative   SRB		,	•	-		-		1425		
Water   Comments   Water   West   1.0   West   West   1.0   West   Wes	-			1/1114		Weather:	40s/50s PC			
Well Condition:   Secure (VFS or NO)   Damaged (VFS or NO)   Describe   DTW Before Purging (ft)   2.55   Time:   1355   Flow through cell vol.   GW Meter No (y HERON 3)   End Purger   Dane/Time:   11/14 2017   142 017   142	Landau Rep	resentative:	SKB							
DTW Before Purging (ft)	WATER LEV	/EL/WELL/PU	JRGE DATA							
Begin Purge:   Due-Firme:   11/4   2017   1-401   End Purge:   Due-Firme:   11/4   2017   1-423   Gallons Purged:   0.5	Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
Purge water disposed to:	DTW Before	Purging (ft)	3.55	Time:	1355	Flow through cel	l vol.		GW Meter No.(s	HERON 3
Time	Begin Purge:	Date/Time:	11/14 /2017	1401	End Purge:	Date/Time:	11/14 /2017 @	1423	Gallons Purged:	0.5
Time	Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATMI	ENT SYSTEM
Time   New Pire Coals: Statistical transport   New Pire Coals: New Pire Coa		Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
1404	Time									Observations
1404   11.2   120.8   4.65   6.72   4.2   3.55							~	~		
1407	1404						17- 10 /6		tin ough cen	
1410										
1413	1407	11.4	115.0	4.54	6.71	5.3		3.55		
1146	1410	11.4	115.0	4.77	6.85	0.1		3.55		
SAMPLE COLLECTION DATA	1413	11.3	113.0	4.53	6.93	-2.0				
SAMPLE COLLECTION DATA	1416	11.4	113.0	4.62	6.99	-2.8				
SAMPLE COLLECTION DATA										
Sample Collected With:	141)	11,4	113.0	7.70	7.02	-5.0				
Sample Collected With:		. ———							<del></del>	
Sample Collected With:	GALAGE GO	I I ECTION E								
Made of:         Stainless Steel         PVC         Teflon         Polyethylene         Other         Dedicated           Decon Procedure:         Alconox Wash         Tap Rinse         DI Water         Dedicated           Sample Description (color, turbidity, odor, sheen, etc.):         SLIGHTLY YELLOW SLIGHTLY TURBID NO/NS           Replicate         Temp (Cpr/C) (wl/cm)         (mg/L)         ORP (mV)         Turbidity (NTU)         DTW (Fe II)         Comments/Observations           1         11.5         111.0         4.60         7.03         -3.1 <td></td> <td></td> <td></td> <td>Doiler</td> <td></td> <td>Dumn/Dumn Tyna</td> <td>DED BI ADDED</td> <td></td> <td></td> <td></td>				Doiler		Dumn/Dumn Tyna	DED BI ADDED			
Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated	=	cieu wiiii.						Other	Dadicated	
Sample Description (color, turbidity, odor, sheen, etc.):   SLIGHTLY YELLOW SLIGHTLY TURBID NO/NS				_			<b>=</b>	LI Other	Dedicated	
Sample Description (color, turbidity, odor, sheen, etc.):   SLIGHTLY YELLOW SLIGHTLY TURBID NO/NS				n <u>U</u>	rap Kinse	□ Di water	Dedicated			
Replicate   Temp   Cond.   (ng/L)				alaam ata lu	CLICHTLY	VELLOW CLICI	ITLV TUDDID NO	ANIC		
CFPC   (uS/cm)   (mg/L)   (mV)   (NTU)   (ft)   (Fe II)   Observations	Sample Desci	iption (color, i	urbiaity, odor,	sheen, etc.).	SLIGITLI	TELLOW SLIGI	IILI TUKBID NO	//113		
CFFC   (uS/cm)   (mg/L)   (mV)   (NTU)   (ft)   (Fe II)   Observations	Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
2 11.5 111.7 4.42 7.04 -3.1  3 11.5 111.6 4.31 7.05 -3.1  4 11.5 111.5 4.64 7.06 -3.1  Average: 11.5 111.5 4.49 7.05 -3.1 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  3 (8260C) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-D) (R081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)  (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silica VOC (Boeing short list)  Methane Ethane Ethene Acetylene  Duplicate Sample No(s):  Comments:  Signature: SRB Date: 11/14/2017		(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
3	1	11.5	111.0	4.60	7.03	-3.1				
3	2	11.5	111.7	4.42	7.04	-3.1				
Average: 11.5 111.5 4.64 7.06 -3.1  Average: 11.5 111.5 4.49 7.05 -3.1 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  3 (8260C) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA OR	3			,						
Average: 11.5 111.5 4.49 7.05 -3.1 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  3 (8260C) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA OR										
QUANTITY   TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)							#DB4/01			
3	Average:	11.5	111.5	4.49	7.05	-3.1	#DIV/0!	-		
(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F) (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silical VOC (Boeing short list)  Methane Ethane Ethene Acetylene  Duplicate Sample No(s):  Comments:  Signature: SRB Date: 11/14/2017	QUANTITY						plicable or write n	on-standard ar		
(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F) (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silical VOC) (Boeing short list)  Methane Ethane Ethene Acetylene  Others  Duplicate Sample No(s):  Comments:  Signature: SRB  Date: 11/14/2017	3									
(COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)  (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silical VOC (Boeing short list)  Methane Ethane Ethene Acetylene  others  Duplicate Sample No(s):  Comments:  Signature: SRB  Date: 11/14/2017										OR □
(Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silical VOC (Boeing short list)  Methane Ethane Ethane Acetylene  others  Duplicate Sample No(s):  Comments:  Signature:  SRB  Date: 11/14/2017								(SO4) (NO	3) (NO2) (F)	
(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silical VOC (Boeing short list)  Methane Ethane Ethene Acetylene  others  Duplicate Sample No(s):  Comments:  Signature: SRB  Date: 11/14/2017						i) (NH3) (NO3/	NO2)			
(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Silical VOC (Boeing short list)  Methane Ethane Ethane Acetylene  others  Duplicate Sample No(s):  Comments:  Signature:  SRB  Date: 11/14/2017						(Cr) (Cu) (Fa) (	Db) (Ma) (Mn) (N	Ji) (A a) (Sa) (	T1) (V) ( <b>7</b> n) ( <b>U</b> a	) (K) (Na)
VOC (Boeing short list)  Methane Ethane Ethene Acetylene  others  Duplicate Sample No(s):  Comments:  Signature:  SRB  Date: 11/14/2017										
Methane Ethane Ethane Acetylene  others  Duplicate Sample No(s):  Comments:  Signature: SRB  Date: 11/14/2017				) (Da) (Dc) (C	ca) (ca) (co)	(CI) (Cu) (IC) (II	)) (1 <b>11g</b> ) (1 <b>111</b> ) (1	(1g) (Sc) (11) ( v	) (Zii) (11g) (K) (1	(Haraness) (Since
Others  Duplicate Sample No(s):  Comments:  Signature: SRB Date: 11/14/2017				etylene						
Duplicate Sample No(s):  Comments:  Signature: SRB Date: 11/14/2017										
Duplicate Sample No(s):  Comments:  Signature: SRB Date: 11/14/2017				-	-					-
Comments:         SrB         Date:         11/14/2017		others								
Comments:         SrB         Date:         11/14/2017	Dum!! C	1- N(-)								
Signature:         SRB         Date:         11/14/2017	=	upie ivo(s):								
		anr.						444460-		
	Signature:	SKB					Date:			



Project Nam	ie:	Boeing Ren	ton		Project Number	r:	0025217.099.0	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/14 /2017 @		1007	
Sample Nun	nber:	RGW262S			Weather:	OC			
Landau Rep	resentative:	DSB			•				
WATER LEV	/EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	4.93	Time:	942	Flow through ce	ll vol.		GW Meter No.(	s 2
Begin Purge:	Date/Time:	11/ 14 /2017	943	End Purge:	Date/Time:	11/ 14 /2017 @	1002	Gallons Purged:	0.75
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	Γ <u>REATMENT</u> CI	ENTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	4 4 <b>-</b>	(mV)	(NTU)	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	ıs: Stabiizatio +/- 3%	on of Parame +/- 10%	+/- 0.1 units	+/- 10 mV	dings within the fo $\pm$ +/- $\pm$ 10%	< 0.3 ft	through cell	
946		537	1.39	6.10	123.5		6.50	<b>g</b>	PUMP ON LOWES
949	15.78	544	0.84	6.17	107.0		7.09	-	
952		547	0.64	6.21	97.9		7.50	-	
955		549	0.49	6.24	88.9		8.03		
958		550		6.25	84.2		8.29		
			0.44				0.29		
1001	16.01	552	0.36	6.26	78.2				
CAMPLE CO	L ECTION D	A T A							
Sample Collection	LLECTION D		Bailer		Pump/Pump Type	Peristaltic			
Made of:		Stainless Stee	_	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	=	Alconox Was		Tap Rinse	DI Water	Dedicated	<b>—</b>	-X Dealeanea	
(By Numerica		Other	··· —	rup remse	□ Di Water	Dedicated			
, ,	ription (color, t		sheen, etc.):		CLEAR YELLO	OW NONS			
	1 ,		· · · · ·						
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	16.01	552	0.35	6.26	77.5	(1410)	(11)	(FC II)	Obsci vations
2	16.09	552	0.35	6.26	76.7			·	
3	16.12	553	0.34	6.26	76.1				-
4	16.13	553	0.33	6.26	75.4				
Average:	16.09	553	0.34	6.26	76.4	#DIV/0!			-
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TYPE (Circle a)	oplicable or write r	ıon-standard aı	nalysis below)	
3	(8260C) (80							WA 🗆	OR 🗆
						(8141) (Oil & Grea		WA 🗆	OR □
1	1 /	2/	/ \ / \		dity) (Alkalinity) n) (NH3) (NO3)	(HCO3/CO3) (C	(SO4) (NO	(NO2) (F)	
1		e) (WAD Cy	<u> </u>		i) (NH3) (NO3)	NO2)			
					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (H	g) (K) (Na)
									Na) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene Ac	cetylene						
	-41								
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:		DSB				Date	11/14/2017		



Signature:

Project Nan	ne:	Boeing Rer	nton		Project Number	er:	0025217.099.0	99	
Event:			August 2017		Date/Time:	11/ /2017 @			
Sample Nui	mber:	RGW263S	-		Weather:				_
Landau Rep	oresentative:	DSB							
WATER LE	VEL/WELL/P	URGE DATA	<u>.</u>						
Well Conditi	on:	Secure (YES	S or NO)	Damaged (Y	(ES or NO)	Describe:			
DTW Before	Purging (ft)	5.37	Time:	1039	Flow through ce	ell vol.		GW Meter No.(s	s)
Begin Purge:	Date/Time:	11/ /2017 @	@	End Purge:	Date/Time:	11/ /2017 @		Gallons Purged:	
Purge water	disposed to:		55-gal Drum		Storage Tank	Ground	Other	Γ <u>REATMENT</u> CE	ENTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ıls: Stablizati +/- 3%	on of Parame +/- 10%	ters for thre +/- 0.1 units		ndings within the fo +/- 10%	ollowing limits < 0.3 ft	>/= 1 flow through cell	
	17-370	47-370	47- 10 /6	47- 0.1 uiiits	77- 10 m v	17- 10 /6	< 0.5 It	tiii ougii cen	
	_	<b>13</b> 7	ATEL	) I E	VEL O	NI V			
	_	<b>VV</b> .	AILI		V LL O		-		
	_				-		-	-	
CAMDLE CO	OLLECTION I	) A T A							
Sample Colle		DATA	Bailer		Pump/Pump Typ	e DED Geotech blac	dder numn		
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proce	dure:	Alconox Wa			₩		<u> </u>		
Decoil Floce	uuic. iii		ach II II	Ton Dinco	DI Water	Dedicated			
(Ry Numeric			ısh 📋	Tap Rinse	DI Water	☐ Dedicated			
(By Numeric	al Order)	Other		Tap Rinse	DI Water	Dedicated			
•		Other		Tap Rinse	DI Water	☐ Dedicated			
•	al Order)	Other		Tap Rinse	ORP	Dedicated  Turbidity	DTW	Ferrous iron	Comments/
Sample Desc	al Order)	Other turbidity, odor	r, sheen, etc.):	•			DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
Sample Desc	al Order) cription (color, s	Other turbidity, odor	r, sheen, etc.):	•	ORP	Turbidity			
Sample Description Replicate	al Order) cription (color, s	Other turbidity, odor	r, sheen, etc.):	•	ORP	Turbidity			
Replicate  1 2	al Order) cription (color, s	Other turbidity, odor	r, sheen, etc.):	•	ORP	Turbidity			
Replicate  1 2 3	al Order) cription (color, s	Other turbidity, odor	r, sheen, etc.):	•	ORP	Turbidity			
Replicate  1 2 3 4	al Order) cription (color, 1 Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)			
Replicate  1 2 3	al Order) cription (color, s	Other turbidity, odor	r, sheen, etc.):	•	ORP	Turbidity			
Replicate  1 2 3 4 Average:	al Order) cription (color, ription (color, remp (°F/°C)  #DIV/0!	Cond. (uS/cm)  #DIV/0!	D.O. (mg/L)  #DIV/0!	pH #DIV/0!	ORP (mV)	Turbidity (NTU)	(ft)	(Fe II)	
Replicate  1 2 3 4 Average:	al Order) cription (color, ription (color, ription (color, ription (°F/°C))  #DIV/0!	Cond. (uS/cm)  #DIV/0!	D.O. (mg/L)  #DIV/0!	pH  #DIV/0! ER BOTTLE	ORP (mV)  #DIV/0!	Turbidity (NTU)  #DIV/0!	(ft)	nalysis below) WA	
Replicate  1 2 3 4 Average:	#DIV/0!  (**EYPICAL A)  (**EXPICAL A)	#DIV/0!  **DALYSIS A: 0) (8020) [N	#DIV/0! LLOWED PENTY PHONE TO MATTER TO THE PROPERTY OF THE PR	#DIV/0! ER BOTTLE [NWTPH-Gx	#DIV/0!  CTYPE (Circle a ) (BTEX) -HCID) (8081)	Turbidity (NTU)  #DIV/0!  pplicable or write in (8141) (Oil & Green)	non-standard a	malysis below) WA □ WA □	Observations
Replicate  1 2 3 4 Average:	#DIV/0!  (**TYPICAL A** (8260) (8014) (9H) (Condu	#DIV/0!  **DIV/0!  **DALYSIS A: 0) (8020) (Note: The content of th	#DIV/0! LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH-GOD) (Turbi	#DIV/0!  CTYPE (Circle a ) (BTEX) -HCID) (8081) dity) (Alkalinity	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (C	non-standard a	malysis below) WA □ WA □	Observations OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801)  (8270) (PAI  (pH) (Condu	#DIV/0!  **NALYSIS A: 0) (8020) (N. H) (NWTPH- activity) (TD) C) (Total PO)	#DIV/0!  LLOWED PENWTPH-G) ( -D) (NWTPH-S) (TSS) (B) 4) (Total Kie	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH- BOD) (Turbicatahl Nitroge	#DIV/0!  CTYPE (Circle a ) (BTEX) -HCID) (8081)	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great) (HCO3/CO3) (C	non-standard a	malysis below) WA □ WA □	Observations OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801)  (8270) (PAH  (pH) (Condu  (COD) (TOG  (Total Cyanic	#DIV/0!  #DIV/0!  NALYSIS AD 0) (8020) (NH) (NWTPH- lectivity) (TD C) (Total PO de) (WAD Cy	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (Bel) (Total Kieyanide) (Free	#DIV/0! ER BOTTLE NWTPH-Gx I-Dx) (TPH- GOD) (Turbic dahl Nitroge Cyanide)	#DIV/0!  ETYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in the second control of the	non-standard a ase) Cl) (SO4) (NC	malysis below) WA  WA  WA  O O O O O O O O O O O O O O O O O O O	Observations  OR □  OR □
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A (8260) (801) (8270) (PAH (pH) (Condu (COD) (Total Cyanic (Total Metals)	#DIV/0!  #DIV/0!  **MALYSIS A: 0) (8020) (N. H) (NWTPH- activity) (TD C) (Total PO de) (WAD C) ) (As) (Sb) (	#DIV/0!  LLOWED PENTPH-G) (NWTPH-S) (TSS) (B) (4) (Total Kie yanide) (Free (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR □ OR □ OR □
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #YPICAL A  (8260) (801)  (8270) (PAI  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M	#DIV/0!  #DIV/0!  **MALYSIS A: 0) (8020) (N. H) (NWTPH- activity) (TD C) (Total PO de) (WAD C) () (As) (Sb) (etals) (As) (S)	#DIV/0!  LLOWED PENTPH-G) (NWTPH-S) (TSS) (B) (4) (Total Kie yanide) (Free (Ba) (Be) (Ca)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR □  OR □
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAH  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boein	#DIV/0!  #DIV/0!  **NALYSIS A:  0) (8020) (P.  H) (NWTPH-  activity) (TD  C) (Total PO  de) (WAD Cy.  ) (As) (Sb) (Setals) (As) (Sl  gg short list)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) (Total Kieyanide) (Free (Ba) (Be) (Cab) (Ba) (Be) (Cab)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAH  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boein	#DIV/0!  #DIV/0!  **MALYSIS A: 0) (8020) (N. H) (NWTPH- activity) (TD C) (Total PO de) (WAD C) () (As) (Sb) (etals) (As) (S)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) (Total Kieyanide) (Free (Ba) (Be) (Cab) (Ba) (Be) (Cab)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAH  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boein	#DIV/0!  #DIV/0!  **NALYSIS A:  0) (8020) (P.  H) (NWTPH-  activity) (TD  C) (Total PO  de) (WAD Cy.  ) (As) (Sb) (Setals) (As) (Sl  gg short list)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) (Total Kiesyanide) (Free (Ba) (Be) (Cab) (Ba) (Be) (Cab)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI  (COD) (TOd  (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boein  Methane Eth	#DIV/0!  #DIV/0!  **NALYSIS A:  0) (8020) (P.  H) (NWTPH-  activity) (TD  C) (Total PO  de) (WAD Cy.  ) (As) (Sb) (Setals) (As) (Sl  gg short list)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) (Total Kiesyanide) (Free (Ba) (Be) (Cab) (Ba) (Be) (Cab)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAH  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boein	#DIV/0!  #DIV/0!  **NALYSIS A:  0) (8020) (P.  H) (NWTPH-  activity) (TD  C) (Total PO  de) (WAD Cy.  ) (As) (Sb) (Setals) (As) (Sl  gg short list)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) (Total Kiesyanide) (Free (Ba) (Be) (Cab) (Ba) (Be) (Cab)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2)) (Pb) (Mg) (Mn) (Notation)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
Replicate  1 2 3 4 Average:	#DIV/0!  #DIV/0!  #TYPICAL A  (8260) (801) (8270) (PAI  (pH) (Condu  (COD) (Total Cyanic  (Total Metals  (Dissolved M  VOC (Boein  Methane Eth	#DIV/0!  #DIV/0!  **NALYSIS A:  0) (8020) (P.  H) (NWTPH-  activity) (TD  C) (Total PO  de) (WAD Cy.  ) (As) (Sb) (Setals) (As) (Sl  gg short list)	#DIV/0!  #DIV/0!  LLOWED PENWTPH-G) (NWTPH-S) (TSS) (B) (Total Kiesyanide) (Free (Ba) (Be) (Cab) (Ba) (Be) (Cab)	#DIV/0! ER BOTTLE NWTPH-Gx H-Dx) (TPH GOD) (Turbicatal Nitroge Cyanide) a) (Cd) (Co)	#DIV/0!  #TYPE (Circle a) (BTEX) -HCID) (8081) dity) (Alkalinity n) (NH3) (NO3	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Green) (HCO3/CO3) (Control of the Market in (NO2) (Pb) (Mg) (Mn) (No2)	non-standard ase) Cl) (SO4) (NO	(Fe II)  malysis below)  WA   WA   O  WA   O  O  O  O  O  O  O  O  O  O  O  O  O	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR



Project Nam	e <u>:</u>	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly Au	igust 2017		Date/Time:	11/14 /2017 @		1037	
Sample Nun	nber:	RGW264S	171114		Weather:	OC			
Landau Repr	resentative:	DSB							
WATER LEV	EL/WELL/PU	IRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		5.79	Time:	_	Flow through cel			GW Meter No.(s	2
Begin Purge:	r urging (it)	11/ 14/2017	1014	End Purge:	=	11/ 14 /2017 @	1030	Gallons Purged:	
Purge water d	ionocad to:		55-gal Drum	Ä	Storage Tank	Ground		TREATMENT CE	
ruige water u	isposed to.		_	-	_	<del>_</del>	Other	REATMENT CE	NIEK
TD*	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C) Purge Goa	(uS/cm) ls: Stablization	(mg/L) n of Parame	ters for three	(mV)	(NTU) dings within the fol	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1017	17.27	701	0.66	6.37	84.7		6.88		
		759							
1020	17.22		0.28	6.28	75.4		7.15		
1023	17.45	825	0.22	6.21	67.4		7.43		
1026	17.42	834	0.21	6.20	61.7		7.57		
1029	17.35	849	0.21	6.19	56.3		7.66		
SAMPLE CO			D - 11		D /D T	Di-4-14i-			
Sample Collec	cted with:		Bailer		Pump/Pump Type				
Made of:	빌	Stainless Stee	_	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced		Alconox Was	h 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	· · · · · · · · · · · · · · · · · · ·	Other							
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):		CLEAR SLIGH	T YELOW NONS			
Danlicata	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Replicate	(°F/°C)	(uS/cm)	(mg/L)	þП	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	17.29	851	0.20	6.19	55.2	` ,		, ,	
-			-						
2	17.28	854	0.20	6.19	54.7				
3	17.30	851	0.20	6.19	54.3				
4	17.34	846	0.20	6.19	53.7				
Average:	17.30	851	0.20	6.19	54.5	#DIV/0!			
QUANTITY						plicable or write n	on-standard ar		
3		10) (8020) (1		•		(01.41) (011.0.0			OR 🗆
						(8141) (Oil & Grea			OR 🗆
1	` `				) (NH3) (NO3)	(HCO3/CO3) (C	1) (SO4) (NO	3) (NO2) (F)	
1		e) (WAD Cya			<u>) (NH3) (NO3)</u>	NO2)			
					(Cr) (Cu) (Fe)	Pb) (Mg) (Mn) (N	Ji) (Ag) (Se) (	T1) (V) ( <b>7</b> n) (Ha	) (K) (Na)
									a) (Hardness) (Silica
	VOC (Boein		(Bu) (Be) (e	(Ca) (Co)	(CI) (Cu) (I C) (I C	)) (1 <b>11</b> <u>g</u> ) (1 <b>111</b> ) (1 <b>11</b> ) (1	15) (50) (11) (1	) (Zii) (11g) (11) (1	a) (Haraness) (Since
		ane Ethene Ace	etylene						
		·	•						
	others								
Duplicate San									
-	nple No(s):								
Comments:	nple No(s):								
Comments: Signature:		DSB				Date:	11/14/2017		dau Associates



Event    Counterly August 2017   Counterly August 20	Project Name	e:	Boeing Ren	ton		Project Number	er:	0025217.099.0	99	
Margine   Number   RGW031S   71114     Weather:   40x/50x PC		· <u>·</u>								
MAIR LEVEL/WELL/PURGEDATA		her		_				1020		
Well Condition:	-	-		1,1111		Wedner.	103/3031			
Well Condition:	WATER LEV	'EL/WELL/PU	JRGE DATA							
Begin Purge   Date/Time   1/14   2/17   9.55   End Purge   Date/Time   Ground   Other   STEE TREATMENT SYSTEM   Ground   Other   Othe				or NO)	Damaged (Y	ES or NO)	Describe:			
Purge water disposed to:	DTW Before I	Purging (ft)	5.05	Time:	950	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
Time   Purp   Cond.   D.O.   pH   ORP   Turbidity   ORTU   (ft)   Volume (all)   Purp Grains   Stabilization of Parameters for three consecutive readings within the following limits   y-1 flow	Begin Purge:	Date/Time:	11/14 /2017	955	End Purge:	Date/Time:	11/ 14 /2017 @	1017	Gallons Purged:	(
Time	Purge water di	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
Purge Collection   Parameters for three consecutive readings within the following limits   X-1 How through cell			Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
1.4	Time				tana fan thua					Observations
958		_					~			
1001	958								<b></b>	
1004								5.05		
1007 14.3 258.0 3.89 6.17 -12.2   1010 14.2 258.0 4.15 6.17 -14.5   1013 14.2 259.0 4.29 6.17 -17.0   1016      SAMPLE COLLECTION DATA	1004	14.4	257.3	3.21	6.17	-8.8				
SAMPLE COLLECTION DATA   Sample Collected With:	1007				6.17	-12.2				
SAMPLE COLLECTION DATA	1010	14.2	258.0	4.15	6.17	-14.5				
SAMPLE COLLECTION DATA	1013	14.2	259.0	4.29	6.17	-17.0				
Sample Collected With:   Bailer   Pump/Pump Type   DED Qed Bladder   Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated   Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated   Dedicated   Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated   Dedi										
Sample Collected With:   Bailer   Pump/Pump Type   DED Qed Bladder   Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated   Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated   Dedicated   Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated   Dedi										
Made of:         Stainless Steel         PVC         Teflon         Polyethylene         Other         Dedicated           Decon Procedure:         Alconox Wash         Tap Rinse         DI Water         Dedicated           (By Numerical Order)         Other         DI Water         Dedicated           Sample Description (color, turbidity, odor, sheen, etc.):         SLIGHTLY TURBID COLORLESS NO/NS           Replicate         Temp (°F/°C)         Cond. (mg/L)         D.O. pH (mV)         Turbidity (NTU)         DTW (Fe II)         Comment Observation           1         14.2         259.0         4.34         6.17         -17.8         -17.2         -17.8         -17.2         -17.8         -17.2         -17.8         -17.2         -17.8         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -17.2         -1	SAMPLE CO	LLECTION D	OATA							
Decom Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated	Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Qed Bladder			
Comment   Comm	Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Replicate (FF°C)         Cond. (uS/cm)         D.O. (mg/L)         pH (mV)         ORP (mV)         Turbidity (NTU)         DTW (ft)         Ferrous iron (Fe II)         Comment Observation           1         14.2         259.0         4.34         6.17         -17.8         -19.0<	Decon Proced	ure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
Replicate         Temp (°F/°C)         Cond. (uS/cm)         D.O. (mg/L)         pH (mV)         ORP (mV)         Turbidity (NTU)         DTW (ft)         Ferrous iron (Fe II)         Commendos           1         14.2         259.0         4.34         6.17         -17.8	(By Numerical	l Order)	Other							
(°F)°C) (uS/cm) (mg/L) (mV) (NTU) (ft) (Fe II) Observation  1 14.2 259.0 4.34 6.17 -17.8  2 14.2 259.0 4.40 6.17 -19.0  3 14.2 259.3 4.46 6.17 -20.1  4 14.2 259.5 4.53 6.17 -21.3  Average: 14.2 259.2 4.43 6.17 -19.6 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (CI) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na)	Sample Descri	iption (color, t	urbidity, odor.	sheen, etc.):	SLIGHTLY	TURBID COLO	RLESS NO/NS			
1 14.2 259.0 4.34 6.17 -17.8  2 14.2 259.0 4.40 6.17 -19.0  3 14.2 259.3 4.46 6.17 -20.1  4 14.2 259.5 4.53 6.17 -21.3  Average: 14.2 259.2 4.43 6.17 -19.6 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)	Replicate				pН					Comments/ Observations
3	1				6.17		, ,	. ,	,	
3	2	14.2	259.0							
Average: 14.2 259.2 4.43 6.17 -19.6 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA OR (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA OR (PH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (As) (Boeing short list)	3									
QUANTITY         TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)           6         (8260)         (8010)         (8020)         (NWTPH-GX)         (BTEX)         WA □         OR □           (8270)         (PAH)         (NWTPH-D)         (NWTPH-DX)         (TPH-HCID)         (8081)         (8141)         (Oil & Grease)         WA □         OR □           (pH)         (Conductivity)         (TDS)         (TSS)         (BOD)         (Turbidity)         (Alkalinity)         (HCO3/CO3)         (CI)         (SO4)         (NO3)         (NO2)         (F)           1         (COD)         (TOC)         (Total PO4)         (Total Kiedahl Nitrogen)         (NH3)         (NO3/NO2)           (Total Cyanide)         (WAD Cyanide)         (Free Cyanide)         (Total Metals)         (As)         (Sb)         (Ba)         (Be)         (Ca)         (Cd)         (Co)         (Cr)         (Cu)         (Fe)         (Pb)         (Mg)         (Mn)         (Ni)         (Ag)         (Se)         (TI)         (V)         (Zn)         (Hg)         (K)         (Na)           (Dissolved Metals)         (As)         (Sb)         (Ba)         (Be)         (Ca)         (Cd)         (Co)         (Cr)	4	14.2	259.5	4.53	6.17	-21.3				
6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □ (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)	Average:	14.2	259.2	4.43	6.17	-19.6	#DIV/0!			
6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □ (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)	OUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TYPE (Circle at	oplicable or write n	on-standard aı	nalysis below)	
(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)										OR 🗆
1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)							(8141) (Oil & Grea	ase)	WA □	OR □
(Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)		(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbi	dity) (Alkalinity	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)				/		n) (NH3) (NO3	/NO2)			
(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) VOC (Boeing short list)										
VOC (Boeing short list)										
				) (ва) (ве) ( <b>(</b>	.a) (Cd) (Co)	(Cr) (Cu) (Fe) (P	υ) (Mg) (Mn) (N1) (.	Ag) (Se) (T1) (V	) (Zn) (Hg) (K) (N	va) (Hardness) (Sil
Methane Ethane Ethene Acetylene				etylene						
Mediate Entitle Necticité		Triculanc Eth	and Eulene At	ocy ione						
others		others								
	•									
Duplicate Sample No(s): Duplicate Location (RGWDUP2)	=	nple No(s):	Duplicate Lo	cation (RGW	DUP2)					
Comments:  Signature: SRR Date: 11/14/2017	•	CDD					<b></b>	11/14/2017		



Landau Associates

Project Nam		Boeing Ren	ton	<u> </u>	Project Numbe		0025217.099.0		
Event:	. <u>.                                   </u>	Quarterly A			Date/Time:	11/ 13 /2017 @		99	
Sample Nun	abor:	RGW033S	-		Weather:	50'S, CLOUDY	1320		
Landau Rep		JHA	1/1113		weather.	303, CLOOD I			
Well Condition	/EL/WELL/PU	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		5.23	Time:	-	Flow through ce			GW Meter No.(s	HERON 1
	Date/Time:			End Purge:	=	11/ 13 /2017 @ 13	321	Gallons Purged:	
Purge water d			55-gal Drum	Ť	Storage Tank	Ground		SITE TREATM	
r urgo water a	-		_		_	<u> </u>			
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
			on of Parame		e consecutive rea	dings within the fol	llowing limits	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1303	15.5	265.6	1.56	6.49	-7.4	LOW			
1309	15.3	273.2	1.33	6.48	-8.9		5.23		
1309	15.3	275.2	1.20	6.48	-12.1			0.25	
1312	15.4	275.0	1.11	6.46	-10.9			·	
1315		276.8	0.93	6.44	-10.8				
1318		276.9	0.93	6.44	-10.5				
1320	15.5	277.0	0.80	6.42	-10.5	•		·	
SAMDI E CO	LLECTION I	<u></u>			<u> </u>			<u> </u>	
Sample Colle			Bailer		Pump/Pump Type	DED Qed Bladder			
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lura:	Alconox Was	_	Tap Rinse	DI Water	Dedicated	<b>—</b>		
(By Numerica		Other	Sii 🖳	rap Kilise	□ Di Water	Dedicated			
		_	chaan ata):	CLEAD CC	LORLESS, NO/N	IC			
Sample Desci	iption (color, i	urbianty, odor	, sileeii, etc.)	CLEAR, CC	LOKEESS, NO/I	15			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(°F/°C)	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	15.6	277.3	0.85	6.39	-10.3			·	
2	15.6	277.3	0.81	6.41	-10.3				
3	15.6	277.3	0.81	6.41	-10.3			·	
4	15.6	277.3	0.78	6.42	-10.3				
Average:	15.6	277.3	0.81	6.41	-10.3	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	R BOTTLE	TYPE (Circle a	oplicable or write n	on-standard a	nalysis below)	
6		(8020) (N				pricusio or writer		WA □	OR 🗆
	(8270) (PAH					(8141) (Oil & Grea	ise)	WA □	OR 🗆
	(pH) (Condu	ctivity) (TDS				(HCO3/CO3) (C	1) (SO4) (NC	(NO2) (F)	
1	(COD) (TO				n) (NH3) (NO3	NO2)			
	•	e) (WAD Cy		•					
						(Pb) (Mg) (Mn) (N			
			) (Ba) (Be) (C	(Cd) (Co)	(Cr) (Cu) (Fe) (P	o) (Mg) (Mn) (Ni) (A	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	Va) (Hardness) (Silica
	VOC (Boein	g short list) ane Ethene Ad	retylene						
	wichiane Elli	anc Ethelle At	CLYICHE						
	others								
D 11									
Duplicate Sar		VIDED VEGE	D Aliciter i	EVENT AND	INCTALLED	DAV			
	PUMP KEP		K AUGUSI I	EVENT AIND	INSTALLED TO		11/10/20:=		
Signature:		JHA				Date:	11/13/2017		_

P:\8888 - Boeing Renton\02 Data Management\2017\4Q2017\Landau Field Sheets\building 4-78&79\_11.13.17\_JHA.xlsx



Project Name	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/13 /2017 @		1417	
Sample Num	ber:	RGW034S	-		Weather:	wind			
Landau Repr	resentative:	DSB							
WATER LEV	'EL/WELL/PU	JRGE DATA							
Well Conditio	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before l	Purging (ft)	5.3	Time:	1345	Flow through cel	ll vol.		GW Meter No.(s	2
Begin Purge:	Date/Time:	11/13 /2017	1349	End Purge:	Date/Time:	11/ 13 /2017 @	1409	Gallons Purged:	0.25
Purge water di	isposed to:		55-gal Drum		Storage Tank	Ground	Other	site treatment	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L) on of Parame	ters for three	(mV)	(NTU) dings within the fo	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1352	16.78	400	0.67	8.05	-30.9		5.35		
1355	16.21	405	1.24	7.45	-30.1		5.35		
1358	15.83	405	0.70	7.17	-23.7		5.35		
1401	15.44	406	0.70	6.98	-20.7				
1404	14.66	406	0.57	6.77	-16.8				
1407	14.53	397	0.45	6.60	-10.1				
1107	11.33	371	0.13	0.00	10.1				
SAMPLE CO	LLECTION I	DATA			<u> </u>				
Sample Collec			Bailer		Pump/Pump Type	DED Qed Bladder			
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	· · ·	Other							
Sample Descr	iption (color, t	turbidity, odor,	sheen, etc.):		clear colorless no	ons			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	14.66	396	0.44	6.60	-9.9				
2	14.78	395	0.43	6.60	-11.6				
3	14.83	397	0.43	6.60	-13.0				
4	14.86	398	0.43	6.60	-14.0				
Average:	14.78	397	0.43	6.60	-12.1	#DIV/0!			
QUANTITY	TVDICALA	NAI VCIC AI	I OWED DE	D ROTTI E	TVDE (Circle or	oplicable or write r	on standard or	nolycic holow)	
6		0) (8020) (N				pricable of write i	ion-stanuaru ai		OR 🗆
-						(8141) (Oil & Grea	ase)		OR 🗆
	(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbio	dity) (Alkalinity)	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
1					) (NH3) (NO3)	NO2)			
		le) (WAD Cy			(Cr) (Cr) (Er)	(Pb) (Mg) (Mn) (N	Ti) (A ~) (C ~) (	T1) (V) (7m) (U)	(V) (Na)
									Va) (Hardness) (Silica
	VOC (Boein				(/ (/) (1-0/ (1-0		<u> </u>	/ (/ (** <u>8</u> / (**) (1	
		ane Ethene Ac	etylene						
	ath and								
	others								
Duplicate San Comments:	nple No(s):								
Signature:		DSB				Date:	11/13/2017		



Project Nam	e:	Boeing Ren	ton		Project Number	er:	0025217.099.09	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @	1440		
Sample Num	ber:	RGW038S	•		Weather:	50S RAINY			
Landau Repr	resentative:	SRB							
WATER LEV	'EL/WELL/PI	URGE DATA							
Well Conditio		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	5.4	Time:	1410	Flow through ce	ll vol.		GW Meter No.(s	S HERON 3
Begin Purge:	Date/Time:	11/ 13 /2017	1412	End Purge:	Date/Time:	11/13 /2017 @	1434	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	te Treatment Syste	em
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	- 4	(mV)	(NTU)	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	4/- 3%		+/- 0.1 units		dings within the fo +/- 10%	< 0.3 ft	through cell	
1415	16.9	299.0	0.16	6.48	-66.0		5.4		
1418	16.3	270.0	0.17	6.49	-78.0		5.4		
1421	16.4	269.0	0.25	6.49	-79.0		5.4		
1424	16.3	260.0	1.76	6.49	-81.0				
1427	16.3	258.0	2.10	6.49	-82.0				
1430	16.3	258.0	2.42	6.49	-82.0				
1433	16.3	257.0	2.77	6.49	-82.5				<u>,                                      </u>
SAMPLE CO	LIECTION	) A T A							
Sample Collection			Bailer		Pump/Pump Type	e DED Qed Bladder			
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🗖	Tap Rinse	DI Water	Dedicated	<del>_</del>	_	
(By Numerica	l Order)	Other		-	42				
Sample Descr	iption (color,	turbidity, odor.	sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Daulianta	Томан	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	(uS/cm)	D.O. (mg/L)	рп	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	16.3	257.2	2.89	6.49	-82.9				
2	16.4	257.0	2.98	6.48	-83.0				
3	16.4	256.4	3.09	6.48	-83.0				
4	16.3	256.1	3.19	6.49	-83.4				
Average:	16.4	256.7	3.04	6.49	-83.1	#DIV/0!			
QUANTITY 6						pplicable or write n	ion-standard ar	wa 🗆	OR 🗆
0		0) (8020) (N H) (NWTPH-				(8141) (Oil & Grea	ase)	WA 🗆	OR 🗆
						(HCO3/CO3) (C			
1	(COD) (TO	C) (Total PO	4) (Total Kie	dahl Nitroger	n) (NH3) (NO3	/NO2)			
		le) (WAD Cy							
						(Pb) (Mg) (Mn) (N			
	VOC (Boein		) (Ba) (Be) (C	<i>(</i> Ca) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (N1) (.	Ag) (Se) (11) (V	) (Zn) (Hg) (K) (F	Na) (Hardness) (Silica
		ane Ethene Ac	etylene						
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:	SRB					Date:	11/13/2017		



D : .N		D : D			D : .N 1		0005017 000 0		
Project Nam	e <u>:</u>	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly Au	_		Date/Time:	11/ 13 /2017 @	1406		
Sample Num		RGW039S	171113		Weather:	50'S, WINDY			
Landau Repr	resentative:	JHA							
WATER LEV	EL/WELL/PI	URGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	5.14	Time:	1340	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:	Date/Time:	11/13 /2017	@ 1345	End Purge:	Date/Time:	11/ 13/2017 @ 14	405	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	P	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	~					dings within the fo	_	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1348	16.5	116.7	1.64	6.49	39.7	LOW	5.14	<0.25	
1351	16.5	99.9	1.59	6.45	44.8				
1354	16.7	94.8	1.54	6.41	48.3		5.14	0.25	
1357	16.6	90.6	1.58	6.38	50.0				
1400		88.9	1.60	6.36	51.9				
					54.7			0.5	
1403	16.5	87.0	1.63	6.32	34.7			0.5	
					-				
0.1.1.0V.E.00									
Sample Collection			Bailer		Dump/Dump Type	DED Ood Bladdar			
Made of:	zied Willi.	Stainless Stee		PVC	Teflon	DED Qed Bladder Polyethylene	Other	Dedicated	
			_		—		□ Other	Dedicated	
Decon Proced		Alconox Was	п	Tap Rinse	DI Water	Dedicated			
(By Numerica	•	Other	-1	CLEAD CO	LODIECC NOA	IC			
Sample Desci	ipuon (color,	turbiaity, odor,	sneen, etc.).	CLEAR, CO	LORLESS, NO/	NO.			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	16.6	87.0	1.61	6.31	54.9				
2	16.7	87.1	1.60	6.31	55.1				
3	16.7	87.0	1.65	6.31	55.3				
4	16.7	86.9	1.61	6.31	55.7				
Average:	16.7	87.0	1.62	6.31	55.3	#DIV/0!			
						pplicable or write n	on-standard ar		
6		0) (8020) (N				(01.41) (01.0.0			OR 🗆
						(8141) (Oil & Great (HCO3/CO3) (C			OR 🗆
1			<del></del>	_ · ·	ilty) (Alkalility) i) (NH3) (NO3)		.1) (304) (NO	(NO2) (F)	
1		le) (WAD Cya			1) (14113) (1403)	1102)			
					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
									(Ia) (Hardness) (Silica
	VOC (Boein	g short list)							
	Methane Eth	ane Ethene Ac	etylene						
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:			JHA			Date:	11/13/2017		



Project Name:   Bocing Renton   Project Number:   G025217(09099)
Sample Number:   RGW143S   171113
NATIRE LEVELIAND   Secure   VFR or NO    Damaged (YFR or NO)   Describe:
Watter   Level   Well Condition:   Secure (YES or NO)   Damaged (YES or NO)   Describe:   Describe:   Secure (YES or NO)   Secure (YES or NO)   Describe:   Secure (YES or NO)   Secure (YES or
Medical   Secure   VES or NO   Describe:
Date
Begin Purge   Date/Time   11/13/2017
Purge water disposed to:
Time
Time
Time
1215   15.3   277.8   0.83   6.61   -17.9   LOW   5.65   c.0.25
1215
1218
1221   15.4   284.1   0.76   6.59   -24.6   5.65
1224
1224
1227   15.5   288.7   0.32   6.57   -29.8
1230
SAMPLE COLLECTION DATA
Sample Collected With:
Sample Collected With:
Sample Collected With:
Made of:         Stainless Steel         PVC         Teflon         Polyethylene         Other         Dedicated           Decon Procedure:         Alconox Wash         Tap Rinse         DI Water         Dedicated           Sample Description (color, turbidity, odor, sheen, etc.):         CLEAR, COLORLESS, NO/NS           Replicate         Temp (Cond. (uS/cm) (mg/L)         D.O. pH (mV)         Turbidity (NTU)         DTW Ferrous iron (Fe II)         Comments/Observation           1         15.5         290.3         0.31 6.57 -31.9         -31.9         -32.0         -32.0         -32.0         -32.0         -32.0         -32.0         -32.0         -32.3         -4         15.5 290.2         0.32 6.57 -32.3         -32.4         -32.4         -32.4         -32.2         #DIV/0!         -32.4         -32.4         -32.4         -32.2         #DIV/0!         -32.2         #DIV/0!         -32.4         -32.4         -32.2         #DIV/0!         -32.2
Decon Procedure:   Alconox Wash   Tap Rinse   DI Water   Dedicated
Comments   Comments
Replicate         Temp (°F/°C)         Cond. (us/cm)         D.O. (mg/L)         pH (mV)         ORP (mV)         Turbidity (NTU)         DTW (ft)         Ferrous iron (Fe II)         Comments/Observation           1         15.5         290.3         0.31         6.57         -31.9         -31.9         -31.9         -32.0         -32.0         -32.0         -32.0         -32.3         -32.3         -32.3         -32.4         -32.3         -32.4         -32.2         #DIV/0!         WA         -32.2         WA         -32.2         WA         -32.2         WA         -32.2         WA         -32.2         WA         -32.2         WA         -32.2 </td
Replicate   Temp   Cond.   (uS/cm)   (ug/L)
(°F/°C) (uS/cm) (mg/L) (mV) (NTU) (ft) (Fe II) Observation  1 15.5 290.3 0.31 6.57 -31.9  2 15.5 290.2 0.32 6.57 -32.0  3 15.5 290.2 0.32 6.57 -32.3  4 15.5 290.3 0.32 6.57 -32.4  Average: 15.5 290.3 0.32 6.57 -32.2 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (S VOC (Boeing short list)
(°F/°C) (uS/cm) (mg/L) (mV) (NTU) (ft) (Fe II) Observation  1 15.5 290.3 0.31 6.57 -31.9  2 15.5 290.2 0.32 6.57 -32.0  3 15.5 290.2 0.32 6.57 -32.3  4 15.5 290.3 0.32 6.57 -32.4  Average: 15.5 290.3 0.32 6.57 -32.2 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (S VOC (Boeing short list)
1 15.5 290.3 0.31 6.57 -31.9  2 15.5 290.2 0.32 6.57 -32.0  3 15.5 290.2 0.32 6.57 -32.3  4 15.5 290.3 0.32 6.57 -32.4  Average: 15.5 290.3 0.32 6.57 -32.2 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-GX) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-DX) (TPH-HCID) (8081) (8141) (0il & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (S VOC (Boeing short list)
2 15.5 290.2 0.32 6.57 -32.0  3 15.5 290.2 0.32 6.57 -32.3  4 15.5 290.3 0.32 6.57 -32.4  Average: 15.5 290.3 0.32 6.57 -32.2 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (TI) (V) (Zn) (Hg) (K) (Na) (Hardness) (S VOC (Boeing short list)
3 15.5 290.2 0.32 6.57 -32.3  4 15.5 290.3 0.32 6.57 -32.4  Average: 15.5 290.3 0.32 6.57 -32.2 #DIV/0!   QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □ (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (VOC (Boeing short list)
4 15.5 290.3 0.32 6.57 -32.4  Average: 15.5 290.3 0.32 6.57 -32.2 #DIV/0!  QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □  (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □  (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Sub) (Radial Short list)
Average:       15.5       290.3       0.32       6.57       -32.2       #DIV/0!         QUANTITY       TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)         6       (8260)       (8010)       (8020)       (NWTPH-G)       (NWTPH-Gx)       (BTEX)       WA □ OR □         (8270)       (PAH)       (NWTPH-D)       (NWTPH-Dx)       (TPH-HCID)       (8081)       (8141)       (Oil & Grease)       WA □ OR □         (pH)       (Conductivity)       (TDS)       (BOD)       (Turbidity)       (Alkalinity)       (HCO3/CO3)       (Cl)       (SO4)       (NO3)       (NO2)       (F)         1       (COD)       (TOC)       (Total PO4)       (Total Kiedahl Nitrogen)       (NH3)       (NO3/NO2)         (Total Cyanide)       (WAD Cyanide)       (Free Cyanide)         (Total Metals)       (As)       (Sb)       (Ba)       (Be)       (Ca)       (Cd)       (Co)       (Cr)       (Pb)       (Mg)       (Mn)       (Ni)       (Alkalinity)       (Alkalinity)       (HCO3/CO3)       (Cl)       (SO4)       (NO3)       (NO2)       (F)         1       (COD)       (TOC)       (Total PO4)       (Total Kiedahl Nitrogen)       (NH3)       (NO3/NO2)       (NO3)
QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA OR
QUANTITY TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)  6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA OR
6 (8260) (8010) (8020) (NWTPH-G) (NWTPH-Gx) (BTEX) WA □ OR □ (8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA □ OR □ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (Th) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (Th) (V) (Th) (Th) (Th) (Th) (Th) (Th) (Th) (Th
(8270) (PAH) (NWTPH-D) (NWTPH-Dx) (TPH-HCID) (8081) (8141) (Oil & Grease) WA ☐ OR ☐ (pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (VOC (Boeing short list)
(pH) (Conductivity) (TDS) (TSS) (BOD) (Turbidity) (Alkalinity) (HCO3/CO3) (Cl) (SO4) (NO3) (NO2) (F)  (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2)  (Total Cyanide) (WAD Cyanide) (Free Cyanide)  (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na)  (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (VOC (Boeing short list)
1 (COD) (TOC) (Total PO4) (Total Kiedahl Nitrogen) (NH3) (NO3/NO2) (Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (VOC (Boeing short list)
(Total Cyanide) (WAD Cyanide) (Free Cyanide) (Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (VOC (Boeing short list)
(Total Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (S VOC (Boeing short list)
(Dissolved Metals) (As) (Sb) (Ba) (Be) (Ca) (Cd) (Co) (Cr) (Cu) (Fe) (Pb) (Mg) (Mn) (Ni) (Ag) (Se) (Tl) (V) (Zn) (Hg) (K) (Na) (Hardness) (Se) (VOC (Boeing short list)
VOC (Boeing short list)
Methane Ethane Ethene Acetylene
others
Dunlicate Sample No(x):
Duplicate Sample No(s):  Comments:
Duplicate Sample No(s):



Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.09	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @	1400		
Sample Num	ber:	RGW209S	•		Weather:	50S RAINY			
Landau Repr	resentative:	SRB			•				
WATER LEV	'EL/WELL/PU	JRGE DATA							
Well Conditio	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	5.15	Time:	1334	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/ 13 /2017	1336	End Purge:	Date/Time:	11/13 /2017 @	1358	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	e Treatment Syste	em
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	tong fon thus	(mV)	(NTU) dings within the fo	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1339	15.1	380.0	0.18	6.40	-68.0		5.15		
1342	14.8	380.0	0.51	6.40	-83.0		5.15		
1345	14.7	380.0	2.94	6.40	-87.0		5.15		
1348	14.5	379.0	4.15	6.40	-88.0				
1351	14.5	378.0	4.32	6.40	-88.0				
1354	14.4	378.0	4.38	6.40	88.0				
1357									
SAMPLE CO	LLECTION I	OATA							
Sample Collec	eted With:		Bailer		Pump/Pump Type	DED Geotech blad	lder pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color, t	turbidity, odor	sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	14.4	377.0	4.40	6.40	-88.0				
2	14.4	377.0	4.42	6.40	-87.7				
3	14.3	376.6	4.45	6.40	-87.6				
4	14.3	376.0	4.73	6.40	-87.0				
Average:	14.4	376.7	4.50	6.40	-87.6	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TYPE (Circle a	oplicable or write n	on-standard ar	alvsis below)	
6		0) (8020) (N				pricusie of writer		WA □	OR 🗆
						(8141) (Oil & Grea	ase)	WA □	OR □
	(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbio	dity) (Alkalinity)	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
1	(COD) (TOO				n) (NH3) (NO3)	/NO2)			
		le) (WAD Cy			(0) (0) (0)		T) (1 ) (0 ) (1		\
						(Pb) (Mg) (Mn) (Ng) (Mg) (Ng) (Ng) (Mg) (Ng) (Ng) (Ng) (Ng) (Ng) (Ng) (Ng) (N			
	VOC (Boein		) (ва) (ве) (с	<i>(Ca)</i> (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (MIII) (MI) (	Ag) (Se) (11) (V	) (ZII) (Hg) (K) (N	Na) (Hardness) (Silica
		ane Ethene A	etylene						
	others								
Duplicate San	nple No(s)								
Comments:	1								
Signature:	SRB					Date:	11/13/2017		



Project Nam	e:	Boeing Ren			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	-		Date/Time:	11/ 14/2017 @ 1			
Sample Num		RGW210S	171114		Weather:	40's, PARTLY SU	INNY		
Landau Repr	resentative:	JHA							
WATER LEV	/EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	4.54	Time:	956	Flow through cel	l vol.		GW Meter No.(s	S HERON 3
Begin Purge:	Date/Time:	11/ 14 /2017	@ 957	End Purge:	Date/Time:	11/ /2017 @ 1018		Gallons Purged:	0.25
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	IENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	pii	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	~					dings within the foll	~	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1000	13.7	311.9	3.12	6.47	29.0	LOW			
1003	13.6	274.3	2.27	6.60	21.6				
1006	13.6	251.5	1.84	6.64	21.6		4.67		LOWER CPM
1009	13.6	246.8	1.68	6.65	22.8				
1012		249.3	1.05	6.62	25.0		4.64	0.25	
							4.04	0.23	
1015	13.0	252.4	1.08	6.62	235.9				
1017	12.8	253.8	1.14	6.60	253.6				
SAMPLE CO									
Sample Collec	cted With:		Bailer			DED Geotech bladd			
Made of:	븯	Stainless Stee	_	PVC	Teflon	Polyethylene	U Other	Dedicated	
Decon Proced		Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	*	Other							
Sample Descr	ription (color, t	turbidity, odor,	sheen, etc.):_	CLODUY, L	IGHT BROWN,	NO/NS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
rtopriouto	(°F/°C)	(uS/cm)	(mg/L)	P	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	12.8	253.6	1.15	6.60	26.1				
2	12.8	253.6	1.17	6.60	26.1				
3									
	12.8	253.6	1.18	6.60	26.0				
4	12.8	253.6	1.19	6.60	25.9				
Average:	12.8	253.6	1.17	6.60	26.0	#DIV/0!	5.78		
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle ap	pplicable or write no	n-standard ar	nalysis below)	
6	( <mark>8260</mark> ) (8010	0) (8020) (N	WTPH-G) (	NWTPH-Gx)	(BTEX)			WA □	OR 🗆
	(8270) (PAH	H) (NWTPH-l	D) (NWTPH	I-Dx) (TPH-	HCID) (8081)	(8141) (Oil & Greas	e)	WA □	OR □
						(HCO3/CO3) (CI)	(SO4) (NO	3) (NO2) (F)	
1					) (NH3) (NO3)	NO2)			
		le) (WAD Cy			(6) (6) (7)				\ (T) QT \
						(Pb) (Mg) (Mn) (Ni			
	VOC (Boein		) (Ba) (Be) (C	a) (Ca) (Co)	(Cr) (Cu) (Fe) (Pi	5) (Mg) (Mn) (N1) (A	g) (Se) (11) (V	) (Zn) (Hg) (K) (F	Na) (Hardness) (Silica
		ane Ethene Ac	estulana						
	Triculant Eth	une Ethelle At	ory to the						
	others								
Duplicate San	mple No(s):								
Duplicate San Comments:	nple No(s):								
Comments: Signature:			ЈНА			Date: _ ilding 4-78&79 11.14.1	11/14/2017		- ndau Associates



Project Nam	e·	Boeing Ren	ton		Project Numbe	::	0025217.099.0	99	
Event:	<u> </u>	Quarterly A			Date/Time:	11/ 13 /2017 @	1330		
Sample Num	her	RGW237S	_		Weather:	50S RAINY	1330		
Landau Repi		SRB	171110		· · · · · · · · · · · · · · · · · · ·	505 IU III ( 1			
WATER LEV		IDGE DATA							
WATER LEV		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		4.7	Time:	=	Flow through ce			GW Meter No.(s	S HERON 3
Begin Purge:				End Purge:		11/13 /2017 @	1326	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		te Treatment Syst	
. 8	-	Cond	D.O.		ORP	_	<u> </u>	Internal Purge	
Time	Temp (°F/°C)	Cond. (uS/cm)	(mg/L)	pН	(mV)	Turbidity (NTU)	DTW (ft)	Volume (gal)	Comments/ Observations
	Purge Goa		on of Parame			dings within the fo	_	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1307	14.8	238.0	1.98	6.59	6.2		4.7		
1310	14.5	237.0	1.89	6.51	-1.5		4.7		
1313	14.4	237.0	1.90	6.51	-2.8		4.7		
					1	-			
					-				
					-				
SAMPLE CO		OATA 🗔							
Sample Collec	cted With:	Ш	Bailer			DED Geotech blad		_	
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced		Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color, t	urbidity, odor	sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
керпсас	(°F/°C)	(uS/cm)	(mg/L)	pii	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	14.4	237.0	1.90	6.50	-3.2				
2	14.4	236.7	1.90						
2				6.50	-3.4				
3	14.4	236.7	1.92	6.50	,				
4	14.3	236.6	1.92	6.50	-3.7				
Average:	14.4	236.8	1.91	6.50	-3.5	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TYPE (Circle a)	oplicable or write n	ıon-standard aı	nalysis below)	
6		0) (8020) (N				•		WA □	OR 🗆
	(8270) (PAH	I) (NWTPH-	D) (NWTPH	I-Dx) (TPH-	HCID) (8081)	(8141) (Oil & Grea	ase)	WA □	OR 🗆
	(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbio	dity) (Alkalinity)	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
1	· · · · · ·	· ·	<u> </u>		n) (NH3) (NO3)	/NO2)			
		e) (WAD Cy			(0) (0) =:	(DI) (AZ) (ZZ) =	***		) (T) (A)
						(Pb) (Mg) (Mn) (Ng) (Mg) (Ng) (Ng) (Mg) (Ng) (Ng) (Ng) (Ng) (Ng) (Ng) (Ng) (N			
	VOC (Boein		) (Ba) (Be) (C	.a) (Cd) (Co)	(Cr) (Cu) (Fe) (P	o) (Mg) (Mn) (N1) (	Ag) (Se) (11) (V	) (Zn) (Hg) (K) (N	Na) (Hardness) (Silic
	`	ane Ethene A	retylene						
	Triculanc Eth	une Eulelle At	octy ione						
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:	SRR					Date	11/13/2017		



Project Nam	ıe:	Boeing Ren	nton		Project Numbe	r:	0025217.099.09	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @	1250		
Sample Nun	nber:	RGW238I	-		Weather:	50S RAINY			
Landau Repr	resentative:	SRB			•				
WATER LEV	/EL/WELL/PI	JRGE DATA							
Well Condition		Secure (YES		Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	4.77	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
	Date/Time:			End Purge:	=	11/13 /2017 @	1245	Gallons Purged:	
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	te Treatment Syste	em
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablization +/- 3%		ters for three +/- 0.1 units	consecutive rea +/- 10 mV	dings within the following +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
1224		379.0	0.41	6.43	-88.0	47-1070	4.8	tin ough cen	
1227	13.6	383.2	4.15	6.44	-95.0		4.8		
1230	13.6	382.2	4.21	6.44	-94.7		4.8		
1233	13.5	381.0	4.24	6.44	-94.5				
SAMPLE CO	LLECTION I	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blad	lder pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica		Other							
Sample Descr	ription (color, t	urbidity, odor	, sheen, etc.):	CLEAR CO	LORLESS NO/N	<u>S</u>			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.4	381.0	4.28	6.44	-94.0				
2	13.4	381.0	4.29	6.44	-94.3				
3	13.4	380.4	4.28	6.44	-94.3				
4	13.3	380.0	4.34	6.44	-94.0				
Average:	13.4	380.6	4.30	6.44	-94.2	#DIV/0!			
QUANTITY	TVDICALA	NAT VCIC AT	I I OWED DE	D DATTI E	TVDE (Civale or	oplicable or write n	on standard ar	alveis balaw)	
6			WTPH-G) (			opiicable of write in	ion-standard at	WA	OR 🗆
						(8141) (Oil & Grea	nse)	WA □	OR 🗆
•	(8270) (PAF	<ul> <li>I) (NWTPH-</li> </ul>	D) (NWTPE	1-DA) (1111-					
						(HCO3/CO3) (C			
1		ctivity) (TD	S) (TSS) (B	OD) (Turbio		(HCO3/CO3) (C			
1	(pH) (Condu (COD) (TOO (Total Cyanid	(Total POe) (WAD Cy	S) (TSS) (B 4) (Total Kie vanide) (Free	OD) (Turbio dahl Nitroger Cyanide)	dity) (Alkalinity) (NH3) (NO3)	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
1	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals	(Total PO- ce) (WAD Cy (C) (As) (Sb) (	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	
1	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M	(TDatal PO- le) (WAD Cy ) (As) (Sb) (etals) (As) (St)	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	
1	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	ctivity) (TDC) (Total POC) (WAD Cy) (As) (Sb) (etals) (As) (Sb) (g short list)	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca b) (Ba) (Be) (Ca	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	
1	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	(TDatal PO- le) (WAD Cy ) (As) (Sb) (etals) (As) (St)	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca b) (Ba) (Be) (Ca	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	
1	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	ctivity) (TDC) (Total POC) (WAD Cy) (As) (Sb) (etals) (As) (Sb) (g short list)	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca b) (Ba) (Be) (Ca	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	
1	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	ctivity) (TDC) (Total POC) (WAD Cy) (As) (Sb) (etals) (As) (Sb) (g short list)	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca b) (Ba) (Be) (Ca	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	
	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	ectivity) (TDe C) (Total PO- e) (WAD Cy ) (As) (Sb) ( etals) (As) (St g short list) ane Ethene A	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca b) (Ba) (Be) (C cetylene	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	g) (K) (Na) Na) (Hardness) (Silica
Duplicate San	(pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	ctivity) (TDC) (Total POC) (WAD Cy) (As) (Sb) (etals) (As) (Sb) (g short list)	S) (TSS) (B 4) (Total Kie vanide) (Free (Ba) (Be) (Ca b) (Ba) (Be) (C cetylene	GOD) (Turbio dahl Nitroger Cyanide) a) (Cd) (Co)	dity) (Alkalinity) (NH3) (NO3) (Cr) (Cu) (Fe)	(HCO3/CO3) (C/NO2) (Pb) (Mg) (Mn) (N	(SO4) (NO Ni) (Ag) (Se) (	3) (NO2) (F) Π) (V) (Zn) (Hg	



D :		D : D			D 1 . N 1				
Project Nam	e <u>:</u>	Boeing Rent			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	_		Date/Time:	11/ 13 /2017 @	1146		
Sample Num		RGW239I	171113		Weather:	50'S, CLOUDY			
Landau Repr	resentative:	JHA							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	5.51	Time:	1120	Flow through cel	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:	Date/Time:	11/ 13 /2017	@ 1121	End Purge:	Date/Time:	11/ 13 /2017 @ 11	40	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	рП	(mV)	(NTU)	(ft)	Volume (gal)	Observations
			n of Paramet			dings within the fol	_	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1124	13.4	251.5	0.78	6.38	27.5	LOW		< 0.25	
1127	13.6	259.6	0.79	6.41	8.1		5.53	<0.25	
1130	13.6	263.1	0.52	6.45	-4.2				
1133	13.6		0.44	6.48	-15.8				
		267.5				·			
1136	13.7	268.1	0.41	6.49	-18.6		5.53		
1139	13.7	269.3	0.43	6.49	-21.4				
SAMPLE CO	LLECTION I	OATA		-					
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blad	der pump		
Made of:		Stainless Stee	1 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	h 🗖	Tap Rinse	DI Water	Dedicated		_	
(By Numerica	l Order)	Other	_		₩				
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):	CLEAR, CO	LORLESS, NO/N	NS			
	•	•							
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.6	269.4	0.43	6.49	-21.7				
2	13.6	269.4	0.43	6.49	-22.0				
3	13.6	269.5	0.41	6.49	-22.1				
4	13.6	269.7	0.40	6.49	-22.4				
						WDH 1/01			
Average:	13.6	269.5	0.42	6.49	-22.1	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle ap	plicable or write n	on-standard ar	nalysis below)	
6		0) (8020) (N						WA 🗆	OR 🗆
						(8141) (Oil & Grea		WA 🗆	OR 🗆
		* * * *	<del></del>	_ · ·		(HCO3/CO3) (C	l) (SO4) (NO	3) (NO2) (F)	
1					) (NH3) (NO3)	NO2)			
		e) (WAD Cy			(C+) (C+) (E+)	(Dl.) (M.) (M.) (N.	() (A -) (C -) (	T1) (V) (7) (U-	) (IZ) (N-)
		) (As) (Sb) (I				(Pb) (Mg) (Mn) (Ng) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (M			
		otole) (Ac) (Sh	$(\mathbf{P}_{\mathbf{a}})(\mathbf{P}_{\mathbf{a}})(\mathbf{C}_{\mathbf{a}})$		(CI) (Cu) (IE) (F	)) (Mg) (MII) (M) (A	Ag) (3c) (11) (V	) (Zii) (Hg) (K) (N	(a) (Hardiless) (Silica
	(Dissolved M	etals) (As) (Sb	) (Ba) (Be) (C	a) (Cu) (Co)					
	(Dissolved M VOC (Boein	g short list)		(Cu) (Cu)					
	(Dissolved M VOC (Boein			a) (Cu) (Co)					
	(Dissolved M VOC (Boein	g short list)		a) (Cu) (Co)					
	(Dissolved M VOC (Boein	g short list)		a) (Cu) (Co)					
	(Dissolved M VOC (Boein Methane Eth others	g short list)		(Cu) (Co)					
Duplicate San	(Dissolved M VOC (Boein Methane Eth others	g short list)		a) (Cu) (Co)					
Duplicate San Comments:	(Dissolved M VOC (Boein Methane Eth others	g short list)		(Cu) (Cu)					
Comments: Signature:	(Dissolved M VOC (Boein Methane Eth others	g short list) ane Ethene Ac	etylene			Date:	11/13/2017		ndau Associates



Landau Associates

Project Nam	e.	Boeing Ren	ton		Project Numbe	:i**	0025217.099.0	99	
Event:	<u> </u>	Quarterly A			Date/Time:	11/ 13 /2017 @ 1			
Sample Nun	nber:	RGW240D	-		Weather:	50'S, CLOUDY A			
Landau Rep	-	JHA	-,						
	/EL/WELL/PU	IDCE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		5.04	Time:	=	Flow through ce	•		GW Meter No.(s	HERON 1
	Date/Time:		•	End Purge:	=	11/ 13 /2017 @ 11	59	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		SITE TREATM	
C	•	Cond.	D.O.	pН	ORP	— Turbidity	DTW	Internal Purge	Comments/
Time	Temp (°F/°C)	(uS/cm)	(mg/L)	þп	(mV)	(NTU)	(ft)	Volume (gal)	Observations
						dings within the fol		>/= 1 flow	
1110	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1149	12.8	320.8	0.83	6.47		LOW		<0.25	
1152	12.6	324.3	0.77	6.48	-21.4			<0.25	
1155	12.3	323.7	0.71	6.48	-23.2		5.21	<0.25	TURNED PUMP OFF
1158	12.2	324.1	0.73	6.48	-24.2		5.21		PUMP ON
SAMPLE CO	LLECTION D	OATA							
Sample Collec			Bailer		Pump/Pump Type	DED Geotech blade	der pump		
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	h	Tap Rinse	DI Water	Dedicated			
(By Numerica	ıl Order)	Other							
Sample Descr	ription (color, t	urbidity, odor,	sheen, etc.):_	SLIGHTLY	TURBID, CLIGH	HT GRAY, NO/NS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Керпсис	(°F/°C)	(uS/cm)	(mg/L)	pII	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	12.2	323.9	0.76	6.48	-24.5				
2	12.2	323.9	0.77	6.48	-24.5				
3	12.2	324.1	0.75	6.48	-24.6				
4	12.2	324.1	0.74	6.48	-24.6				
						#D###01	5.21		-
Average:	12.2	324.0	0.76	6.48	-24.6	#DIV/0!	5.31		
_					· · · · · · · · · · · · · · · · · · ·	oplicable or write n	on-standard ar		
6		(8020) (N				(01.41) (O'1.0 C		WA 🗆	OR 🗆
						(8141) (Oil & Grea (HCO3/CO3) (Ci		WA □ 3) (NO2) (F)	OR 🗆
1					) (NH3) (NO3)		, (50 <del>1</del> ) (110	o, (1102) (11)	
		e) (WAD Cy			, , , , , , , , , , , , , , , , , , , ,				
					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	(i) (Ag) (Se) (	Γl) (V) (Zn) (Hg	g) (K) (Na)
			(Ba) (Be) (C	(a) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (A	Ag) (Se) (Tl) (V	(Zn) (Hg) (K) (N	Na) (Hardness) (Silica
	VOC (Boein		. 1						
•	■ Mathana Eth	ane Ethene Ac	etylene						
	Wiethalie Eth								
	Wethane Eth								
	others								
=	others				BEFORE SAMPL	JING.			

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Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.09	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/ 13 /2017 @	1150		
Sample Num	nber:	RGW-241S	-		Weather:	50S RAINY			
Landau Repi	resentative:	SRB							
WATER LEV	'EL/WELL/PU	JRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	6.05	Time:	1118	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
Begin Purge:	Date/Time:	11/ 13 /2017	1121	End Purge:	Date/Time:	11/13 /2017 @	1148	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	te Treatment Syste	em
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	+/- 3%	ls: Stablizatio +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the following +/- 10%	< 0.3 ft	>/= 1 flow through cell	
1124	14.9	306.6	3.13	6.32	-45.0		6.05	8	
1127	14.5	304.0	2.25	6.32	-49.0		6.05		
1130	14.1	303.0	2.25	6.32	-49.6		6.05		
1133	13.6	300.0	1.82	6.32	-50.0		0.03		
1136	13.4	299.0	3.20	6.32	-50.0				
1139	13.1	297.5	3.84	6.32	-50.8				
1142	13.1	297.3	3.90	6.32	-51.0				
CAMPLE CO	LICTION								
Sample Collection			Bailer		Pump/Pump Type	DED Geotech blad	lder pump		
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	h 🗍	Tap Rinse	DI Water	Dedicated	<u> </u>	_	
(By Numerica	l Order)	Other	_	1	<b>—</b>	_			
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
			D.O.	***	ODD	m 1111	DEW	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	(Fe II)	Observations
1	13.1	297.1	3.94	6.32	-52.0				
2	13.1	297.0	3.98	6.32	-51.0				
3	13.1	297.0	4.02	6.33	-53.0				
4	12.8	296.0	4.13	6.33	-53.0				
Average:	13.0	296.8	4.02	6.33	-52.3	#DIV/0!			
QUANTITY						oplicable or write n	on-standard ar		OR 🗆
6		0) (8020) (N I) (NWTPH-				(8141) (Oil & Grea	ase)	WA □	OR  OR
						(HCO3/CO3) (C			
					n) (NH3) (NO3)				
	(Total Cyanid	e) (WAD Cy	anide) (Free	Cyanide)					
						(Pb) (Mg) (Mn) (N			
			) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (A	Ag) (Se) (Tl) (V	(Zn) (Hg) (K) (N	Na) (Hardness) (Silica
	VOC (Boein		estylana						
	ivieulane Eth	ane Ethene Ac	ctylelle						
	others								
Dunling C									
Duplicate San Comments:									



Project Name	e <u>:</u>	Boeing Ren	ton		Project Numbe	r <u>:</u>	0025217.099.09	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/ 13 /2017 @	1220		
Sample Num	ıber:	RGW-242I	171113		Weather:	50S RAINY			
Landau Repr	resentative:	SRB			•				
WATER LEV	'EL/WELL/PU	JRGE DATA							
Well Conditio		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before l	Purging (ft)	6.15	Time:	1134	Flow through cel	ll vol.		GW Meter No.(s	HERON 3
Begin Purge:		11/ 13 /2017		End Purge:	_	11/13 /2017 @	1216	Gallons Purged:	
Purge water di	isposed to:		55-gal Drum		Storage Tank	Ground		te Treatment Syste	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	рп	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	_					dings within the fo	~	>/= 1 flow	
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1153	12.9	263.0	4.22	6.33	-34.0		6.15		
1156	12.6	262.0	4.42	6.32	-34.0		6.15		
1159	12.3	262.0	4.56	6.31	-35.0		6.15		
SAMPLE CO		OATA							
Sample Collec	cted With:		Bailer	_	Pump/Pump Type	DED Geotech blad	lder pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descri	iption (color, t	urbidity, odor	, sheen, etc.):	SLIGHTLY	TURBID COLO	RLESS NO/NS			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
			_	6.21	` ′	(1410)	(11)	(re n)	Observations
1	12.1	261.0	4.60	6.31	-31.0				
2	12.1	261.0	4.57	6.31	-31.2				
3	12.0	261.0	4.58	6.30	-31.2				
4	12.0	260.9	4.63	6.31	-34.3				
Average:	12.1	261.0	4.60	6.31	-31.9	#DIV/0!			
			I OWED DE						
						pplicable or write n	on-standard ar	_	OR 🗆
6		(NWTDL)				(8141) (Oil & Grea	uca)	WA □ WA □	OR OR
						(HCO3/CO3) (C			OK L
					i) (NH3) (NO3)		1) (504) (110	3) (1102) (1)	
	` ' `	e) (WAD Cy	· ·		, , , , , , , , , , , , , , , , , , , ,				
	•	•			(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Γl) (V) (Zn) (Hg	(K) (Na)
									la) (Hardness) (Silica
	VOC (Boein	g short list)							
	Methane Eth	ane Ethene A	cetylene						
	others								
Duplicate San	nnle No(s)·								
Comments:	r · · ( <i>s</i> )· .								
Signature:	SRR					Data	11/13/2017		



Project Nam	e:	Boeing Rer	nton		Project Number	er:	0025217.099.0	99	
Event:			august 2017		Date/Time:	11/ 13 /2017 @	1436		
Sample Num	ber:	RGW-243I	-		Weather:	50'S, WINDY A	ND DRIZZLIN	lG	
Landau Repr	resentative:	JHA							
WATER LEV	'EL/WELL/PI	URGE DATA							
Well Condition		Secure (YES		Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	5.21	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:				End Purge:	=	11/ 13 /2017 @ 14	123	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ds: Stablization +/- 3%		ters for three +/- 0.1 units		dings within the fol +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
1412							< 0.5 It	<u> </u>	
1413	15.1	313.8	0.24	6.20		LOW		<0.25	
1416	15.1	318.4	0.22	6.34	-2.8		5.21	0.25	
1419	15.1	322.3	0.21	6.30	-11.4			<0.50	
1422	15.1	322.9	0.20	6.35	-16.4				
								_	
					-				
SAMPLE CO	LLECTION I	DATA			<u> </u>				<u> </u>
Sample Collec			Bailer		Pump/Pump Type	DED Geotech blad	der pump		
Made of:		Stainless Ste	el	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color,	turbidity, odor	, sheen, etc.):	CLEAR, CO	LORLESS, NO/	NS			
	<b>T</b>	G 1	D.O.	***	ODD	m 1:34	DTW	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	(ft)	(Fe II)	Observations
1	15.1	322.8	0.20	6.35	-16.9				
2	15.0	323.4	0.19	6.35	-17.2				
			0.19	6.35					
3	15.1	323.0							
4	15.1	323.2	0.19	6.36	-17.8				
Average:	15.1	323.1	0.19	6.35	-17.4	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS A	LLOWED PE	R BOTTLE	TYPE (Circle a)	oplicable or write n	on-standard aı	nalysis below)	
6			WTPH-G) (					WA 🗆	OR 🗆
						(8141) (Oil & Grea		WA 🗆	OR 🗆
1						(HCO3/CO3) (C	1) (SO4) (NO	(NO2) (F)	
1			anide) (Free		n) (NH3) (NO3)	/INO2)			
					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	li) (Ag) (Se) (	Tl) (V) (Zn) (He	r) (K) (Na)
									Va) (Hardness) (Silica
	VOC (Boein						, ,		
	Methane Eth	nane Ethene A	cetylene						
	d								
	others								
Duplicate San	nple No(s):								
Comments:	· ,								
Signature:	<u> </u>	<u> </u>	JHA			Date:	11/13/2017		



Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @		1457	
Sample Num	ber:	RGW-244S			Weather:	wind			
Landau Repr	esentative:	DSB							
WATER LEV	'EL/WELL/PI	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	5.22	Time:	1430	Flow through ce	ll vol.		GW Meter No.(s	2
Begin Purge:	Date/Time:	11/ 13 /2017	1433	End Purge:	Date/Time:	11/13 /2017 @	1452	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	site treatment	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L) on of Parame	ters for three	(mV)	(NTU) dings within the fo	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
1436	14.55	428	1.08	6.35	42.9		5.23		
1439	13.77	476	0.79	6.20	41.2		5.23		
1442	13.73	485	0.63	6.18	38.5		5.23		
1445	13.70	492	0.47	6.18	31.8				
1448	13.63	492	0.44	6.17	28.8				
1451	13.59	492	0.40	6.17					
	13.39	492	0.40	0.17	23.1				
					-			-	
SAMPLE CO	I I FCTION I	<u></u>							
Sample Collect			Bailer		Pump/Pump Type	DED Geotech blace	lder pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🗖	Tap Rinse	DI Water	Dedicated	_	_	
(By Numerica	l Order)	Other							
Sample Descr	iption (color,	turbidity, odor	, sheen, etc.):		CLEAR COLOR	RLESS NONS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Керпсас	(°F/°C)	(uS/cm)	(mg/L)	pm	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.58	492	0.39	6.17	25.3				
2	13.58	492	0.39	6.17	25.0				
3	13.57	492	0.39	6.17	24.8				
4	13.56	492	0.38	6.17	24.6				
Average:	13.57	492	0.39	6.17	24.9	#DIV/0!			
QUANTITY 6						oplicable or write 1	ion-standard ai		OR 🗆
0		0) (8020) (N I) (NWTPH-				(8141) (Oil & Grea	ase)		OR □
						(HCO3/CO3) (C			011
1					n) (NH3) (NO3)				
	(Total Cyanic	le) (WAD Cy	ranide) (Free	Cyanide)					
						(Pb) (Mg) (Mn) (1			
			o) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	la) (Hardness) (Silica
	VOC (Boein		patylana						
	Memane Etr	ane Ethene Ac	ctylelle						
	others								
Duplicate San	nple No(s):								
Comments:		Dan					11/10/2017		
Signature:		DSB				Date:	11/13/2017		



Landau Associates

Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.09	99	
Event:		Quarterly A			Date/Time:	11/ 14/2017 @		1317	
Sample Num	ber:	10-71-MW	-		Weather:	OC			
Landau Repr	resentative:	DSB			•				
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	8.33	Time:	1254	Flow through cel	l vol.		GW Meter No.(s	2
Begin Purge:	Date/Time:	11/ 14 /2017	1254	End Purge:	Date/Time:	11/14 /2017 @	1314	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	REATMENT CE	NTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm) ls: Stablizatio	(mg/L) on of Paramet	ters for three	(mV)	(NTU) dings within the fo	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
1257	15.98	220	0.33	6.18	104.1		8.34		
1300	15.91	221	0.16	6.23	84.2		8.34		
1303	15.23	224	0.39	6.19	78.2		8.34		
1306	14.80	224	0.33	6.17	76.4				
1309	14.10	223	0.26	6.13	74.3				
1312	13.81	223	0.25	6.12	72.9				
SAMPLE CO	LLECTION D	ATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blac	lder pump		
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated Dedicated	
Decon Proced	ure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated		^	
(By Numerica	l Order)	Other							
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):		CLEAR COLOR	LESS NONS			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	13.78	220	0.25	6.11	72.6	, ,			
2	13.76	223	0.24	6.11	72.3				
3	13.74	222	0.24	6.11					
4	13.73	220	0.25	6.11	71.8				
Average:	13.75	221	0.25	6.11	72.2	#DIV/0!			
	TVDICALA	NAI VSIS AI	I OWED PE	'P RATTI F	TVPF (Circle or	plicable or write r	on-standard ar	nalysis balow)	
3		10) (8020) (			`	pricable of write i	ion-stanuaru ai		OR 🗆
						(8141) (Oil & Grea	ase)		OR 🗆
						(HCO3/CO3) (C		3) (NO2) (F)	
	· · ·	<u> </u>	· ·		n) (NH3) (NO3/	NO2)			
	(Total Cyanid								
						Pb) (Mg) (Mn) (Ni) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg			
	(DISSUIVED IVI	.iais) (AS) (30	) (Da) (De) (C	a) (Cu) (C0)	(C1) (Cu) (Ft) (Pt	) (1 <b>v</b> 1g) (1 <b>v</b> 111) (1 <b>v</b> 1) (.	л <u>у) (</u> 36) (11) (V	) (ZII) (11 <u>g) (K)</u> (N	a) (Hardness) (Silica
	others								
Duplicate San	nple No(s):								
Comments:									
Ci am atauma.	<u> </u>	DCD	<u> </u>			Dotor	11/14/2017	·	·

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Landau Associates

Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/ 14/2017 @		1247	
Sample Num	ber:	10-71-MW2	-		Weather:	OC			
Landau Repr	resentative:	DSB			•				
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	8.6	Time:	1223	Flow through cel			GW Meter No.(s	2
Begin Purge:	Date/Time:	11/ 14/2017		End Purge:		11/ 14/2017 @	1240	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	REATMENT CE	NTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	<b>Internal Purge</b>	Comments/
Time	(°F/°C) Purge Goa	(uS/cm) ls: Stablizatio	(mg/L) on of Parame	ters for three	(mV)	(NTU) dings within the fo	(ft) ollowing limits	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
1226	16.65	229	0.38	6.28	79.2		8.61		
1229	16.49	233	0.20	6.25	68.2		8.61		
1232	16.17	230	0.16	6.22	65.2		8.61		
1235	15.83	233	0.16	6.20	63.0				
1238	15.49	232	0.18	6.18	61.8				
1241									
SAMPLE CO	LLECTION D	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech bla	dder pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated		^	
(By Numerica	l Order)	Other				<del>7X</del>			
Sample Descr	iption (color, t	urbidity, odor	, sheen, etc.):		CLEAR COLOR	RLESS NONS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
rtophoute	(°F/°C)	(uS/cm)	(mg/L)	P	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	15.42	229	0.18	6.18	61.7				
2	15.37	230	0.19	6.18	61.5				
3	15.31	233	0.19	6.17	61.4				
4	15.23	230	0.18	6.17	61.3				
Average:	15.33	231	0.19	6.18	61.5	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	R BOTTLE	TYPE (Circle ar	oplicable or write	non-standard ar	nalvsis below)	
3		10) (8020) (							OR 🗆
	(8270) (PAH	I) (NWTPH-	D) (NWTPH	I-Dx) (TPH-	HCID) (8081)	(8141) (Oil & Gre	ase)	WA □	OR 🗆
	` `				<del></del>	(HCO3/CO3) (C	Cl) (SO4) (NO	3) (NO2) (F)	
	· · · · ·	· ·	<u> </u>		n) (NH3) (NO3/	NO2)			
		e) (WAD Cy			(Ca) (Ca) (Ea)	Dia (Ma) (Ma)	NE) (A ~) (C -) (	FI) (W) (7) (T	) (V) (Na)
						(Pb) (Mg) (Mn) (I			a) (K) (Na) a) (Hardness) (Silica
	210301 VCG 1VI		, (Du) (De) (C	-u, (Cu, (CO)	(51) (54) (10) (11	, (1118) (1111) (111) (	<u>6</u> / (50) (11) ( V	, ( <u>=11)</u> (11 <u>5)</u> (11) (11	a, (Hardiness) (Since
	.d								
	others								
Duplicate San	nple No(s):								
Comments:	-								
Ci am atauma.		DCD				Data	11/14/2017		

P:\8888 - Boeing Renton\02 Data Management\2017\4Q2017\Landau Field Sheets\10-71 DSB 171114.xlsx



Project Name	e:	Boeing Ren	on		Project Number	r <u>:</u>	0025217.099.0	99	
Event:		Quarterly A	igust 2017		Date/Time:	11/ 14 /2017 @		1217	
Sample Num	ber:	10-71-MW4	171114		Weather:	OC			
Landau Repr	resentative:	DSB							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before I	Purging (ft)	8.42	Time:	1154	Flow through cel	ll vol.		GW Meter No.(s	2
Begin Purge:			1155	End Purge:	_	11/14 /2017 @	1214	Gallons Purged:	
Purge water di	isposed to:		55-gal Drum		Storage Tank	Ground	Other	ΓREATMENT CE	ENTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
						dings within the fo		>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1158	17.07	345	0.96	6.31	70.6		8.42		
1201	16.80	341	0.57	6.31	62.4		8.42		
1204	15.45	339	0.43	6.26	60.0		8.42		
1207	14.74	336	0.38	6.23	59.2				
1210	14.48	333	0.35	6.22	58.4				
1213	14.41	331	0.33	6.21	57.6				
SAMPLE CO			D !!		D	DED G			
Sample Collec	eted With:		Bailer			DED Geotech blad			
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Procedo		Alconox Was	h 📋	Tap Rinse	DI Water	Dedicated			
(By Numerical	*	Other	-1		CLEAR CO,OR	L ECC NONC			
Sample Descri	ipuon (color, t	urbianty, oaor,	sneen, etc.):_		CLEAR CO.OR	LESS NONS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)				DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
Replicate					ORP	Turbidity			
-	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	pН	ORP (mV)	Turbidity			
1 2	(°F/°Ĉ)  14.40  14.40	(uS/cm) 331 330	(mg/L) 0.33 0.33	<b>pH</b> 6.21  6.21	ORP (mV) 57.4	Turbidity			
1 2 3	(°F/°Č)  14.40  14.40  14.39	(uS/cm) 331 330 330	0.33 0.33 0.32	<b>pH</b> 6.21 6.21 6.21	ORP (mV) 57.4 57.4 57.1	Turbidity			
1 2 3 4	(°F/°C)  14.40  14.40  14.39	331 330 330 330	0.33 0.33 0.32 0.31	6.21 6.21 6.21 6.21	ORP (mV) 57.4 57.4 57.1 56.9	Turbidity (NTU)			
1 2 3	(°F/°Č)  14.40  14.40  14.39	(uS/cm) 331 330 330	0.33 0.33 0.32	<b>pH</b> 6.21 6.21 6.21	ORP (mV) 57.4 57.4 57.1	Turbidity			
1 2 3 4 Average:	(°F/°Č)  14.40  14.39  14.39  14.40  TYPICAL A	(uS/cm)  331  330  330  330  330  NALYSIS AL	0.33 0.33 0.32 0.31 0.32 LOWED PE	6.21 6.21 6.21 6.21 6.21 6.21	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap	Turbidity (NTU)	(ft)	(Fe II)	
1 2 3 4 Average:	(°F/°Č)  14.40  14.39  14.39  14.40  TYPICAL A (8260C) (80	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (	0.33 0.33 0.32 0.31 0.32 LOWED PE	6.21 6.21 6.21 6.21 6.21 6.21 6.21 (R BOTTLE (NWTPH-G	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)	Turbidity (NTU)  #DIV/0!	(ft)	nalysis below)	Observations  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80  (8270) (PAH	331 330 330 330 330 330 330 NALYSIS AL 10) (8020) (	0.33 0.33 0.32 0.31 0.32 LOWED PE NWTPH-G) D) (NWTPH	6.21 6.21 6.21 6.21 6.21 6.21 6.21 6.21	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (	#DIV/0!  pplicable or write r	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations
1 2 3 4 Average:	(°F/°Č)  14.40  14.39  14.39  14.40  TYPICAL AT  (8260C) (80  (8270) (PAH  (pH) (Condu	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (  1) (NWTPH-I  ctivity) (TDS	0.33 0.32 0.31 0.32 0.32 LOWED PE NWTPH-G) 0) (NWTPH 0) (TSS) (B	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G (-Dx) (TPH-OD) (Turbic	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity)	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Great (HCO3/CO3) (Co.)	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations  OR
1 2 3 4 Average:	(°F/°Č)  14.40  14.39  14.39  14.40  TYPICAL A (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) ( 1) (NWTPH-ctivity) (TDS	0.33 0.32 0.31 0.32 LOWED PE NWTPH-G) 0) (NWTPH 1) (TSS) (B	6.21 6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G F-Dx) (TPH-OD) (Turbio dahl Nitroger	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (	#DIV/0!  #DIV/0!  pplicable or write in (8141) (Oil & Great (HCO3/CO3) (Co.)	(ft)	(Fe II)  malysis below)  WA  WA  WA	Observations  OR
1 2 3 4 Average:	(°F/°Č)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80  (8270) (PAH  (pH) (Condu  (COD) (TOO  (Total Cyanid	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) ( 1) (NWTPH-Ictivity) (TDS  C) (Total PO4  e) (WAD Cy.	0.33 0.32 0.32 0.31 0.32 LOWED PE NWTPH-G) 0) (NWTPH 1) (TSS) (B 2) (Total Kie anide) (Free	6.21 6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-T-Dx) (TPH-OD) (Turbid dahl Nitrogen Cyanide)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap (x) (BTEX))  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4)	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (CV)	non-standard and asse)	MA  WA  NO2) (F)	Observations  OR □  OR □
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid) (Total Metals)	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and asse) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid) (Total Metals)	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and asse) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR □  OR □
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid) (Total Metals)	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and asse) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid) (Total Metals)	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and asse) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOd (Total Cyanid (Total Metals) (Dissolved Me	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and ase) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid) (Total Metals)	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and ase) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid (Total Metals) (Dissolved Me	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and ase) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid (Total Metals) (Dissolved Me	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and ase) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR
1 2 3 4 Average:  QUANTITY 3  Duplicate Sam	(°F/°C)  14.40  14.39  14.39  14.40  TYPICAL A  (8260C) (80 (8270) (PAH (pH) (Condu (COD) (TOO (Total Cyanid (Total Metals) (Dissolved Me	(uS/cm)  331  330  330  330  330  NALYSIS AL  10) (8020) (1) (NWTPH-Ictivity) (TDS  C) (Total PO4 e) (WAD Cyc) () (As) (Sb) (I	(mg/L)  0.33  0.32  0.31  0.32  LOWED PE  NWTPH-G)  0) (NWTPH  1) (TSS) (B  1) (Total Kie  anide) (Free  Ba) (Be) (Ca	6.21 6.21 6.21 6.21 6.21 6.21 CR BOTTLE (NWTPH-G-Dx) (TPH-OD) (Turbic dahl Nitroger Cyanide) ) (Cd) (Co)	ORP (mV)  57.4  57.4  57.1  56.9  57.2  TYPE (Circle ap x) (BTEX)  HCID) (8081) (dity) (Alkalinity) (NH3) (NO3/4) (Cr) (Cu) (Fe) (	#DIV/0!  #DIV/0!  pplicable or write r  (8141) (Oil & Great (HCO3/CO3) (Creat (HCO3/CO3))	non-standard and ase) El) (SO4) (NO	(Fe II)    malysis below)   WA	Observations  OR  OR  OR  OR  OR  OR  OR  OR  OR  OR



Project Nam	e:	Boeing Rer	nton		Project Numbe	r:	0025217.099.0	99	
Event:			august 2017		Date/Time:	11/ 14 /2017 @ 8	356		
Sample Nun	ber:	RGW183S	-		Weather:	40'S, PARTLY SU	UNNY		
Landau Repr		JHA			•				
WATER LEV	EL/WELL/PI	IRGE DATA							
Well Condition		Secure (YES		Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	8.7	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:				End Purge:	_	11/ 14 /2017 @ 840	6	Gallons Purged:	
Purge water d			55-gal Drum	Ě	Storage Tank	Ground		SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablization +/- 3%		ters for three +/- 0.1 units		dings within the foll +/- 10%	owing limits < 0.3 ft	>/= 1 flow through cell	
838	11.9		1.00					O	
		147.0		6.38		LOW	6.73	<0.25	
841	11.9	146.4	1.05	6.40	63.2				
844	12.1	145.3	1.10	6.43	60.3				
SAMPLE CO	LLECTION I	OATA							
Sample Collec			Bailer		Pump/Pump Type	DED Geotech blade	ler pump		
Made of:		Stainless Ste	el	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	sh	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color, t	urbidity, odor	, sheen, etc.):	CLEAR, CO	LORLESS, NO/N	NS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Керпсис	(°F/°C)	(uS/cm)	(mg/L)	pm	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	12.1	145.0	1.08	6.44	59.9				
2	12.1	144.9	1.13	6,44	60,2				
3	12.1	144.7		6.44	59.7				
4	12.1	144.8	1.09	6.45	59.3				
Average:	12.1	144.9	1.10	6.44	59.8	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS A	LLOWED PE	ER BOTTLE	TYPE (Circle ap	oplicable or write no	on-standard ar	nalysis below)	
			WTPH-G) (						OR 🗆
2						(8141) (Oil & Greas			OR 🗆
						(HCO3/CO3) (CI	) (SO4) (NO	3) (NO2) (F)	
			vanide) (Free		n) (NH3) (NO3)	NO2)			
					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (Ni	i) (Ag) (Se) (	T1) (V) (Zn) (Hg	(K) (Na)
						b) (Mg) (Mn) (Ni) (A			
	VOC (Boein								
	Methane Eth	ane Ethene A	cetylene						
	d								
	others								
Duplicate San	nple No(s):								
Comments:	· •								
Signature:			JHA	<u></u>		Date:	11/14/2017		



		ъ . –			ъ				
Project Nam	e <u>:</u>	Boeing Ren			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	_		Date/Time:	11/ 14 /2017 @ 9			
Sample Num	-	RGW184S	171114		Weather:	40'S, PARTLY SU	UNNY		
Landau Repi	resentative:	JHA							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Conditio	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.28	Time:	910	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:	Date/Time:	11/14 /2017	@ 913	End Purge:	Date/Time:	11/ 14 /2017 @ 934	4	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	_					dings within the foll	~	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
916	13.1	183.1	4.35	6.53	71.9	LOW		<0.25	
919	13.7	171.6	1.63	6.60	58.1				
922	13.7	166.0	1.40	6.63	56.4		9.28	0.25	
925	13.7	163.6	1.32	6.64	55.7				
928	13.8	163.0	1.18	6.64	56.1		9.28	·	
931	13.8	163.3	1.12	6.64	56.3		7.20	·	
933	13.9	163.4	1.14	6.64	56.3				
0.1.1.0V.E.00									
Sample Collection			Bailer		Dumn/Dumn Tyne	DED Geotech blade	lar numn		
Made of:	Acca With.	Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced		Alconox Was	_	Tap Rinse		Dedicated	ш ошег	Dedicated	
(By Numerica		Other	11 U	rap Kilise	DI Water	Dedicated			
,	,		chaon ata ):	CLEAD CO	LORLESS, NO/N	IC			
Sample Deser	iption (color, t	urbianty, odor,	sheen, etc.)	CLL/III, CO	LOKELSS, IVO/I	15			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.9	163.4	1.17	6.64	56.4				
2	13.9				50.1				
3	13.7	163.6	1.16	6.63	56.5				
9			1.16 1.17						
	13.9	163.5	1.17	6.63	56.5 56.6				
4	13.9 13.9	163.5 163.7	1.17 1.14	6.63	56.5 56.6 56.7	#DIV/01			
4 Average:	13.9 13.9 13.9	163.5 163.7 163.6	1.17 1.14 1.16	6.63 6.63	56.5 56.6 56.7 56.6	#DIV/0!			
4 Average:	13.9 13.9 13.9 <b>TYPICAL A</b>	163.5 163.7 163.6 NALYSIS AI	1.17 1.14 1.16 LOWED PE	6.63 6.63 R BOTTLE	56.5 56.6 56.7 56.6 TYPE (Circle a)	#DIV/0!	on-standard ar		
4 Average: QUANTITY	13.9 13.9 13.9 <b>TYPICAL A</b> (8260) (8010	163.5 163.7 163.6 NALYSIS AI 0) (8020) (N	1.17 1.14 1.16 LOWED PE WTPH-G) (	6.63 6.63 6.63 R BOTTLE NWTPH-Gx)	56.5 56.6 56.7 56.6 TYPE (Circle ap (BTEX)	pplicable or write no		WA □	OR 🗆
4 Average:	13.9 13.9 13.9 <b>TYPICAL A</b> (8260) (8010 (8270) (PAF	163.5 163.7 163.6 NALYSIS AI 0) (8020) (N	1.17 1.14 1.16 LOWED PE WTPH-G) (	6.63 6.63 6.63 <b>R BOTTLE</b> NWTPH-Gx) -Dx) (TPH-	56.5 56.6 56.7 56.6  TYPE (Circle ap (BTEX) HCID) (8081)	oplicable or write no	se) JET A	WA □ WA □	OR □ OR □
4 Average: QUANTITY	13.9 13.9 13.9 <b>TYPICAL A</b> (8260) (8010 (8270) (PAF (pH) (Condu	163.5 163.7 163.6 NALYSIS AI (2) (8020) (N H) (NWTPH-Lactivity) (TDS	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B	6.63 6.63 6.63 6.R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic	56.5 56.6 56.7 56.6 TYPE (Circle ap (BTEX) HCID) (8081)	oplicable or write no (8141) (Oil & Greas (HCO3/CO3) (Cl	se) JET A	WA □ WA □	
4 Average: QUANTITY	13.9 13.9 13.9 TYPICAL A (8260) (8010 (8270) (PAH (pH) (Condu (COD) (TOO	163.5 163.7 163.6 NALYSIS AI (D) (8020) (N H) (NWTPH- activity) (TDS) (C) (Total PO4	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B	6.63 6.63 6.63 CR BOTTLE NWTPH-Gx) (-Dx) (TPH-OD) (Turbio dahl Nitrogen	56.5 56.6 56.7 56.6  TYPE (Circle ap (BTEX) HCID) (8081)	oplicable or write no (8141) (Oil & Greas (HCO3/CO3) (Cl	se) JET A	WA □ WA □	
4 Average: QUANTITY	13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOO (Total Cyanid	163.5 163.6 NALYSIS AI 0) (8020) (N H) (NWTPH-lactivity) (TDS C) (Total PO- le) (WAD Cy	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B 4) (Total Kie anide) (Free	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide)	56.5 56.6 56.7 56.6  TYPE (Circle ap (BTEX) HCID) (8081) dity) (Alkalinity) () (NH3) (NO3)	oplicable or write no (8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) <mark>JET A</mark> ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)	OR 🗆
4 Average: QUANTITY	13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOd (Total Cyanid	163.5 163.7 163.6 NALYSIS AI 0) (8020) (N H) (NWTPH- activity) (TDS C) (Total PO- le) (WAD Cy ) (As) (Sb) (1	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B 4) (Total Kie anide) (Free Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	oplicable or write no (8141) (Oil & Greas (HCO3/CO3) (Cl	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average: QUANTITY	13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOd (Total Cyanid	163.5 163.7 163.6 NALYSIS AI (2) (8020) (N (3) (8020) (N (4) (NWTPH- (4) (Total PO- (4) (WAD Cy (5) (As) (Sb) (1) (4) (Sb) (1)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B 4) (Total Kie anide) (Free Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average: QUANTITY	13.9 13.9 13.9 13.9 TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	163.5 163.7 163.6 NALYSIS AI (2) (8020) (N (3) (8020) (N (4) (NWTPH- (4) (Total PO- (4) (WAD Cy (5) (As) (Sb) (1) (4) (Sb) (1)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average: QUANTITY	13.9 13.9 13.9 13.9 TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	163.5 163.6 NALYSIS AI (1) (8020) (N (1) (NWTPH- (1) (TDS (2) (Total PO- (2) (WAD Cy (3) (As) (Sb) (1) (4) (4) (5) (5) (5) (5) (5) (6) (6) (8) (8) (8) (8) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average: QUANTITY	13.9 13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOd (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	163.5 163.6 NALYSIS AI (1) (8020) (N (1) (NWTPH- (1) (TDS (2) (Total PO- (2) (WAD Cy (3) (As) (Sb) (1) (4) (4) (5) (5) (5) (5) (5) (6) (6) (8) (8) (8) (8) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average: QUANTITY	13.9 13.9 13.9 13.9 TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOO (Total Cyanid (Total Metals (Dissolved M VOC (Boein	163.5 163.6 NALYSIS AI (1) (8020) (N (1) (NWTPH- (1) (TDS (2) (Total PO- (2) (WAD Cy (3) (As) (Sb) (1) (4) (4) (5) (5) (5) (5) (5) (6) (6) (8) (8) (8) (8) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average:  QUANTITY  2	13.9 13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOd (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	163.5 163.6 NALYSIS AI (1) (8020) (N (1) (NWTPH- (1) (TDS (2) (Total PO- (2) (WAD Cy (3) (As) (Sb) (1) (4) (4) (5) (5) (5) (5) (5) (6) (6) (8) (8) (8) (8) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average: QUANTITY	13.9 13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOd (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	163.5 163.6 NALYSIS AI (1) (8020) (N (1) (NWTPH- (1) (TDS (2) (Total PO- (2) (WAD Cy (3) (As) (Sb) (1) (4) (4) (5) (5) (5) (5) (5) (6) (6) (8) (8) (8) (8) (7) (8) (8) (8) (8) (8) (8) (8) (8) (8)	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)
4 Average:  QUANTITY  2  Duplicate San	13.9 13.9 13.9 13.9 13.9  TYPICAL A (8260) (8010 (8270) (PAF (pH) (Condu (COD) (TOd (Total Cyanid (Total Metals (Dissolved M VOC (Boein Methane Eth	163.5 163.6 NALYSIS AI (1) (8020) (N H) (NWTPH- activity) (TDS (C) (Total PO- de) (WAD Cy (MA) (Sb) (Setals) (As) (Sb g short list) nane Ethene Ac	1.17 1.14 1.16 LOWED PE WTPH-G) ( D) (NWTPH S) (TSS) (B d) (Total Kie anide) (Free Ba) (Be) (Ca d) (Ba) (Be) (Ca	6.63 6.63 R BOTTLE NWTPH-Gx) -Dx) (TPH-OD) (Turbic dahl Nitrogen Cyanide) ) (Cd) (Co)	56.5 56.6 56.7 56.6  TYPE (Circle ap	(8141) (Oil & Greas (HCO3/CO3) (Cl (NO2)	se) JET A ) (SO4) (NO	WA □ WA □ 3) (NO2) (F)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	OR   (K) (Na)



Project Nam	e:	Boeing Rent	on		Project Numbe	r <u>:</u>	0025217.099.09	99	
Event:		Quarterly Au	igust 2017		Date/Time:	11/ 14 /2017 @		1137	
Sample Nun	nber:	RGW211S	171114		Weather:	OC			
Landau Repr	resentative:	DSB							
WATER LEV	/EL/WELL/PU	IRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		9.91	Time:	_	Flow through cel			GW Meter No.(s	2
		11/ 14 /2017	1114	End Purge:	=	11/14 /2017 @	1133	Gallons Purged:	0.25
Purge water d			55-gal Drum	Š	Storage Tank	Ground		REATMENT CE	
i dige water d					_		<del></del>		
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Tille				ters for three		dings within the fol		>/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
1117	15.87	288	1.13	6.77	49.5		9.93		
1120	15.33	284	0.73	6.55	50.9		9.93		
			,						
1123	14.11	279	0.45	6.33	52.7		9.93		
1126	13.67	276	0.39	6.27	52.7				
1129	13.52	275	0.37	6.26	52.6				
1132	13.39	274	0.36	6.24	52.4				
SAMPLE CO	LLECTION D	<u> </u>							
Sample Collection			Bailer		Pump/Pump Type	DED Geotech blad	der numn		
Made of:		Stainless Stee	_	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced		Alconox Was		Tap Rinse	DI Water	Dedicated		- Dedicated	
(By Numerica		Other	" "	rap Kilise	□ Di watei	Dedicated			
, ,		urbidity, odor,	sheen etc.):		CLEAR COLOR	DI ESS NONS			
Sample Descr	iption (color, t	arolaity, odor,	sileen, etc.).		CLE/ IN COLOR	CLESS NONS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.35	274	0.36	6.23	52.3				
2	13.32	274	0.35	6.23	52.2				
3	13.30	274	0.35	6.23	52.2				
4	13.28	274	0.35	6.23	52.1				
Average:	13.31	274	0.35	6.23	52.2	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle ap	pplicable or write n	on-standard ar	alysis below)	
	(8260) (8010	)) (8020) (N	WTPH-G) (	NWTPH-Gx)	(BTEX)			WA □	OR 🗆
2	(8270) (PAH	I) (NWTPH-I	O) (NWTPH	I-Dx) (TPH-	HCID) (8081)	(8141) (Oil & Grea	ise) JET A	WA □	OR 🗆
	(pH) (Condu	ctivity) (TDS	) (TSS) (B	OD) (Turbio	lity) (Alkalinity)	(HCO3/CO3) (C	1) (SO4) (NO	3) (NO2) (F)	
					i) (NH3) (NO3)	NO2)			
	•	e) (WAD Cya							
						(Pb) (Mg) (Mn) (N			
			(Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (Pl	o) (Mg) (Mn) (Ni) (A	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	(a) (Hardness) (Silica
	VOC (Boein		. 4 . 1						
	ivietnane Eth	ane Ethene Ac	etylene						
	I								
	others								
	others								
Duplicate San	•								
Duplicate San	•								
-	•	DSB				Date:	11/14/2017		



Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.09	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/14 /2017 @		837	
Sample Nun	nber:	RGW212S	•		Weather:	OC			
Landau Rep	resentative:	DSB			•				
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	n:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:	(managed)		
DTW Before	Purging (ft)	10.19	Time:	813	Flow through ce	ll vol.		GW Meter No.(s	3
Begin Purge:	Date/Time:	11/14 /2017	815	End Purge:	Date/Time:	11/14 /2017 @	836	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other I	REATMENT CE	INTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	4 6 41	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	+/- 3%	ls: Stablizatio +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the fo +/- 10%	< 0.3 ft	>/= 1 flow through cell	
818	13.71	304	1.09	5.51	125.9		10.39		
821	12.52	309	0.66	5.38	130.1		10.39		
824	11.24	299	0.56	5.26	134.9		10.38		
827	10.50	287	0.45	5.18	137.6				
830		282	0.35	5.24	133.3				
833		281	0.34	5.25	132.7				
633	10.47	201	0.54		132.7				
SAMPLE CO	LI FCTION F	<u></u>							
Sample Collect			Bailer		Pump/Pump Type	DED Geotech blace	dder pump		
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🗖	Tap Rinse	DI Water	Dedicated	<del>_</del>	<del>7x</del>	
(By Numerica	l Order)	Other				<del>'</del> X			
Sample Descr	iption (color, t	urbidity, odor.	sheen, etc.):		CLEAR YELLO	OW NONS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(°F/°C)	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	10.48	281	0.34	5.26	132.4				
2	10.49	281	0.33	5.26	132.2				
3	10.51	281	0.34	5.26	132.0				
4	10.52	281	0.34	5.27	131.7				
Average:	10.50	281	0.34	5.26	132.1	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	R BOTTLE	TYPE (Circle a)	oplicable or write i	non-standard ar	alysis below)	
	(8260) (8010	0) (8020) (N	WTPH-G) (	NWTPH-Gx)	(BTEX)			WA □	OR 🗆
2	(8270) (PAH	I) (NWTPH-	D) (NWTPH	I-Dx) (TPH-	HCID) (8081)	(8141) (Oil & Gre	ase) JET A	WA □	OR 🗆
						(HCO3/CO3) (C	Cl) (SO4) (NO	3) (NO2) (F)	
					i) (NH3) (NO3)	/NO2)			
		e) (WAD Cy ) (As) (Sb) (			(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (I	Vi) (Ag) (Se) (	ΓΙ) (V) ( <b>7</b> n) (Ho	(K) (Na)
									Va) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene						
	others								
	others								
Duplicate San Comments:	nple No(s):								
Signature:		DSB				Date:	11/14/2017		



Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/14 /2017 @	940		
Sample Num	ber:	RGW221S	-		Weather:	40s/50s PC			
Landau Repr	resentative:	SRB			•				
WATER LEV	'EL/WELL/PI	URGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.95	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
Begin Purge:			915		_	11/ 14 /2017 @	937	Gallons Purged:	
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa	ds: Stablizatio +/- 3%		ters for three +/- 0.1 units		dings within the fo +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
918	12.7	197.0	0.75	6.10	60.4	7, 10%	9.95	viii vugii vvii	
921	12.7	200.0	0.68	6.11	55.0		9.95		
924	12.5	211.7	0.52	6.15	31.2		9.95		
927	12.4		0.87	6.16	22.8		7.73		
	12.4				6.8				
930			2.41	6.18					
933	12.4	216.0	3.26	6.18	14.0				
936	12.4	216.1	3.57	6.18	12.7				
CAMPLE CO	LICTION							·	
Sample Collection			Bailer		Pump/Pump Type	DED Geotech blac	lder pump		
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🗖	Tap Rinse	DI Water	Dedicated	_	_	
(By Numerica	l Order)	Other		•		_			
Sample Descr	iption (color,	turbidity, odor	, sheen, etc.):	CLEAR CO	LORLESS SLIGI	HT ODOR SLIGHT	SHEEN		
	<b>T</b>	- C 1	D.O.		ODD	m 1.11.	DENT	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	(Fe II)	Observations
1	12.4	216.0	3.64	6.18	12.3				
2	12.4	216.0	3.71	6.80	11.6				
3	12.4	216.2	3.74	6.18	11.1				
4	12.4	216.0	3.78	6.18	10.7				
Average:	12.4	216.1	3.72	6.34	11.4	#DIV/0!			
				D DATTI E			on standard or	- alvaia balaw)	
QUANTITY		0) (8020) (N				oplicable or write r	ion-standard ai	WA	OR 🗆
2						(8141) (Oil & Grea	ase) JET A	WA 🗆	OR 🗆
	(pH) (Condu	ctivity) (TDS	S) (TSS) (B	OD) (Turbi	dity) (Alkalinity)	(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
					n) (NH3) (NO3)	/NO2)			
		le) (WAD Cy			(C) (C) (F)	(DI) (M) (M) (M)	T') (A ) (C ) (	T1) (1) (7) (1)	) (II) (NI.)
						(Pb) (Mg) (Mn) (Ni) (h) (Mg) (Mn) (Ni) (			g) (K) (Na) Na) (Hardness) (Silica
	VOC (Boein		)) (Ba) (Bc) (C	<i>(cu)</i> ( <i>co)</i>	(CI) (Cu) (I c) (I	b) (wig) (wiii) (ivi) (.	(1g) (SC) (11) (V	) (Zii) (Tig) (K) (T	va) (Hardiess) (Silica
		ane Ethene A	cetylene						
	.1								
	others								
Duplicate San	nple No(s):								
Comments:	•								
Signature:	SRB					Date:	11/14/2017		



Project Nam	e:	Boeing Ren	ton		Project Numbe	r <u>:</u>	0025217.099.0	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/ 14 /2017 @		757	
Sample Nun	nber:	RGW224S	171114		Weather:	oc			
Landau Repr	resentative:	DSB							
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	10.5	Time:	734	Flow through ce	ll vol.		GW Meter No.(s	3
Begin Purge:	Date/Time:	11/ 14 /2017	734	End Purge:	Date/Time:	11/ 14/2017 @	754	Gallons Purged:	0.25
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	REATMENT CE	NTER
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	+/- 3%	ls: Stablizatio +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the fo +/- 10%	llowing limits	>/= 1 flow through cell	
737	14.73	172	1.53	6.48	84.7	.,,	10.58		
740	14.26	183	1.67	6.28	73.3		10.55		
743	13.90	191	1.37	5.95	83.6		10.55		
746		198	1.15	5.73	94.7	-			
749	11.87	301	1.03	4.87	131.7				
752	10.55	328	0.88	4.52	146.3				
	LLECTION D								
Sample Collec	cted With:		Bailer	_		DED Geotech blad		_	
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	ıl Order)	Other							
Sample Descr	ription (color, t	urbidity, odor,	sheen, etc.):		CLEAR COLOR	RLESS NONS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
терпеше	(°F/°C)	(uS/cm)	(mg/L)	PII	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	10.38	328	0.87	4.49	147.2				
2	10.30	328	0.86	4.47	147.9				
3	10.20	329	0.86	4.45	148.6				
4	10.09	329	0.85	4.43	149.5				
						#DIV/01			
Average:	10.24	329	0.86	4.46	148.3	#DIV/0!			
QUANTITY						oplicable or write n	on-standard ar		
		0) (8020) (N				(01.41) (0"1.0.G	) TERM	WA 🗆	OR 🗆
2						(8141) (Oil & Grea (HCO3/CO3) (C			OR 🗆
	4 /				n) (NH3) (NO3)		(304) (NO	3) (NO2) (F)	
		e) (WAD Cy	· ·		1) (11113) (1103)	1102)			
	•	•			(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Vi) (Ag) (Se) (	Γl) (V) (Zn) (Hg	) (K) (Na)
	(Dissolved Me	etals) (As) (Sb	) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	(Silica) (I) (I) (I) (I) (I) (I) (I) (I) (I) (I
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene						
	others								
	others								
Duplicate San	nple No(s):	Duplicate Lo	cation (RGW	DUP3)					
Comments:									
Signature		DSB				Date:	11/14/2017		



Project Nam	e <u>:</u>	Boeing Ren	iton		Project Number	r <u>:</u>	0025217.099.0	99	
Event:		Quarterly A	ugust 2017		Date/Time:	11/ 14 /2017 @ 8	336		
Sample Nun	ıber:	RGW225I	171114		Weather:	40'S, PARTLY SI	UNNY		
Landau Repr	resentative:	JHA			-				
WATERIEV	EL/WELL/PU	IRCE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	FS or NO)	Describe:			
DTW Before		•	Time:	_		-		CW Mater No. (c	HEDON 1
Begin Purge:		9.11			Flow through cel	11/ 14 /2017 @ 82	Q	GW Meter No.(s	
		11/ 14 /201/		End Purge:		Ground		Gallons Purged:	
Purge water d	isposed to:		55-gal Drum	ب	Storage Tank	□ Ground	Other	SITE TREATM	ENISISIEM
<b>773</b> *	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C) Purge Goa	(uS/cm) ls: Stablizatio	(mg/L) on of Paramet	ters for three	(mV) consecutive read	(NTU) dings within the foll	(ft) lowing limits	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
818	9.9	123.0	4.23	6.60	57.2	LOW		< 0.25	
821	9.6	121.9	3.44	6.57	60.2		0.11		
							9.11	<0.25	
824	9.4	123.3	3.40	6.52	64.5				
827	9.3	126.6	3.24	6.44	66.2				
-									
CAMPLE CO	LLECTIONE	ATLA							
Sample Collection		AIA 🖳	Bailer		Pumn/Pumn Tyne	DED Geotech blade	ler numn		
Made of:	ieu wiii.	Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
			_		—		U Other	Dedicated	
Decon Proced		Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	,	Other	1 ( )	CL OUDY 6	OLOBIEGG NO	AIG			
Sample Descr	iption (color, t	urbiaity, odor	, sneen, etc.):_	CLOUDY, C	COLORLESS, NO	//NS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
•	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	•	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	9.3	126.9	3.23	6.44	66.2				
2	9.3	127.0	3.22	6.44	66.1		_		
3	9.3								
		127.0	3.22	6.43	66.1				
4	9.3	127.2	3.22	6.42	66.0				
Average:	9.3	127.0	3.22	6.43	66.1	#DIV/0!	9.13		
QUANTITY	TYPICAL A	NALYSIS AI	LLOWED PE	R BOTTLE	TYPE (Circle ap	plicable or write no	on-standard ar	nalysis below)	
			WTPH-G) (			•		WA □	OR 🗆
2						(8141) (Oil & Greas	se) JET A	WA □	OR □
	(pH) (Condu	ctivity) (TD:	S) (TSS) (B	OD) (Turbio	lity) (Alkalinity)	(HCO3/CO3) (Cl	) (SO4) (NO	3) (NO2) (F)	
	(COD) (TOO	C) (Total PO	4) (Total Kie	dahl Nitrogen	) (NH3) (NO3/	NO2)			
	(Total Cyanid	e) (WAD Cy	vanide) (Free	Cyanide)					
	(Total Metals)	(As) (Sb) (	Ba) (Be) (Ca	) (Cd) (Co)	(Cr) (Cu) (Fe) (	Pb) (Mg) (Mn) (N	i) (Ag) (Se) (	Γl) (V) (Zn) (Hg	(s) (K) (Na)
			o) (Ba) (Be) (C	(Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (Pt	o) (Mg) (Mn) (Ni) (A	(Se) (Tl) (V	) (Zn) (Hg) (K) (N	(Va) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene A	cetylene						
	oth or-								
	others								
Duplicate San									
-	nple No(s):	D A LITTLE	HIGH COMP.	ARED TO SU	JRROUNDING V	VELLS.			
-	nple No(s):	D A LITTLE	HIGH COMP. JHA	ARED TO SU	JRROUNDING V	VELLS.  Date:	11/14/2017		



Project Nam	e:	Boeing Ren	ton		Project Number	er:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/14 /2017 @	750		
Sample Num	ber:	RGW255S	-		Weather:	40s/50s PC			
Landau Repr	resentative:	SRB							
WATER LEV	/EL/WELL/PI	IRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.95	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 3
Begin Purge:				End Purge:	_	11/ 14 /2017 @	747	Gallons Purged:	
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablization +/- 3%		ters for three +/- 0.1 units		dings within the fo +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
728				5.79	58.0	17-1070	10	tiir ougii ceii	
728	14.2	191.5	0.31						
731	13.2	177.9	1.52	5.89	45.5				
734	12.7	172.2	2.77	5.93	43.4		10		
737	12.2	163.4	3.93	5.97	69.4				
740	12.1	160.2	3.95	6.02	66.4				
743	11.9	157.3	3.95	6.07	41.5				
SAMPLE CO	LLECTION I	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blac	lder pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color,	turbidity, odor	, sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
1	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	•	$(\mathbf{mV})$	(NTU)	(ft)	(Fe II)	Observations
1	11.9	157.0	3.91	6.12	31.0				
2	11.9	157.0	3.90	6.12	31.1				
3	11.9	156.0	3.90	6.14	30.4				
4	11.9	156.0	3.90	6.14	30.3				
Average:	11.9	156.5	3.90	6.13	30.7	#DIV/0!			
								-	
QUANTITY						oplicable or write r	on-standard ar	_	
2		0) (8020) (N				(9141) (O:1 % Cmax	and IET A	WA □	OR  OR
2						(8141) (Oil & Great (HCO3/CO3) (O			OR 🗆
					n) (NH3) (NO3)		1) (504) (110	3) (1102) (1)	
		le) (WAD Cy				,			
	(Total Metals	(As) (Sb) (	Ba) (Be) (Ca	a) (Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Γl) (V) (Zn) (Hg	g) (K) (Na)
			) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	(Zn) (Hg) (K) (N	Va) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene A	cetylene						
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:	SRB					Date:	11/14/2017		



Project Nam	ie:	Boeing Ren	ton		Project Number	er:	0025217.099.0	99	
Event:	···	Quarterly A			Date/Time:	11/14 /2017 @	820	,,	
Sample Nun	nher:	RGW256S	_		Weather:	40s/50s PC	020		
Landau Rep		SRB	1/1114		weather.	+03/303 I C			
WATER LEV	/EL/WELL/PU	Secure (YES	or NO)	Damaged (Y	FS or NO)	Describe:			
		8.82	Time:	_				GW Motor No (s	HEDON 2
DTW Before	Date/Time:			End Purge:	Flow through ce	11/ 14 /2017 @	916	GW Meter No.(s	
Purge water d		11/14 /2017	55-gal Drum		Storage Tank	Ground		SITE TREATM	
i dige water d	•		_		_	<u> </u>	<del></del>		
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Time		/		ters for three		dings within the fo		>/= 1 flow	Observations
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
755	12.5	137.0	0.83	6.09	54.8		8.82		
758	12.3	141.0	2.20	6.10	49.5		8.82		
801	12.2	144.0	3.60	6.12	44.6		8.82		
804		147.0	4.00	6.16	40.4				
807	11.9	147.0	4.00	6.16	40.2				-
810	11.9	147.0	4.01	6.17	40.1				
	· <del></del>						-		
	· <del></del>								
	LLECTION I		Bailer		Dames / Dames Trees	DED Castach bloc	d d on my man		
Sample Collection Made of:	ctea with:	Stainless Stee		PVC	Teflon	DED Geotech blace Polyethylene	Other	Dedicated	
	. =		_				<u></u>	Dedicated	
Decon Proced		Alconox Was	sn 📋	Tap Rinse	DI Water	Dedicated			
(By Numerica			choon ato.).	CLEAD CO	LORLESS ROTT	TEN ODOD NG			
Sample Desci	iption (color, i	urbianty, odor,	sheen, etc.).	CLEAR CO.	LOKLESS KOTT	EN ODOK NS			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	11.9	147.0	4.02	6.17	40.6	( /	( )	,	
2						·			
2	11.9	147.1	4.03	6.16	40.4				
3	11.9	147.2	4.02	6.17					
4	11.9	147.2	4.02	6.17	40.2		-		
Average:	11.9	147.1	4.02	6.17	40.4	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TYPE (Circle a)	oplicable or write 1	non-standard aı	nalysis below)	
		) (8020) (N						WA □	OR 🗆
2						(8141) (Oil & Gre		WA 🗆	OR 🗆
						(HCO3/CO3) (C	Cl) (SO4) (NO	3) (NO2) (F)	
		· ·	<del></del>		n) (NH3) (NO3)	/NO2)			
		e) (WAD Cy ) (As) (Sb) (			(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (I	Vi) (Ag) (Se) (	Tl) (V) (7n) (Uc	t) (K) (Na)
									Na) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene		-				
	others								
Duplicate Sar	nple No(s):								
Comments:									
Signature:	SRR					Date	11/14/2017		



Project Nam	e:	Boeing Ren	iton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/14 /2017 @	850		
Sample Nun	nber:	RGW257S	•		Weather:	40s/50s PC			
Landau Rep	resentative:	SRB			•				
WATER LEV	EL/WELL/PI	IRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		9.35	Time:	_	Flow through ce			GW Meter No.(s	HERON 3
Begin Purge:				End Purge:	_	11/ 14 /2017 @	847	Gallons Purged:	
Purge water d			55-gal Drum	i i	Storage Tank	Ground		SITE TREATM	
C	Temp	Cond.	D.O.	pH	ORP	— Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	рп	(mV)	(NTU)	(ft)	Volume (gal)	Observations
						dings within the fo		>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
828	12.4	144.5	4.40	6.36	88.9		9.35		
831	12.2	144.6	4.04	6.41	93.3		9.35		
834	12.2	144.8	4.14	6.41	94.4		9.35		
					-	-		-	-
SAMDLE CO	LLECTION I	)ATA							
Sample Colle			Bailer		Pump/Pump Type	DED Geotech blad	lder pump		
Made of:		Stainless Ste		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	_	Tap Rinse	DI Water	Dedicated	—	_	
(By Numerica	_	Other			<u> </u>				
Sample Descr	iption (color,	turbidity, odor	, sheen, etc.):	CLEAR CO	LORLESS ROTT	EN ODOR NS			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	· · · ·		, 0	6.40		(1110)	(11)	(FC II)	Observations
1	12.3	144.9	3.93	6.42	94.9				
2	12.3	145.1	3.81	6.42	95.6	-			
3	12.3	145.2	3.90	6.43	95.9				
4	12.3	145.4	3.76	6.44	96.0				
Average:	12.3	145.2	3.85	6.43	95.6	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LLOWED PE	ER BOTTLE	TYPE (Circle a	oplicable or write n	on-standard at	nalysis helow)	
QUALITIT		0) (8020) (N				pricupic of write i	ion sumum a ai	WA □	OR 🗆
2						(8141) (Oil & Grea	ase) JET A	WA □	OR □
	(pH) (Condu	ctivity) (TD	S) (TSS) (B	OD) (Turbio	dity) (Alkalinity)	(HCO3/CO3) (C	(I) (SO4) (NO	3) (NO2) (F)	
	(COD) (TO	C) (Total PO	4) (Total Kie	dahl Nitroger	n) (NH3) (NO3)	/NO2)			
		le) (WAD Cy							
						(Pb) (Mg) (Mn) (N			
	VOC (Boein		o) (Ba) (Be) (C	(Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (N1) (.	Ag) (Se) (11) (V	) (Zn) (Hg) (K) (N	Na) (Hardness) (Silica
		ane Ethene A	cetylene						
			0, 10110						
	others								
D 1: . C	1 37 ( )								
Duplicate Sar	npie No(s):								
Comments:	CDD					<b></b>	11/14/2017		
Signature:	SRB					Date:	11/14/2017		



Project Nam		Boeing Ren	ton		Project Numbe		0025217.099.0	00	
•	. <u>.                                   </u>	Quarterly A			Date/Time:	11/ 14 /2017 @		99	
Event: Sample Nun	her:	RGW258S	-		Weather:	40'S, PARTLY S			
Landau Rep		JHA	1/1114		w caulci.	403,1AK1L1 S	OUNINI		
	/EL/WELL/PI								
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before		7.73	Time:	_	Flow through ce			GW Meter No.(s	HERON 1
	Date/Time:			End Purge:	_	11/ 14 /2017 @ 7:	59	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	pii	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	_					dings within the fo	_	>/= 1 flow	
= 11	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
741	12.7	261.4	1.05	6.99		LOW		<0.25	
744	12.8	270.3	0.74	6.74	26.0		7.73	0.25	
747	13.1	271.0	0.58	6.60	29.0				
750	13.1	268.1	0.52	6.53	31.2		7.73	0.5	
753	13.1	265.9	0.43	6.48	32.2				
756	13.0	264.5	0.49	6.46	32.9				
758		263.3	0.45	6.44	32.3				
750	13.0	203.3	0.13	0.11	32.3				
SAMPLE CO	LLECTION D	DATA							<u> </u>
Sample Colle			Bailer		Pump/Pump Type	DED Geotech blac	lder pump		
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	ıl Order)	Other			<b>—</b>				
Sample Descr	ription (color, t	turbidity, odor,	sheen, etc.):	CLEAR, CO	LORLESS, NO/N	NS			
Daulianta	Town	Cond.	D.O.		ORP	Toubidite	DTW	Ferrous iron	Comments/
Replicate	Temp (°F/°C)	(uS/cm)	(mg/L)	pН	(mV)	Turbidity (NTU)	(ft)	(Fe II)	Observations
1	13.0	262.8	0.42	6.43	32.8				
2	13.0	262.4	0.49	6.43	32.3				
_									
3	13.0	262.6	0.56	6.43	32.7				
4	13.0	262.4	0.58	6.43	33.2				
Average:	13.0	262.6	0.51	6.43	32.8	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	ER BOTTLE	TYPE (Circle ap	oplicable or write n	on-standard aı	nalysis below)	
		0) (8020) (N							OR 🗆
2						(8141) (Oil & Grea			OR 🗆
	1					(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
		le) (WAD Cy			n) (NH3) (NO3)	/NO2)			
					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	T1) (V) (Zn) (Hø	r) (K) (Na)
						b) (Mg) (Mn) (Ni) (A			
	VOC (Boein			/					
	Methane Eth	ane Ethene Ac	cetylene						
	.1								
	others								
Duplicate Sar	nple No(s):	MSMSD Loc	cation						
Comments:									
Signature			ТΗΔ			Data	11/14/2017		



Project Nam	e:	Boeing Ren	iton		Project Number	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @	1055		
Sample Num	ber:	RGW081S	-		Weather:	50S PC			
Landau Repi	resentative:	SRB							
WATER LEV	/EL/WELL/PI	IRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	8.71	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON3
Begin Purge:				End Purge:	_	11/13 /2017 @	1052	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		Site Treatment S	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablization +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the fo $\pm$ /- $\pm$ 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
1029		174.6	1.29	6.40	6.8	T/- 10 /0	8.71	tin ough cen	
	14.6								
1032	14.3	176.6	1.23	6.40	1.2				
1035	14.0	179.6	1.21	6.41	-5.1		8.71		
SAMPLE CO	LLECTION I	OATA			T				
Sample Collec			Bailer		Pump/Pump Type	DED Geotech blac	lder pump		
Made of:		Stainless Ste	el	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	sh	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color,	turbidity, odor	, sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Керпсас	(°F/°C)	(uS/cm)	(mg/L)	pii	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.6	179.9	1.20	6.42	-7.2				
2	13.4	179.8	1.18	6.43	-8.6				
3	13.3	179.9		6.43	-11.5				
4	13.0	179.5	1.14	6.44	-13.3				
Average:	13.3	179.8	1.17	6.43	-10.2	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LLOWED PE	ER BOTTLE	TYPE (Circle a)	oplicable or write r	ıon-standard aı	nalysis below)	
3		(8010) (80						WA 🗆	OR 🗆
		AH) (NWTPI				(8141) (Oil & Gr		WA 🗆	OR 🗆
1	```				dity) (Alkalinity itrogen) (NH3)	(NO3/NO2)	.1) (SO4) (NO	5) (NO2) (F)	
1		le) (WAD Cy			inogen) (NH3)	(1103/1102)			
1					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	(K) (Na)
									Va) (Hardness) (Silica
	VOC (Boein	g short list)							
	Methane Eth	ane Ethene A	cetylene						
	d								
	others								
Duplicate San	nple No(s):								
Comments:	· ,								
Signature:	SRB					Date:	11/13/2017		



Project Nam	ıe:	Boeing Ren	iton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @ 9	941		
Sample Nun	nber:	RGW152S	_		Weather:	40'S, CLOUDY			
Landau Rep	resentative:	JHA			•				
WATER LEV	/EL/WELL/PI	JRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.07	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
	Date/Time:			End Purge:	=	11/ 13 /2017 @ 938	8	Gallons Purged:	
Purge water d	lisposed to:		55-gal Drum	i i	Storage Tank	Ground		SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablizatio +/- 3%		ters for three +/- 0.1 units		dings within the foll +/- 10%	owing limits < 0.3 ft	>/= 1 flow through cell	
920			1.01				<b>₹0.51</b> t	O	
		91.7		6.30		LOW		<0.25	
923		86.3	0.93	6.27	45.3			<0.25	
926	13.0	85.6	0.99	6.26	45.7	MED	9.07	0.25	
929	13.0	83.8	0.88	6.24	47.3			<0.50	
932	12.8	79.4	0.81	6.20	51.3			< 0.50	
935	12.8	78.4	0.83	6.19	52.6				
937	12.9	77.9	0.71	6.17	54.8				
SAMPLE CO	LLECTION I	DATA							
Sample Colle	cted With:		Bailer		Pump/Pump Type	DED Geotech blade	ler pump		
Made of:		Stainless Ste	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	,	Other							
Sample Descr	ription (color,	turbidity, odor	, sheen, etc.):	CLOUDY, C	COLORLESS, NO	D/NS			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	12.9	77.7	0.73	6.17	54.7	, ,	,	, ,	
2	12.9	77.5	0.64	6.17	55.1				
3	12.9	77.3	0.62	6.16	55.4				
4	12.8	77.0	0.65	6.16	55.7				
				6.17		#DIV/01			
Average:	12.9	77.4	0.66		55.2	#DIV/0!			
						oplicable or write no	on-standard aı		
3		) (8010) (80				,	>		OR 🗆
		AH) (NWTPI				(8141) (Oil & Gre (HCO3/CO3) (Cl			OR 🗆
1					(itrogen) (NH3)		) (304) (110	(1) (NO2) (1)	
		le) (WAD Cy			(-1)	(			
1	(Total Metals	) (As) (Sb) (	Ba) (Be) (Ca	ı) (Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (Ni	i) (Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
			) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (A	g) (Se) (Tl) (V	(Zn) (Hg) (K) (N	(a) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene A	cetylene						
	others								
	- 31010								
Duplicate Sar	nple No(s):	Duplicate loc	cation (RGWI	OUP1)					
Comments:									
Signature:				JHA		Date:	11/13/2017		



Project Nam	ie.	Boeing Ren	ton		Project Number	er.	0025217.099.0	99	
Event:	···	Quarterly A			Date/Time:	11/13 /2017 @	1020		
Sample Nun	her:	RGW153S	-		Weather:	50S RAINY	1020		
Landau Rep	-	SRB	1,1115		,, camer.	305 10 111 (1			
WATER LEV	/EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.55	Time:	951	Flow through ce	ll vol.		GW Meter No.(s	HERON3
Begin Purge:	Date/Time:	11/13 /2017	955	End Purge:	Date/Time:	11/13 /2017 @	1017	Gallons Purged:	0.5
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	Site Treatment S	ystem
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm) ls: Stablizatio	(mg/L)	ters for three	(mV)	(NTU) dings within the fo	(ft)	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
958	14.4	109.0	4.62	6.28	34.3		9.5		
1001	13.1	131.1	3.35	6.30	15.2		9.5		
1004	12.5	128.2	2.37	6.34	12.9		9.5		
1007	12.4	125.1	2.10	6.34	15.6				
1010	12.2	121.6	1.95	6.33	20.0				
1013	12.2	120.8	1.84	6.33	21.0				
1016	12.2	120.2	1.81	6.34	21.8				
	LLECTION E		D. '1		D /D T	DED C + 1.11	1.1		
Sample Collec	cted with:		Bailer			DED Geotech blad			
Made of:	띹	Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced		Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	ıl Order)	Other							
Sample Descr	ription (color, t	urbidity, odor,	sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	12.1	119.8	( <b>mg/L</b> )	6.33	22.1	(1410)	(11)	(FC II)	Observations
2	12.1	119.6	1.76	6.33	22.6				
3	12.1	110.3	1.72	6.33					
4	12.1	119.0	1.71	6.34	23.8				
Average:	12.1	117.2	1.74	6.33	22.9	#DIV/0!			
QUANTITY	TVDICALA	NAT VCIC AT	I OWED DE	D DATTI E	TVDE (Circle or	anlicable on write r	on standard or	anlysis bolow)	
3		(8010) (80				oplicable or write r	ion-standard ai	_	OR 🗆
	` '	, , ,	_ · ·			(8141) (Oil & Gr	rease)		OR 🗆
						(HCO3/CO3) (C			
1					(itrogen) (NH3)				
	(Total Cyanid	e) (WAD Cy	anide) (Free	Cyanide)					
1	(Total Metals)	(As) (Sb) (I	Ba) (Be) (Ca	(Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	(K) (Na)
	(Dissolved M	etals) (As) (Sb	) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	(Zn) (Hg) (K) (N	Ia) (Hardness) (Silic
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene						
	others								
Duplicate San	nple No(s):								
Comments:	• • • • • •								
Signature:	SRR					Data	11/13/2017		



Project Nam	e:	Boeing Ren	ton		Project Numbe	r:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/13 /2017 @	920		
Sample Nun	her:	RGW172S	_		Weather:	50S RAINY	720		
Landau Rep		SRB	1,1115		vi cutifor.	Job Iu III (1			
WATER LEV	/EL/WELL/PI	JRGE DATA							
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.7	Time:	850	Flow through ce	ll vol.		GW Meter No.(s	HERON3
		11/13 /2017	851	End Purge:	_	11/ 13 /2017 @	916	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		Site Treatment S	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablization +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the fol +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
954							< 0.5 It	tiii ougii cen	
854	13.5	202.1	2.63	6.56	-43.7	9.75			
857	13.4	202.2	2.68	6.56	-41.5				
900	12.2	199.0	2.43	6.50	-29.6	9.75			
						1			
SAMPLE CO	LLECTION I	)ATA							
Sample Collection			Bailer		Pump/Pump Type	DED Geotech blad	der pump		
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	_	Tap Rinse	DI Water	Dedicated	—		
(By Numerica		Other	"· <u> </u>	rap remse		Dedicated			
		_	sheen etc.):	CLEAR CO	LORLESS NO/N	<u> </u>			
	-F (,	,, ,				_			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	12.1	198.7	2.31	6.49	-29.1				
2	11.8	198.6	2.30	6.49	-29.2				
3	11.8	198.9	2.04	6.48	-29.1				
4	11.6	199.0	1.95	6.48	-29.6				
Average:	11.8	198.8	2.15	6.49	-29.3	#DIV/0!			
	·								
QUANTITY						oplicable or write n	on-standard ai	_	OD [
3		) (8010) (80 AH) (NWTPI				(8141) (Oil & Gr	eace)	WA □ WA □	OR $\square$
						(8141) (Oli & Gl			UK —
1					itrogen) (NH3)		, (===.) (110	-, (02) (1)	
		le) (WAD Cy							
1	(Total Metals	) (As) (Sb) (	Ba) (Be) (Ca	ı) (Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Vi) (Ag) (Se) (	Tl) (V) (Zn) (Hg	(K) (Na)
	(Dissolved M	etals) (As) (Sb	) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (A	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	la) (Hardness) (Silic
	VOC (Boein	<u> </u>							
	Methane Eth	ane Ethene Ac	etylene						
	d								
	others								
Duplicate San	nple No(s):								
Comments:									
Signature:	SRR					Data	11/13/2017		



							<b>_</b>		
Project Nam	e <u>:</u>	Boeing Ren			Project Numbe		0025217.099.0	99	
Event:		Quarterly A	_		Date/Time:	11/ 13 /2017 @	1026		
Sample Nun		RGW173S	171113		Weather:				
Landau Rep	resentative:	JHA							
WATER LEV	EL/WELL/PU	URGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	9.73	Time:	956	Flow through cel	l vol.		GW Meter No.(s	HERON1
Begin Purge:	Date/Time:	11/ 13 /2017	@ 1000	End Purge:	Date/Time:	11/ 13 /2017 @ 10	021	Gallons Purged:	0.5
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa	lls: Stablizatio +/- 3%		ters for three +/- 0.1 units	consecutive read +/- 10 mV	dings within the fo +/- 10%	llowing limits < 0.3 ft	>/= 1 flow through cell	
1002							< 0.5 It		
1003	12.8	302.4	3.62	6.36	7.7	MED		<0.25	
1006	12.2	332.0	2.51	6.40	5.1		9.73		
1009	11.9	338.9	2.16	6.39	3.5			0.25	
1012	11.7	353.9	1.40	6.40	-0.1		9.75		
1015	12.4	372.7	0.83	6.45	-13.6				
1018	12.6	375.5	0.75	6.47	-17.1		9.75		
1020		376.5	0.71	6.48	-18.7		7.73		
1020	12.7	370.3	0.71	0.46	-10.7				
SAMPLE CO	LIECTION	) A T A							
Sample Collection			Bailer		Pump/Pump Type	DED Geotech blac	lder numn		
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure.	Alconox Was	_	Tap Rinse	DI Water	Dedicated	<u> </u>	B careacea	
(By Numerica		Other	—	rup remse	□ Di Water	Bedreuted			
, ,	*		sheen etc.):	CLOUDY C	COLORLESS, NO	/NS			
	-F (, ·	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			, , , , ,				
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	12.8	376.7	0.69	6.48	-19.3				
2	12.8	377.0	0.68	6.49	-19.8				
3	12.7	377.1	0.68	6.49	-20.2				
4	12.7	377.4	0.68	6.49	-20.5				
Average:	12.8	377.1	0.68	6.49	-20.0	#DIV/0!	9.87		
	1								
QUANTITY						plicable or write r	ion-standard ai		an 🗆
3	`	) (8010) (802 ALL) (NIVERLA	_ ` ` ` ·			) (8141) (Oil & Gı			OR □ OR □
						(HCO3/CO3) (C			OK 🗆
1					itrogen) (NH3)		2) (504) (140	3) (1102) (1)	
		le) (WAD Cy				,			
1	(Total Metals	) (As) (Sb) (I	Ba) (Be) (Ca	) (Cd) (Co)	(Cr) (Cu) (Fe)	Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
	(Dissolved M	etals) (As) (Sb	) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (Pl	o) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	a) (Hardness) (Silica
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene						
	others								
	others								
Duplicate San	nple No(s):								
Comments:	·-						·		
Comments.									
Signature:			ЈНА			Date:	11/13/2017		



Project Nam	e.	Boeing Ren	ton		Project Number	er.	0025217.099.0	99	
Event:	<u>.                                    </u>	Quarterly A			Date/Time:	11/13 /2017 @			
Sample Num	her.	RGW226S	_		Weather:	50S RAINY	930		
Landau Rep		SRB	1/1113		weather.	305 R/ HI V I			
WATER LEV Well Condition	EL/WELL/PU	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
				-				CW Matau Na (a	HEDONS
DTW Before Begin Purge:		8.9	Time: 923		Flow through ce	11/ 13 /2017 @	049	GW Meter No.(8	0.5
Purge water d		11/13 /2017	55-gal Drum	End Purge:	Storage Tank	Ground		Gallons Purged: Site Treatment S	
ruige water u	isposed to.	<del>_</del>	_		_	<u> </u>	<u> </u>		
Time	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Internal Purge Volume (gal)	Comments/ Observations
Time				ters for three		dings within the fo		>/= 1 flow	Observations
	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
926	14.6	186.0	2.61	6.49	-13.2		8.9		
929	13.9	184.0	2.49	6.47	-10.9		8.9		
932		183.0	2.51	6.46	-12.9		8.9		
932	15.7	105.0	2.31	0.40	-12.9		6.9		
	· <del></del>								
SAMPLE CO	LLECTION I	OATA							
Sample Collec	cted With:		Bailer		Pump/Pump Type	DED Geotech blad	lder pump		
Made of:		Stainless Stee	el 🔲	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color, t	urbidity, odor,	sheen, etc.):	SLIGHLTY	GRAY SLIGHTI	LY TURBID NO/NS	S		
Doubleate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
Replicate	(°F/°C)	(uS/cm)	(mg/L)	þп	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	13.2	183.0	2.53	6.46	-13.4				
2									
2	13.0	186.3	2.81	6.46	-12.6				
3	12.9	186.0	2.77	6.46					
4	12.6	192.0	2.79	6.44	-12.1				
Average:	12.9	186.8	2.73	6.46	-12.7	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LOWED PE	R BOTTLE	TYPE (Circle a	oplicable or write n	on-standard aı	nalysis below)	
3		(8010) (80						WA □	OR 🗆
	(8270D) (PA	AH) (NWTPI	I-D) (NWTI	PH-Dx) (TPI	H-HCID) (8081)	(8141) (Oil & Gr	rease)	WA □	OR □
						(HCO3/CO3) (C	(SO4) (NO	3) (NO2) (F)	
1					itrogen) (NH3)	(NO3/NO2)			
	•	e) (WAD Cy							
1						(Pb) (Mg) (Mn) (Ng) (Mg) (Ng) (Ng) (Mg) (Ng) (Ng) (Ng) (Ng) (Ng) (Ng) (Ng) (N			
	VOC (Boein		) (ва) (ве) ( <b>(</b>	.a) (Ca) (Co)	(Cr) (Cu) (Fe) (P	υ) (Mg) (Mn) (N1) (.	Ag) (Se) (11) (V	) (Zn) (Hg) (K) (N	Na) (Hardness) (Silic
	,	ane Ethene Ac	retylene						
	Michane Eu	and Eulelle At	ocy ione						
	others								
Duplicate San	nple No(s):								
Comments:									
Signature	SRR					Date:	11/13/2017		



Project Nam	ie:	Boeing Ren	ton		Project Number	er:	0025217.099.0	99	
Event:		Quarterly A			Date/Time:	11/ 13 /2017 @	755	· ·	
Sample Nun	nber:	RGW232S	_		Weather:	50S RAINY	,,,,		
Landau Rep		SRB	-,						
WATER LEV	/EL/WELL/PU	JRGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	7.9	Time:	721	Flow through ce	ll vol.		GW Meter No.(s	HERON3
Begin Purge:	Date/Time:	11/ 13 /2017	725	End Purge:	Date/Time:	11/13 /2017 @	745	Gallons Purged:	0.5
Purge water d	lisposed to:		55-gal Drum		Storage Tank	Ground	Other	Site Treatment S	ystem
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	4 6 41	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	+/- 3%	ıs: Stabiizatio +/- 3%		ters for three +/- 0.1 units		dings within the fo +/- 10%	< 0.3 ft	>/= 1 flow through cell	
728		423.0	6.06	5.88	14.2	,, 20,0	7.9	•••• ••• ••• ••• ••• ••• ••• ••• ••• •	
731	13.4	445.0	6.70	5.93	-16.7		8.35		
734		538.0	6.49	6.25	-80.0		8.4		
737	13.3	535.0	6.57	6.27	-85.0		8.4		
740		520.0	6.84	6.26	-92.2		8.4		
740	12.4	320.0	0.64	0.20	-92.2		0.4		
	. ———				-				
	. ———								
CAMDI E CO	LLECTION I	) A T A							
Sample Colle			Bailer		Pump/Pump Type	DED Geotech blad	lder pump		
Made of:	П	Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	lure:	Alconox Was	_	Tap Rinse	DI Water	Dedicated	—		
(By Numerica		Other	··· 및	rup runse	<u> </u>	Bearcated			
			sheen, etc.):	CLEAR CO	LORLESS NO/N	S			
•	1 ,	-	_						
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	12.2	515.0	6.87	6.25	-93.0				
2	11.9	512.0	6.98	6.25	-92.7				
3	11.8	510.0	6.92	6.24					
4	11.4	507.0	7.02	6.24	-93.0				
Average:	11.8	511.0	6.95	6.25	-92.9	#DIV/0!			
	1								
QUANTITY 3		NALYSIS AI ) (8010) (80				oplicable or write n	ion-standard ai	WA   WA	OR 🗆
3	,		_ ` ` ` ·			(8141) (Oil & Gr	rease)	WA 🗆	OR □
						(8141) (Oli & Gl			<u> </u>
1	1				fitrogen) (NH3)		, , , , , , , , , , , , , , , , , , , ,		
	(Total Cyanid	e) (WAD Cy	anide) (Free	Cyanide)					
1	(Total Metals	(As) (Sb) (	Ba) (Be) (Ca	(Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	Ni) (Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
	(Dissolved M	etals) (As) (Sb	) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (	Ag) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	(Silica) (In the second of the
	VOC (Boein								
	Methane Eth	ane Ethene Ac	etylene						
	others								
	others								
Duplicate Sar	nple No(s):								
Comments:									
Signature:	SRR					Data:	11/13/2017		



Project Nam	ie:	Boeing Ren	iton		Project Numbe	r: 0	025217.099.0	99	
Event:			august 2017		Date/Time:	11/ 13 /2017 @ 7:	51		
Sample Nun	nber:	RGW233I	_		Weather:	40'S, PARTLY CI	OUDY		
Landau Rep	resentative:	JHA			•				
WATER LEV	/EL/WELL/PI	URGE DATA							
Well Condition	on:	Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	7.49	Time:	73\25	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:	Date/Time:	11/ 13 /2017	7 @ 728	End Purge:	Date/Time:	11/ 13 /2017 @ 748		Gallons Purged:	0.75
Purge water d	isposed to:		55-gal Drum		Storage Tank	Ground	Other	SITE TREATM	ENT SYSTEM
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	<b>Internal Purge</b>	Comments/
Time	(°F/°C) Purge Goa	(uS/cm) ls: Stablizatio	(mg/L) on of Parame	ters for three	(mV)	(NTU) dings within the follo	(ft) wing limits	Volume (gal) >/= 1 flow	Observations
	+/- 3%	+/- 3%		+/- 0.1 units		+/- 10%	< 0.3 ft	through cell	
731	13.9	209.3	1.07	8.16	-71.3	LOW	7.49	<0.25	
734	14.1	203.8	0.58	7.47	-45.8				
737	14.0	198.3	0.63	7.23	-27.9		7.49	0.25	
740	14.0	196.8	0.66	7.15	-23.6				
743	14.1	196.7	0.48	7.08	-18.0				
746	14.2	195.9	0.48	6.94	-10.5		7.49		
748	14.1	194.9	0.48	6.92	-7.8				
	LLECTION D								
Sample Collec	cted With:		Bailer			DED Geotech bladd			
Made of:	닏	Stainless Ste	_	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced		Alconox Wa	sh 🔲	Tap Rinse	DI Water	Dedicated			
(By Numerica	,	Other							
Sample Descr	ription (color, t	turbidity, odor	, sheen, etc.):	CLEAR, CO	LORLESS, NO/N	NS			
Replicate	Temp (°F/°C)	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	14.1	194.4	0.53	6.91	-6.9				
2	14.1	194.5	0.51	6.00	-6.8				
3	14.1	194.6	0.49	6.89	-6.7				
4	14.1	194.9	0.48	6.89	-6.0				
Average:	14.1	194.6	0.50	6.67	-6.6	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AI	LLOWED PE	ER BOTTLE	TYPE (Circle a	oplicable or write no	n-standard ar	nalysis below)	
3		(8010) (80		H-G) (NWT	-				OR 🗆
	(8270D) (PA	AH) (NWTPI	H-D) (NWTI	PH-Dx) (TPI	H-HCID) (8081)	(8141) (Oil & Grea	ase)	WA □	OR 🗆
						(HCO3/CO3) (Cl)	(SO4) (NO	3) (NO2) (F)	
1		(10 (10 (10 (10 (10 (10 (10 (10 (10 (10			fitrogen) (NH3)	(NO3/NO2)			
1		-			(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (Ni	(Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
						b) (Mg) (Mn) (Ni) (Ag			
	VOC (Boein								
	Methane Eth	ane Ethene A	cetylene						
	others								
Duplicate San	nple No(s):	MSMSD loc	ation						
Comments: Signature:		JHA				Data	11/13/2017		
orgnature.		JIIA				Date:	11/13/201/		



Landau Associates

Drainat Nam		Daging Dan	ton	<u> </u>			-		
Project Nam	<u>:</u>	Boeing Ren			Project Number	11/ 13 /2017 @ 9	0025217.099.0	99	
Event: Sample Nun	ahar:	Quarterly A RGW234S			Date/Time: Weather:	40'S, PARTLY S			
Landau Rep	-	JHA	1/1113		weather.	403, FARILI 3	UNIN I		
	/EL/WELL/PU								
Well Condition		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	8/.16	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
	Date/Time:		@ 845	End Purge:		11/ 13 /2017 @ 85	8	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground		SITE TREATM	
_	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	pm	(mV)	(NTU)	(ft)	Volume (gal)	Observations
						dings within the fol		>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
848	12.7	148.5	3.99	6.37	48.1	LOW		<0.25	
851	13.0	114.4	4.87	6.40	43.2		8.16		
854	12.3	109.2	4.91	6.39	44.1		8.16		
857	12.7	109.3	4.90	6.39	44.2				
	. ———								
CANDIE CO	I I ECTION E								
Sample Colle	LLECTION D		Bailer		Pump/Pump Type	DED Geotech blade	der numn		
Made of:	cica wiiii.	Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
			_		—			Dedicated	
Decon Proced		Alconox Was	sh 📋	Tap Rinse	DI Water	Dedicated			
(By Numerica		Other	1 ( )	CLOUDY (	COLODI EGG NG	NATC.			
Sample Descr	iption (color, t	urbiaity, odor,	sneen, etc.):	CLOUDY, C	COLORLESS, NO	J/N5			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)		(mV)	(NTU)	(ft)	(Fe II)	Observations
1	12.7	109.3	4.90	6.39	44.2				
2	12.7	109.3	4.87	6.39	44.3				
3	12.7	109.3	4.86	6.39	44.3				
4	12.7	109.3	4.87	6.39	44.3				
Average:	12.7	109.3	4.88	6.39	44.3	#DIV/0!	8.21		
						oplicable or write n	on-standard a	_	
3		(8010) (80			PH-Gx) (BTEX		`	WA 🗆	OR 🗆
		H) (NWTPI				(8141) (Oil & Gre (HCO3/CO3) (Cl		WA []	OR 🗆
1	` ` `		<del></del>		itrogen) (NH3)		i) (304) (INC	(NO2) (F)	
		e) (WAD Cy				(1.00/1102)			
1					(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (N	i) (Ag) (Se) (	Tl) (V) (Zn) (Hg	(K) (Na)
						b) (Mg) (Mn) (Ni) (A			
	VOC (Boein	g short list)							
	Methane Eth	ane Ethene Ac	etylene						
	others								
Duplicate Sar	nple No(s):								
-	-	IER THAN SU	JRROUNDIN	IG WELLS. O	CHECKED OUT	FINE.			
Signature:			ЈНА			Date:	11/13/2017		

P:\8888 - Boeing Renton\02 Data Management\2017\4Q2017\Landau Field Sheets\SWMU-172&174\_11.13.17\_JHA.xlsx



Project Nam	e:	Boeing Rer	nton		Project Numbe	er: (	0025217.099.0	99	
Event:			august 2017		Date/Time:	11/ 13 /2017 @84	46		
Sample Nun	nber:	RGW235I	-		Weather:	40'S, PARTLY SU	JNNY		
Landau Rep	resentative:	JHA			•				
WATER LEV	EL/WELL/PU	JRGE DATA							
Well Condition		Secure (YES		Damaged (Y	ES or NO)	Describe:			
DTW Before	Purging (ft)	7.7	Time:	-	Flow through ce	ll vol.		GW Meter No.(s	HERON 1
Begin Purge:				End Purge:	=	11/ 13 /2017 @ 83	7	Gallons Purged:	
Purge water d			55-gal Drum		Storage Tank	Ground	_	SITE TREATM	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	-	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	Purge Goa +/- 3%	ls: Stablization +/- 3%		ters for three +/- 0.1 units	e consecutive rea +/- 10 mV	dings within the foll +/- 10%	owing limits < 0.3 ft	>/= 1 flow through cell	
828	12.0						< 0.5 It	<0.25	
		148.5	1.19	6.67		LOW			
831	12.2	143.0	1.12	6.68	19.7		7.7		
834	12.3	140.1	1.09	6.66	13.5				
837	12.3	139.9	1.09	6.66	13.4				
SAMPLE CO	LLECTION I	OATA							
Sample Colle	cted With:		Bailer		Pump/Pump Type	DED Geotech bladd	ler pump		
Made of:		Stainless Ste	el	PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Wa	sh	Tap Rinse	DI Water	Dedicated			
(By Numerica	l Order)	Other							
Sample Descr	iption (color, t	turbidity, odor	, sheen, etc.):	CLEAR, CO	LORLESS, NO/	NS			
Replicate	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Ferrous iron	Comments/
	(° <b>F</b> /° <b>C</b> )	(uS/cm)	(mg/L)	•	(mV)	(NTU)	(ft)	(Fe II)	Observations
1	12.3	139.9	1.09	6.66	13.4				
2	12.3	139.8	1.09	6.66	13.3				
3	12.3	139.8	1.10	6.66	13.3				
4	12.3	139.7	1.12	6.66	13.3				
Average:	12.3	139.8	1.10	6.66	13.3	#DIV/0!			
QUANTITY						oplicable or write no	on-standard ar	_	OD [
3			020) (NWTP H-D) (NWTF			.) (8141) (Oil & Gre	202)		OR □ OR □
						(HCO3/CO3) (CI			OK —
1					itrogen) (NH3)		<i>y</i> (3 3 1) (3 1 3	-) () (-)	
			yanide) (Free						
1	(Total Metals	) (As) (Sb) (	(Ba) (Be) (Ca	ı) (Cd) (Co)	(Cr) (Cu) (Fe)	(Pb) (Mg) (Mn) (Ni	i) (Ag) (Se) (	Tl) (V) (Zn) (Hg	) (K) (Na)
			b) (Ba) (Be) (C	Ca) (Cd) (Co)	(Cr) (Cu) (Fe) (P	b) (Mg) (Mn) (Ni) (A	.g) (Se) (Tl) (V	) (Zn) (Hg) (K) (N	(a) (Hardness) (Silica
	VOC (Boein		4-1.						
	Methane Eth	ane Ethene A	cetylene						
	others								
Duplicate Sar	nple No(s):								
Comments:									
Signature:			JHA			Date:	11/13/2017		



Project Name Event: Sample Num Landau Repr WATER LEV Well Condition DTW Before I Begin Purge:	nber: resentative:	Quarterly Av RGW236S SRB	ugust 2017		Project Number Date/Time:	11/ 13 /2017 @	0025217.099.0		
Sample Num Landau Repr WATER LEV Well Conditio DTW Before	resentative: VEL/WELL/PU	RGW236S	_		•	11/ 13/2017 @	010		
Landau Repr WATER LEV Well Conditio DTW Before	resentative: VEL/WELL/PU		171115		Weather:	50S RAINY			
WATER LEV Well Conditio DTW Before	EL/WELL/PU				, carrer.	305 II II ( I			
Well Condition DTW Before l		IRGE DATA							
		Secure (YES	or NO)	Damaged (Y	ES or NO)	Describe:			
	Purging (ft)	7.3	Time:	_	Flow through ce	ll vol.		GW Meter No.(s	HERON3
				End Purge:	=	11/ 13 /2017 @	837	Gallons Purged:	
Purge water di			55-gal Drum		Storage Tank	Ground		Site Treatment S	
	Temp	Cond.	D.O.	pН	ORP	Turbidity	DTW	Internal Purge	Comments/
Time	(°F/°C)	(uS/cm)	(mg/L)	pii	(mV)	(NTU)	(ft)	Volume (gal)	Observations
	~					dings within the fol	~	>/= 1 flow	
	+/- 3%	+/- 3%		+/- 0.1 units	+/- 10 mV	+/- 10%	< 0.3 ft	through cell	
818	14.1	311.0	2.32	6.46	-33.0		7.4		
821	12.0	326.6	3.20	6.52	-40.6		7.35		
824	11.3	324.0	3.93	6.52	-41.0		7.3		
827	10.7	319.0	4.69	6.52	-41.0				
830	10.1	311.7	4.90	6.51	-39.0				
833		308.7	4.83	6.51	-37.8				
033		300.7	4.03	0.51	37.0			-	
CAMDI E CO	LLECTION D	A T A							
Sample Collec			Bailer		Pump/Pump Type	DED Geotech blad	der numn		
Made of:		Stainless Stee		PVC	Teflon	Polyethylene	Other	Dedicated	
Decon Proced	ure:	Alconox Was		Tap Rinse	DI Water	Dedicated			
(By Numerica		Other	··· Ш	rap remse	□ Di Water	Dedicated			
		—	sheen, etc.):	CLEAR CO	LORLESS NO/N	<u> </u>			
Sumpre Beser	ipiion (voior, c	arorarej, odor,		OBBI III OO					
Replicate	<b>Temp</b> (° <b>F</b> /° <b>C</b> )	Cond. (uS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	DTW (ft)	Ferrous iron (Fe II)	Comments/ Observations
1	9.8	307.2	4.80	6.51	-37.4				
2	9.8	306.5	4.82	6.51	-37.2				
2									
3	9.7	306.0	4.81	6.50	-36.9				
4	9.7	305.5	4.79	6.50	-36.7				
Average:	9.8	306.3	4.81	6.51	-37.1	#DIV/0!			
QUANTITY	TYPICAL A	NALYSIS AL	LOWED PE	R BOTTLE	TYPE (Circle ap	pplicable or write n	on-standard ar	nalysis below)	
3	(8260C -SIM)	(8010) (802	20) (NWTPI	H-G) (NWT	PH-Gx) (BTEX	)		WA □	OR 🗆
	(8270D) (PA	H) (NWTPH	I-D) (NWTP	H-Dx) (TPI	H-HCID) (8081)	(8141) (Oil & Gr	ease)	WA □	OR 🗆
						(HCO3/CO3) (C	l) (SO4) (NO	3) (NO2) (F)	
1	`				itrogen) (NH3)	(NO3/NO2)			
1	•	e) (WAD Cy		•	(Ca) (Ca) (Ta)	The CM-1 CM 1 C	C) (A-) (C) (	F1) (V) (7) \ (1)	) (V) (N-)
1						(Pb) (Mg) (Mn) (Ng) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (Mg) (M			
	VOC (Boein		, (ва) (ве) (С	a) (Cu) (C0)	(C1) (Cu) (Ft) (P	o, (1 <b>v1</b> g) (1 <b>v1</b> 11) (1 <b>v</b> 1) (A	18) (DE) (11) (V	, (zл.) (11g) (K) (N	(Silica) (All (All (Mardness))
	,	ane Ethene Ac	etylene						
	others								
Dumlia-t- C	anla Na/-\:								
Duplicate San	upie ivo(s):								
Comments:	SRR					ъ.	11/13/2017		



#### **APPENDIX C**

**Data Validation Memos** 



#### Memo

Date:

To: John Long, Project Manager Project: 0088880100.2018

From: Crystal Thimsen cc: Project File Tel: (206) 342-1760

Fax: (206) 342-1761

**Subject:** Summary Data Quality Review

January 11, 2018

November 2017 Boeing Renton Groundwater Sampling

SWMU-172/174

ARI Group Number: 17K0211

This memo presents the summary data quality review of 11 primary groundwater samples, one groundwater field duplicate, and one trip blank sample collected on November 13, 2017. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology). The samples were analyzed for the following:

- Volatile organic compounds (VOCs) (cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method 8260C with selected ion monitoring (SIM);
- Total organic carbon (TOC) by Standard Method (SM) 5310; and
- Total metals (arsenic, copper, and lead) by EPA Method 6020A.

The samples and the analyses conducted on the samples are listed below.

	<u>Laboratory</u>	
Sample ID	Sample ID	Requested Analyses
RGW233I-171113	17K0211-01	all
RGW232S-171113	17K0211-02	all
RGWDUP1-171113	17K0211-03	all
RGW236S-171113	17K0211-04	all
RGW235I-171113	17K0211-05	all
RGW234S-171113	17K0211-06	all
RGW172S-171113	17K0211-07	all
RGW152S-171113	17K0211-08	all
RGW226S-171113	17K0211-09	all
RGW153S-171113	17K0211-10	all
RGW173S-171113	17K0211-11	all
RGW081S-171113	17K0211-12	all
Trip Blanks	17K0211-13	VOCs

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Memo January 11, 2018 Page 2 of 4

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA guidance documents (EPA, 2014a and b).

ARI received the samples on November 14, 2017. The temperatures of the coolers were recorded upon receipt and were below the maximum acceptable temperature of 6 degrees Celsius (°C).

#### ORGANIC ANALYSES

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable
- 4. LCS/LCSD Acceptable
- 5. MS/MSD Acceptable
- 6. Field Duplicates Acceptable

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The project-specific control limit for field duplicate relative percent differences (RPDs) is 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit. The field duplicate RPDs were within the control limits.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (ng/L)	Duplicate Result (ng/L)	Reporting Limit (ng/L)	RPD (%)
	vinyl chloride	44.9	40.9	20	NC
RGW152-171113/	cis-1,2-dichloroethene	203	188	20	8
RGWDUP-171113	trichloroethene	146	149	20	2
	tetrachloroethene	529	589	20	11

Notes

ng/L = nanograms per liter NC = not calculated

RPD= relative percent difference



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7. Reporting Limits and Laboratory Flags – Acceptable except as noted:

The vinyl chloride results in samples RGW232S-171113, RGWDUP1-171113, RGW172S-171113, RGW152S-171113, RGW226S-171113, and RGW173S-171113 were flagged with an "M" by the laboratory to indicate that the results were estimated values detected and confirmed by an analyst but with a low spectral match. The results are reported as estimated and flagged with a "J."

#### **INORGANIC ANALYSES**

Samples were analyzed for total metals and TOC. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. LCS Acceptable except as noted:
- 4. MS/MSD Acceptable
- 5. Laboratory Duplicates Acceptable
- 6. Field Duplicates Acceptable

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The project-specific control limit for field duplicate RPDs is 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit. The field duplicate RPDs were within the control limits, except for total arsenic, copper, and lead. The results for the affected analytes in samples RGW152S-170508 and RGWDUP-170508 are qualified as estimated and flagged with a "J."

Sample ID/ Field Duplicate ID	Analyte	Primary Result (µg/L)	Duplicate Result (µg/L)	Reporting Limit (µg/L)	RPD (%)
	TOC	2.84	2.60	0.50	9
RGW152S-171113/	total arsenic	1.56	1.69	0.200	8
RGWDUP-171113	total copper	2.95	3.14	0.500	6
	total lead	1.54	1.79	0.100	15

<u>Notes</u>

µg/L = micrograms per liter RPD= relative percent difference TOC = total organic carbon

7. Reporting Limits and Laboratory Flags – Acceptable



Memo January 11, 2018 Page 4 of 4

#### **OVERALL ASSESSMENT OF DATA**

The table below summarizes the data assessment. The completeness of work order number 17K0211 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
RGW233I-171113	none			
RGW232S-171113	vinyl chloride	621 J	ng/L	flagged "M" by laboratory
RGWDUP1-171113	vinyl chloride	40.9 J	ng/L	flagged "M" by laboratory
RGW236S-171113	none			
RGW235I-171113	none			
RGW234S-171113	none			
RGW172S-171113	vinyl chloride	286 J	ng/L	flagged "M" by laboratory
RGW152S-171113	vinyl chloride	44.9 J	ng/L	flagged "M" by laboratory
RGW226S-171113	vinyl chloride	48.3 J	ng/L	flagged "M" by laboratory
RGW153S-171113	none			
RGW173S-171113	vinyl chloride	70.5 J	ng/L	flagged "M" by laboratory
RGW081S-171113	none			
Trip Blanks	none			

#### **REFERENCES**

- Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.
- U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.
- EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.



#### Memo

To: John Long, Project Manager

Project: 0088880100.2018 Crystal Thimsen CC: Project File

From: Tel: (206) 342-1760 Fax: (206) 342-1761 Date: January 11, 2018

Subject: **Summary Data Quality Review** 

November 2017 Boeing Renton Groundwater Sampling

Building 4-78/79 SWMU/AOC Group

ARI Work Order Numbers: 17K0213 and 17K0264

This memo presents the summary data quality review of 17 primary groundwater samples, one field duplicate groundwater sample, and two trip blank samples collected on November 13 and 14, 2017. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology). The samples were analyzed for the following:

- Volatile organic compounds (VOCs) (limited suite: benzene, vinyl chloride, cis-1,2dichloroethene, and trichloroethene) by U.S. Environmental Protection Agency (EPA) Method 8260C;
- Total petroleum hydrocarbons as gasoline (TPH-G) by Ecology Method NWTPH-G; and
- Total organic carbon (TOC) by Standard Method (SM) 5310B-00.

The samples and the analyses conducted on the samples are listed below.

	<u>Laboratory</u>	
Sample ID	Sample ID	Requested Analyses
RGW234I-171113	17K0213-01	all
RGW-241S-171113	17K0213-02	all
RGW240D-171113	17K0213-03	all
RGW-242I-171113	17K0213-04	all
RGW143S-171113	17K0213-05	all
RGW238I-171113	17K0213-06	all
RGW033S-171113	17K0213-07	all
RGW237S-171113	17K0213-08	all
RGW209S-171113	17K0213-09	all
RGW039S-171113	17K0213-10	all
RGW034S-171113	17K0213-11	all
RGW243I-171113	17K0213-12	all
RGW038S-171113	17K0213-13	all
		·

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	<u>Laboratory</u>	
Sample ID	Sample ID	Requested Analyses
RGW244S-171113	17K0213-14	all
Trip Blanks	17K0213-15	VOCs and TPH-G
RGWDUP2-171114	17K0264-01	all
RGW031S-171114	17K0264-02	all
RGW210S-171114	17K0264-03	all
Trip Blanks	17K0264-04	VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidelines (EPA, 2014a and b).

ARI received the samples on November 14 and 15, 2017. The temperatures of the coolers were recorded upon receipt and were below the maximum acceptable temperature of 6 degrees Celsius (°C). ARI noted the following upon sample receipt:

 A large air bubble (> than 2 millimeters) was noted in one of three vials submitted for sample RGW240D-171113, a pea-sized bubble (approximately 2 to 4 millimeters) was noted in one of three of three vials submitted analysis of sample RGW238I-171113, and pea-sized bubbles were noted in both of the vials submitted for the trip blank. The laboratory proceeded with analysis using unaffected vials if available or the least affected vials, and sample results are not qualified.

#### **ORGANIC ANALYSES**

Samples were analyzed for VOCs and TPH-G. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable except as noted:

<u>VOCs by EPA 8260C:</u> The recoveries for one of four surrogates, 1,2-dichloroethane-d4, were 217 and 218 percent, respectively, in the initial analyses of samples RGWDUP2-171114 and RGW031S-171114, greater than the control limits of 80 to 129 percent. The samples were reanalyzed with similar surrogate recoveries. The results are reported from



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the initial analysis and the detected results are qualified as estimated, due to the potential high bias. Non-detected results are not qualified.

- 4. LCS/LCSD Acceptable
- 5. MS/MSD Acceptable
- 6. Field Duplicates Acceptable

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The relative percent differences (RPDs) for the field duplicate are within the project-specific control limit of 30 percent for concentrations greater than five times the reporting limit. The RPD is not calculated for results that are less than five times the reporting limit, as indicated on the table below by "NC." In these cases, the absolute value of the difference between the primary and duplicate result should not exceed the value of the reporting limit.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (µg/L)	Duplicate Result (µg/L)	Primary/Duplicate Reporting Limit (µg/L)	RPD (%)
RGW031S-171114/ RGWDUP2-171114	benzene	59.9	59.2	0.2	1
	cis-1,2-dichloroethene	0.47	0.38	0.2	NC
KGWD0F2-171114	TPH-G	3,040	2,940	100	3

#### Notes

 $\mu g/L = micrograms per liter$ 

NC = not calculated

RPD= relative percent difference

TPH-G = total petroleum hydrocarbons as gasoline

7. Reporting Limits and Laboratory Flags – Acceptable except as noted:

<u>VOCs by EPA 8260C:</u> The laboratory flagged the vinyl chloride and cis-1,2-dichloroethene results in sample RGW033S-171113 with an "E" to indicate the results were greater than the calibration range of the instrument. The samples were diluted and reanalyzed. The "E" flagged results are reported from the diluted analyses and the remaining results are reported from the initial analyses.

#### **INORGANIC ANALYSES**

Samples were analyzed for TOC. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. LCS Acceptable
- 4. MS Acceptable
- Laboratory Duplicates Acceptable
- 6. Field Duplicates Acceptable



Memo January 11, 2018 Page 4 of 5

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The RPDs are acceptable.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW031S-171114/ RGWDUP2-171114	TOC	14.4	14.8	0.5	3

Notes

mg/L = milligrams per liter
RPD= relative percent difference
TOC = total organic carbon

7. Reporting Limits and Laboratory Flags – Acceptable

## **OVERALL ASSESSMENT OF DATA**

The table below summarizes the data assessment. The completeness of work order numbers 17K0213 and 17K0264 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents identified in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Qualifier Reason
RGW234I-171113	none		
RGW-241S-171113	none		
RGW240D-171113	none		
RGW-242I-171113	none		
RGW143S-171113	none		
RGW238I-171113	none		
RGW033S-171113	none		
RGW237S-171113	none		
RGW209S-171113	none		
RGW039S-171113	none		
RGW034S-171113	none		
RGW243I-171113	none		
RGW038S-171113	none		
RGW244S-171113	none		
Trip Blanks	none		
RGWDUP2-171114	cis-1,2-dichloroethene	0.38 J	ourregete recevery
	benzene	59.2 J	surrogate recovery
RGW031S-171114	vinyl chloride	0.20 J	
	cis-1,2-dichloroethene	0.47 J	surrogate recovery
	benzene	59.9 J	
RGW210S-171114	none		
Trip Blanks	none		

<u>Notes</u>

J = the value is an estimate



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## **REFERENCES**

- Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.
- U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.
- EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.

#### Memo

To: John Long, Project Manager Project: 0088880100.2018

From: Crystal Thimsen cc: Project File

Tel: (206) 342-1760 Fax: (206) 342-1761 Date: January 11, 2018

**Subject:** Summary Data Quality Review

November 2018 Boeing Renton Groundwater Sampling

Former Fuel Farm AOC Group ARI Work Order Number: 17K0262

This memo presents the summary data quality review of 11 primary groundwater samples and one field duplicate collected on November 14, 2017. The samples were submitted to Analytical Resources Inc. (ARI), a Washington State Department of Ecology (Ecology)-accredited laboratory located in Tukwila, Washington. The samples were analyzed for total petroleum hydrocarbons as diesel (TPH-D), plus motor oil (TPH-O) and Jet-A (TPH-Jet A) ranges by Ecology Method NWTPH-Dx.

The samples and the analyses conducted on the samples are listed below.

	<u>Laboratory Sample</u>	
Sample ID	<u>ID</u>	Requested Analyses
RGWDUP3-171114	17K0262-01	all
RGW255S-171114	17K0262-02	all
RGW224S-171114	17K0262-03	all
RGW258S-171114	17K0262-04	all
RGW256S-171114	17K0262-05	all
RGW225I-171114	17K0262-06	all
RGW212S-171114	17K0262-07	all
RGW183S-171114	17K0262-08	all
RGW257S-171114	17K0262-09	all
RGW184S-171114	17K0262-10	all
RGW221S-171114	17K0262-11	all
RGW211S-171114	17K0262-12	all

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable

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methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidelines (EPA, 2014a and b).

ARI received the samples on November 15, 2017. The temperatures of the coolers were recorded upon receipt and were below the maximum acceptable temperature of 6 degrees Celsius (6°C).

## ORGANIC ANALYSES

Samples were analyzed for TPH-D plus TPH-O and TPH-Jet A ranges. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable
- 4. LCS Acceptable
- 5. MS/MSD Acceptable
- 6. Field Duplicates Acceptable

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of 5 percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The field duplicate relative percent difference (RPD) is within the project-specific control limit of 30 percent for concentrations greater than five times the reporting limit.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW224S-171114/	DRO C12-C24	1.84	1.72	0.100	7
RGWDUP3-171114	TPH JetA C10-C18	1.97	1.72	0.100	14

#### Notes

mg/L = milligrams per liter
DRO = diesel range organics
RPD = relative percent difference
TPH = total petroleum hydrocarbons

7. Reporting Limits – Acceptable

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## **OVERALL ASSESSMENT OF DATA**

The table below summarizes the data review. The completeness of ARI work order number 17K0262 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte
RGWDUP3-171114	none
RGW255S-171114	none
RGW224S-171114	none
RGW258S-171114	none
RGW256S-171114	none
RGW225I-171114	none
RGW212S-171114	none
RGW183S-171114	none
RGW257S-171114	none
RGW184S-171114	none
RGW221S-171114	none
RGW211S-171114	none

## **REFERENCES**

- Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.
- U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.
- EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.



#### Memo

To: John Long, Project Manager Project: 0088880100.2018

From: Crystal Thimsen cc: Project File

Tel: (206) 342-1760 Fax: (206) 342-1761 Date: January 11, 2018

Subject: Summary Data Quality Review

November 2017 Boeing Renton Groundwater Sampling

AOC-001 and -002 and AOC-003 ARI Work Order Number: 17K0272

This memo presents the summary data quality review of eight primary groundwater samples, one field duplicate, and one trip blank sample collected on November 14, 2017. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology).

The samples from AOC-001 and -002 were analyzed for the following:

- Volatile organic compounds (VOCs) (benzene only) by U.S. Environmental Protection Agency (EPA) Method 8260C;
- VOCs (vinyl chloride, 1,1-dichloroethene, trichloroethene, and cis-1,2-dichloroethene) by EPA Method 8260C with selected ion monitoring (SIM);
- Total organic carbon (TOC) by Standard Method (SM) 5310C.

Samples from AOC-003 were analyzed for the following:

- VOCs (cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride) by EPA Method 8260C SIM; and
- TOC by SM 5310C.

The samples and the analyses conducted on the samples are listed below.

	<u>Laboratory</u>	
Sample ID	Sample ID	Requested Analyses
RGWDUP4-171114	17K0272-01	all AOC-001 and -002 analyses
RGW247S-171114	17K0272-02	all AOC-003 analyses
RGW248I-171114	17K0272-03	all AOC-003 analyses
RGW194S-171114	17K0272-04	all AOC-001 and -002 analyses
RGW185S-171114	17K0272-05	all AOC-001 and -002 analyses
RGW197S-171114	17K0272-06	all AOC-001 and -002 analyses
RGW245S-171114	17K0272-07	all AOC-001 and -002 analyses
RGW195S-171114	17K0272-08	all AOC-001 and -002 analyses
RGW196D-171114	17K0272-09	all AOC-001 and -002 analyses

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<u>Laboratory</u>
<u>Sample ID</u> <u>Sample ID</u> <u>Requested Analyses</u>
Trip Blanks 17K0272-10 VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA guidance documents (EPA, 2014a and b).

ARI received the samples on November 15, 2017. The temperatures of the coolers were recorded upon receipt and were below the maximum acceptable temperature of 6 degrees Celsius (°C). The laboratory noted the following upon sample receipt:

• A small air bubble (approximately 2 millimeters [mm]) was noted in one of five vials submitted for sample RGWDUP4-171114, three of nine vials submitted for sample RGW248I-171114 had small, pea-size (approximately 2 to 4 mm), and large (>4 mm) bubbles, one of five vials submitted for sample RGW194S-171114 had a small bubble, air bubbles ranging in size from small to large were noted in all five vials submitted for sample RGW185S-171114, air bubbles ranging in size from small to large were noted in three of five vials submitted for sample RGW197S-171114, alrope air bubble was noted in one of five vials submitted for sample RGW195S-171114, air bubbles ranging in size from small to large were noted in four of five vials submitted for sample RGW196D-171114, and a large bubble was noted in one of six vials submitted for the trip blank. The laboratory proceeded with analysis using the least affected vials and sample results are not qualified.

## **ORGANIC ANALYSES**

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable
- 4. LCS/LCSD Acceptable
- 5. MS/MSD Acceptable
- 6. Field Duplicates Acceptable

One field duplicate was submitted for each analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and



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duplicate results were both below detection; therefore, field duplicate relative percent differences could not be calculated.

7. Reporting Limits and Laboratory Flags – Acceptable except as noted:

The vinyl chloride results in samples RGW247S-171114, RGW248I-171114, RGW185S-171114, RGW197S-171114, RGW195S-171114, RGW195S-171114, and RGW196D-171114 were flagged with an "M" by the laboratory to indicate that the results were estimated values detected and confirmed by an analyst but with a low spectral match. The results are reported as estimated and flagged with a "J."

## **INORGANIC ANALYSES**

Samples were analyzed for TOC. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. LCS Acceptable
- 4. MS Acceptable
- 5. Laboratory Duplicates Acceptable
- 6. Field Duplicates Acceptable

One field duplicate was submitted for TOC analysis during this sampling event, meeting the project frequency requirement of five percent, or one for every 20 samples. Primary and duplicate results are summarized in the table below. The project-specific control limit for field duplicate RPDs is 30 percent for concentrations greater than five times the reporting limit. The field duplicate RPD was within the control limits.

Sample ID/ Field Duplicate ID	Analyte	Primary Result (mg/L)	Duplicate Result (mg/L)	Reporting Limit (mg/L)	RPD (%)
RGW194S-171114/ RGWDUP4-171114	TOC	14.7	14.6	0.50	1

Notes

mg/L = milligrams per liter RPD= relative percent difference TOC = total organic carbon

7. Reporting Limits and Laboratory Flags - Acceptable

## OVERALL ASSESSMENT OF DATA

The table below summarizes the data assessment. The completeness of work order number 17K0272is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits.



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Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
RGWDUP4-171114	none			
RGW247S-171114	vinyl chloride	489 J	ng/L	flagged "M" by laboratory
RGW248I-171114	vinyl chloride	617 J	ng/L	flagged "M" by laboratory
RGW194S-171114	none			
RGW185S-171114	vinyl chloride	461 J	ng/L	flagged "M" by laboratory
RGW197S-171114	vinyl chloride	84.3 J	ng/L	flagged "M" by laboratory
RGW245S-171114	vinyl chloride	21.0 J	ng/L	flagged "M" by laboratory
RGW195S-171114	vinyl chloride	137 J	ng/L	flagged "M" by laboratory
RGW196D-171114	vinyl chloride	58.2 J	ng/L	flagged "M" by laboratory
Trip Blanks	none			

## REFERENCES

- Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.
- U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.
- EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.



## Memo

To: John Long, Project Manager Project: 0088880100.2018

From: Crystal Thimsen cc: Project File

Tel: (206) 342-1760 Fax: (206) 342-1761 Date: January 10, 2018

Subject: Summary Data Quality Review

November 2017 Boeing Renton Groundwater Sampling

AOC-034 and -035

ARI Work Order Number: 17K0265

This memo presents the summary data quality review of four primary groundwater samples and one trip blank collected on November 14, 2017. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology). The samples were analyzed for the following:

 Volatile organic compounds (VOCs) (cis-1,2-dichloroethene and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method 8260C.

The samples and the analyses conducted on the samples are listed below.

	<u>Laboratory</u>	
Sample ID	Sample ID	Requested Analyses
RGW217S-171114	17K0265-01	all
RGW216S-171114	17K0265-02	all
RGW218S-171114	17K0265-03	all
RGW251S-171114	17K0265-04	all
Trip Blank	17K0265-05	all

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidance documents (EPA, 2014).

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ARI received the samples on November 15, 2017. The temperature of the cooler was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius (°C). The laboratory noted the following upon sample receipt:

 A pea-sized bubble (approximately 2 to 4 millimeters [mm]) was noted in one of two vials submitted for the trip blank. The laboratory proceeded with analysis using the unaffected vail and sample results are not qualified.

## **ORGANIC ANALYSES**

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable
- 4. LCS/LCSD Acceptable
- 5. MS/MSD Acceptable

Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.

6. Field Duplicates - Acceptable

Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event.

7. Reporting Limits and Laboratory Flags – Acceptable

## **OVERALL ASSESSMENT OF DATA**

The table below summarizes the data review. The completeness of work order number 17K0265 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents referenced in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data meet the project's data quality objectives.

Sample ID	Qualified Analyte
RGW217S-171114	none
RGW216S-171114	none
RGW218S-171114	none
RGW251S-171114	none
Trip Blank	none

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## **REFERENCES**

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

## Memo

To: John Long, Project Manager Project: 0088880100.2018

From: Crystal Thimsen cc: Project File

Tel: (206) 342-1760 Fax: (206) 342-1761 Date: January 11, 2018

**Subject:** Summary Data Quality Review

November 2017 Boeing Renton Groundwater Sampling

Building 10-71 Parcel

ARI Work Order Number: 17K0266

This memo presents the summary data quality review of three primary groundwater samples and one trip blank sample collected on November 14, 2017. The samples were submitted to Analytical Resources, Inc. (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology). The samples were analyzed for the following:

 Volatile organic compounds (VOCs) (vinyl chloride, cis-1,2-dichloroethene, trichloroethene, and toluene) by U.S. Environmental Protection Agency (EPA) Method 8260C.

The samples and the analyses conducted on the samples are listed in the table below.

Sample ID	Laboratory Sample ID	Requested Analyses
10-71-MW4-171114	17K0266-01	VOCs
10-71-MW2-171114	17K0266-02	VOCs
10-71-MW1-171114	17K0266-03	VOCs
Trip Blank	17K0266-04	VOCs

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidelines (EPA, 2014).

ARI received the samples on November 15, 2017. The temperature of the cooler was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius (°C).

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#### ORGANIC ANALYSES

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable
- 4. LCS/LCSD Acceptable
- 5. MS/MSD Acceptable

Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.

6. Field Duplicates - Acceptable

Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event.

7. Reporting Limits and Laboratory Flags - Acceptable

## **OVERALL ASSESSMENT OF DATA**

The table below summarizes the data assessment. The completeness of work order number 17K0266 is 100 percent. Evaluation of the usefulness of these data is based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits. The data are not qualified and meet the project's data quality objectives.

Sample ID	Qualified Analyte
10-71-MW4-171114	none
10-71-MW2-171114	none
10-71-MW1-171114	none
Trip Blank	none

## **REFERENCES**

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.



#### Memo

To: John Long, Project Manager Project: 0088880100.2018

From: Crystal Thimsen cc:
Tel: (206) 342-1760

Fax: (206) 342-1761

Date: January 10, 2018

**Subject:** Summary Data Quality Review

November 2017 Boeing Renton Groundwater Sampling

Apron A

ARI Work Order Number: 17K0267

This memo presents the summary data quality review of two primary groundwater samples and one trip blank sample collected on November 14, 2017. The samples were submitted to Analytical Resources, Inc., (ARI), located in Tukwila, Washington, a laboratory accredited by the Washington State Department of Ecology (Ecology). The samples were analyzed for the following:

 Volatile organic compounds (VOCs) (vinyl chloride and cis-1,2-dichloroethene) by U.S. Environmental Protection Agency (EPA) Method 8260C; and

Project File

Total organic carbon (TOC) by Standard Method (SM) 5310B.

The samples and the analyses conducted on the samples are listed below.

	<u>Laboratory</u>	
Sample ID	Sample ID	Requested Analyses
RGW262S-171114	17K0267-01	all
RGW264S-171114	17K0267-02	all
Trip Blank	17K0267-03	VOCs

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Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler, 2016). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS) and laboratory control sample duplicates (LCSD), matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA guidance documents (EPA, 2014a and b).



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ARI received the samples on November 15, 2017. The temperature of the cooler was recorded upon receipt and was below the maximum acceptable temperature of 6 degrees Celsius (°C). The laboratory noted the following upon sample receipt:

Air bubbles ranging in size from small (approximately 2 millimeters [mm]) to large (>4 mm) were noted in three of three vials submitted for VOC analysis of sample RGW262S-171114, a pea-sized (approximately 2 to 4 mm) bubble was noted in one of three vials submitted for VOC analysis of sample RGW264S-171114, and both vials submitted for the trip blank also had pea-sized bubbles. The laboratory proceeded with analysis using the least impacted vials and sample results are not qualified.

## **ORGANIC ANALYSES**

Samples were analyzed for VOCs. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. Surrogates Acceptable
- 4. LCS/LCSD Acceptable
- 5. MS/MSD Acceptable

Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.

6. Field Duplicates - Acceptable

Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event.

7. Reporting Limits and Laboratory Flags – Acceptable

## **INORGANIC ANALYSES**

Samples were analyzed for TOC. Laboratory data were evaluated for the following parameters:

- 1. Preservation and Holding Times Acceptable
- 2. Blanks Acceptable
- 3. LCS Acceptable



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4. MS/MSD - Acceptable

Extra volume was not submitted for project specific MS/MSD analyses. Sample precision is evaluated based on LCS and LCSD recoveries. The MS/MSD project frequency requirement of one MS/MSD for every 20 samples was achieved with extra volume submitted at other sites included in this sampling event.

- 5. Laboratory Duplicates Acceptable
- 6. Field Duplicates Acceptable

Field duplicates were not collected at this site during this sampling event. The project frequency requirement of one field duplicate for every 20 samples was achieved with field duplicate samples collected at other sites included in this sampling event.

7. Reporting Limits and Laboratory Flags - Acceptable

## **OVERALL ASSESSMENT OF DATA**

The table below summarizes the data assessment. The completeness of work order number 17K0267 is 100 percent. The usefulness of these data was evaluated based on EPA guidance documents listed in the introduction to this report. Few problems were identified, and analytical performance was generally within specified limits.

Sample ID	Qualified Analyte
RGW262S-171114	none
RGW264S-171114	none
Trip Blank	none

## REFERENCES

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016, Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

U.S. Environmental Protection Agency (EPA), 2014a, U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-014-002, August.

EPA, 2014b, U.S. EPA National Functional Guidelines for Inorganic Superfund Data Review: EPA 540-R-013-001, August.



## APPENDIX D

SVE Report

## **APPENDIX D**

# Summary of Remedial Actions at the Boeing Renton Facility October - December 2017

Boeing Renton Site Renton, Washington

Prepared for:
The Boeing Company
EHS Remediation

Prepared by: CALIBRE Systems, Inc. Project No. K0357000

February 13, 2018

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#### 1.0 Introduction

CALIBRE Systems, Inc. (CALIBRE) prepared this Technical Memorandum (Tech Memo) for the Boeing Company to summarize remedial actions implemented at the Boeing Renton Facility in the fourth quarter of 2017 (between October 1 and December 31, 2017). The ongoing remedial actions include:

- 1. Operation of two soil vapor extraction (SVE) systems located at Solid Waste Management Unit (SWMU) and Area of Concern (AOC) locations designated as SWMU-172/174 and Building 4-78/4-79 SWMU/AOC Group, and;
- 2. Biological treatment to promote Enhanced Reductive Dechlorination (ERD) of volatile organic compounds (VOCs) in groundwater underway at several AOCs located throughout the Renton Facility and anaerobic biodegradation of benzene by nitrate/sulfate injections at the 4-78/79 Building.

CALIBRE completed the work described in this Tech Memo to support remedial activities described in the Engineering Design Report (EDR), (AMEC, 2014).

## 1.1 Facility Location and Background

The Boeing Renton Facility is used for assembly of 737 airplanes and is located at the southern end of Lake Washington in Renton, Washington. The location of the Renton Facility and the locations of SWMU-172/174 and Building 4-78/79 within the Facility are shown on Figure 1-1 (SWMU-172/174 and Building 4-78/79 are the locations where the two SVE system are operating). The locations of the other AOCs and SWMUs where groundwater treatment is ongoing are also included in Figure 1-1.

## 1.2 Objectives and Organization

The objective for this Tech Memo is to summarize work completed in accordance with the EDR in the fourth quarter of 2017. This includes operations and monitoring activities for the SVE systems located at Building 4-78/79 and SWMU-172/174, and a summary of the ongoing biological treatment of groundwater at the following areas:

SWMU-172/174
Building 4-78/4-79 SWMU/AOC Group (Building 4-78/79)
AOC-001/002
AOC-003
Lot 20/Former Building 10-71
AOC-060
AOC-090
Building 4-70, and
Apron A

This Tech Memo is organized as follows: Section 1 – Introduction and Background

Section 2 – SVE System Operation and Monitoring

Section 3 – Recommended Next Steps for the SVE Systems

Section 4 – Groundwater Treatment

Section 5 – Conclusions and Recommendations

Section 6 – References

Attachment A – Field Data Sheets

Attachment B – Laboratory Report

## 2.0 SVE Systems Operation and Monitoring

SVE systems were installed in the Building 4-78/79 and SWMU-172/174 areas and began operation in April 2015. During the period covered in this report, both systems were operated in a manner consistent with the goals and operating procedures presented in the EDR. The following sections summarize the operating conditions, operational changes, and performance monitoring/evaluation for the SVE systems.

## 2.1 Building 4-79/4-79 SWMU/AOC Group SVE System

The Building 4-78/79 SVE system consists of 15 vapor extraction wells and a SVE equipment trailer as shown in Figure 2-1. The SVE system is equipped with two vapor-phase granular-activated carbon (GAC) vessels each filled with 1,800 pounds of virgin carbon. The GAC vapor treatment system is configured to run in a lead-lag configuration with vapors from the outlet of the lead vessel passing through the lag vessel. The system also includes two smaller vessels each containing 200 pounds of zeolite impregnated with permanganate to remove and oxidize specific compounds, such as vinyl chloride, that are not efficiently adsorbed by GAC.

Routine maintenance including oil changes, drive-belt tensioning and inspection, inspection of the air filter, and inspection of the moisture separator was completed per the Operations Manual (CALIBRE, 2014). System monitoring includes regular monitoring of total organic vapor concentrations with a calibrated photo-ionization detector (PID), a field instrument, coupled with selected vapor samples submitted for laboratory TO-15 analysis for VOCs.

## 2.1.1 TO-15 Laboratory Analysis of Vapor Samples

Four vapor samples were collected from the Building 4-78/79 SVE system for TO-15 analysis on December 8, 2017. The results showed TCE represented approximately 75% of the total VOCs in the air extracted from the SVE system influent sample. Table 2-1 summarizes the TO-15 detections for the Building 4-78/79 SVE system for nine TO-15 sampling events that have been implemented since system startup<sup>1</sup>. The data collected over time indicate that TCE is the primary VOC detected with two exceptions. Total petroleum hydrocarbons in the gasoline range (TPHg) were detected at relatively high concentrations in the Building 4-78/79 system influent in October 2015, and again in September 2016. TPHg was not detected in the current December 2017 sampling event. The samples were analyzed by EuroFins Air Toxics and the laboratory report is included in Attachment B.

<sup>1</sup> Multiple changes to SVE system operations have been implemented over the period where data are shown. Changes to extraction flow rates by SVE wells are used to maximize the VOC mass removal and the corresponding SVE influent concentration is highly dependent on the flow rate from selected wells.

## 2.1.2 Summary of Operations and Operational Changes

CALIBRE was onsite on October 4, 2017 to install the 4-78/79 benzene treatment wells. As a precautionary measure to avoid disrupting utilities, 'air-knifing' was completed by Holt Drilling using a vacuum truck, during which no utilities and no groundwater was encountered to a depth of approximately 6-7 ft below ground surface (bgs), however petroleum odors were observed at three of the new well locations in the shallow subsurface (B78-18, B78-19, and B78-20). An operational change to the Building 4-78/79 SVE system was initiated on October 5, 2017 to focus vapor removal in the area of these new wells. To accomplish this, the bleed valves at SVE wells SVE-10, SVE-11, and SVE-12 (located up gradient on Manifold 3) were opened and the operating valves on all Manifold 3 wells were closed. At Manifold 2 the operating valves at SVE wells SVE-7 and SVE-8, located in the area of the new benzene treatment wells, were opened 100% along with the primary valve controlling Manifold 2. The remaining wells on Manifold 2 were closed. The primary valve controlling wells at Manifold 1 was also closed. The recycle valve located inside the SVE trailer was opened slightly to control total vacuum of the system. These changes allowed ambient air to flush through the opened bleed valves at Manifold 3 and flush towards SVE-7 and SVE-8, focusing the entire vapor extraction in the area of the new treatment wells. PID measurements were collected at the influent, SVE-7 and SVE-8 before the adjustments were made and approximately 1 hour and 4 hours after adjustment on October 5, 2017. Concentrations measured with the PID showed an increase at the 1 hour and 4 hour mark indicating flushing through the area was occurring (see Table 2-2). The system was operated in this manner for the rest of October and November to allow thorough flushing of this area.

On December 8, 2017 the system was adjusted to allow air flow from all 15 wells of the Building 4-78/79 SVE system. PID measurements were collected from six wells which have historically shown higher concentrations (SVE-1, SVE-3, SVE-6, SVE-8, SVE-10, and SVE-12; see Attachment A). Based on those PID measurements, three wells (one from each manifold) and the influent were selected for TO-15 analysis to provide data for the planned rebound testing.

On December 15, 2017 the Building 4-78/79 SVE system was shut down to begin a 30 day rest period for the rebound testing. After shut down, approximately one teaspoon of blower oil was poured over the impeller and the system restarted momentarily to spread the oil over the impeller to prevent the blower from seizing during the rest period. This process was repeated two more times to ensure full coverage over the impeller. The condensate pump was run momentarily to ensure all water was removed to prevent the pump and hoses from freezing/cracking during the rest period as well.

Table 2-2 shows the PID readings for selected wells in the Building 4-78/79 SVE system. Table 2-3 shows the operational parameters (flow rate and PID readings) and a summary of the mass removal for the SVE system over this quarter.

#### 2.1.3 Mass Removal Estimate

Between April 17, 2015 (system startup) and December 15, 2017 the Building 4-78/79 SVE system has recovered an estimated 17.3 pounds of VOCs (a mixture of TCE, other CVOCs, and fuel related compounds),

as shown in Tables 2-1 and 2-3. Approximately 0.6 pounds of VOCs were removed during the current reporting period (fourth quarter 2017). The prior quarter showed a similar mass removal of VOCs, 0.4 lbs. The PID concentrations at the system influent during the current and previous quarter showed steady low-level concentrations. In this period, TCE accounted for 75% of the total VOCs detected in the TO-15 analysis (Table 2-1). The cumulative VOC mass removal for the Building 4-78/79 SVE system is shown in graphical form on Figure 2-2.

Figure 2-3 shows the total VOC and TCE mass removal for the Building 4-78/79 system, by calendar quarter. The solid bars on Figure 2-3 correspond to the total VOCs mass removed (as measured with a PID at the inlet to the SVE system). The hatched bars represent the TCE mass removed by quarter. The TCE values were calculated by applying a relative fraction of TCE to the total VOC values based on the TO-15 analytical results. The substantial difference between the total VOCs and the TCE fraction in the Fall of 2015 reflects a "slug" of TPHg that was measured in the October 13, 2015 TO-15 sample. At that time, TPHg represented 85% of the total VOCs, while TCE was slightly under 10% of the total VOCs. TPHg was not detected in the December 2017 TO-15 influent results and TCE represented 75% of the total VOCs. The lower/intermittent mass removal rate during winter 2016 was due to problems encountered when excess water was generated from the vapor extraction resulting in a temporary shutdown of the SVE system. The dashed line is an exponential curve fit to the bar chart of the TCE mass removal data. The general shape of the curve is consistent with an asymptotically declining TCE mass removal rate.

## 2.2 SWMU-172/174 SVE System

The SWMU-172/174 SVE system consists of three vapor extraction wells and a SVE equipment trailer as shown in Figure 2-4. The SVE system is equipped with two vapor-phase GAC vessels, each filled with 1,800 pounds of virgin carbon. The GAC vapor treatment system is configured to run in a lead-lag configuration with vapor from the outlet of the lead vessel passing through the lag vessel. The system also includes two smaller vessels each containing 200 pounds of zeolite impregnated with permanganate.

Routine maintenance including oil changes, drive-belt tensioning and inspection, and inspection of the moisture separator was completed as per the Operations Manual (CALIBRE, 2014). Similar to the 4-78/79 SVE system, screening includes regular monitoring of total organic vapor concentrations with a calibrated PID coupled with selected vapor samples submitted for laboratory TO-15 analysis for VOCs.

#### 2.2.1 TO-15 Laboratory Analysis of Vapor Samples

Two vapor samples were collected from the SWMU-172/174 SVE system for TO-15 analysis on December 8, 2017. The results showed PCE represented approximately 90% of the total VOCs for the SWMU-172/174 SVE system influent sample. These current monitoring results show an 80% decrease in PCE and 84% decrease in total VOC concentrations compared to the rebound testing data collected in May 2017. Table

2-4 summarizes the TO-15 detections for the SWMU-172/174 SVE system for nine TO-15 sampling events<sup>2</sup> that have been implemented since system startup. The laboratory report is included in Attachment B.

## 2.2.2 Summary of Operations and Operational Changes

The SVE system operated nearly continuously (approximately 91%) throughout the fourth quarter 2017. The system shut down in November 2017 likely due to an electrical fault. Upon system startup on November 30, 2017 the influent concentration was measured with a PID and shown to have increased during the time the system was down (see Table 2-5). A PID measurement was collected approximately five hours after the restart and the levels had dropped marginally (1,720 ppbv to 1,545 ppbv). PID measurements were collected again on December 8, 2017 and had dropped to 1,220 ppbv indicating some rebound had occurred during the SVE system down time but concentrations were declining. Approximately 1 gallon of water was generated in the moisture separator at the SWMU-172/174 SVE system in this quarter.

On December 15, 2017 the SWMU-172/174 SVE system was shut down to begin a 30 day rest period for the rebound testing. Upon arrival at the site the system flow rate was at 0" H2O and the vacuum was elevated at 86" H2O (normally around 40" H2O). After inspection it was determined the air filter had become clogged. The air filter was removed and a replacement was ordered. At that point the system was shut down and approximately one tsp of blower oil was poured over the impeller and the system restarted momentarily to spread the oil over the impeller to prevent the blower from seizing during the rest period. This process was repeated two more times to ensure full coverage over the impeller. The condensate pump was run momentarily to ensure all water was removed to prevent the pump and hoses from freezing/cracking during the rest period as well.

Table 2-5 shows the PID readings for the wells in the SWMU-172/174 SVE system. Table 2-6 shows the operational parameters (flow rate and PID readings) and a summary of the mass removal for the SVE system over this quarter.

## 2.2.3 Mass Removal Estimate

Between initial startup on April 17, 2015 and December 8, 2017 the SWMU-172/174 SVE system has recovered an estimated 13.0 pounds of VOCs (primarily PCE), as shown in Table 2-6. Approximately 0.7 pounds of VOCs were removed during the current reporting period (fourth quarter 2017), which was identical to the VOC mass removal in the prior quarter. In this period, PCE accounted for 90% of the total VOCs detected in the TO-15 analysis (Table 2-4). The cumulative VOC mass removal for the SWMU-172/174 SVE system is shown in graphical form on Figure 2-5. Figure 2-6 shows the total VOC and PCE mass removal rate by quarter for the SWMU-172/174 SVE system. The general shape of the curve is consistent with an asymptotically declining PCE mass removal rate.

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<sup>&</sup>lt;sup>2</sup> Multiple changes to SVE system operations have been implemented over the period where data are shown. Changes to extraction flow rates by SVE wells are used to maximize the VOC mass removal and the corresponding SVE influent concentration is highly dependent on the flow rate from selected wells.

## 2.3 Recommended Next Steps for the SVE Systems

PID results from both systems show low-level VOC concentrations continue to be removed at asymptotically low levels. Given these data, a rebound test for both systems was started on December 15, 2017. The rebound test will follow the standard procedures outlined in the previous quarterly report. The next planned activities for both SVE systems is to monitor system concentrations (with PID and TO-15 analysis) in mid-January 2018 after a shutdown period of approximately 30 days.

## 3.0 Continuing Groundwater Treatment

Groundwater treatment is being implemented at several AOCs/SWMUs at the Renton Facility. The remedy being implemented is ERD of chlorinated solvents at targeted areas and most recently by anaerobic biodegradation of benzene by nitrate/sulfate injections at the 4-78/79 Building. The ERD treatment involves substrate injection using sucrose as a carbon source to stimulate biological degradation of the chlorinated solvents. Substrate injections were conducted in December 2014 through June 2016 and summarized in prior reports. No sucrose substrate injections were completed in this quarterly reporting period. In most areas, monitoring and injection wells show total organic carbon (TOC) levels are dropping to near background concentrations indicating the need for additional substrate injections to promote continued dechlorination in areas where VOCs are still present.

Boeing has proposed to implement continued bioremediation treatment in selected areas of the 4-78/79 area, focusing on elevated CVOC concentrations observed at monitoring well GW-033S (total CVOCs at 1,430  $\mu$ g/L in November 2017). Injections will consist of approximately 500 gallons of 6-10% sugar substrate using existing IWs previously used for sugar substrate injections. Substrate will be derived from a concentrated sucrose/fructose syrup diluted to the desired concentrations. The planned IWs in the 4-78/79 area include: B78-12, B78-14, B78-15, and B78-16 (Figure 3-1) and substrate injections are planned for January 2018.

Site wide groundwater sampling was conducted as part of the quarterly monitoring program during this reporting period and the results are presented in the main text of the quarterly report to Ecology.

## 3.1 4-78/79 Building Injection Well Installation, Monitoring and Injection for Benzene

In September 2017 Boeing submitted a Tech Memo to Ecology that recommended adaptations and expansion of the bioremediation system to address a small area of the Building 4-78/79 plume that contains benzene (CALIBRE 2017). The biodegradation of benzene at this site involves the use of injected/added compounds to act as an electron acceptor (common amendments include nitrate and sulfate) while the hydrocarbon serves as the electron donor. Nitrate and sulfate injections were completed in October 2017 following the installation of five new injection wells in the area of the 4-78/79 Building area. Following approval of the Tech Memo, Boeing installed five injection wells (IWs) in the area of the benzene plume (detected at GW-031S, GW-244S, and B78-11) for the optimized remediation approach (Figure 3-1). Five two-inch diameter wells, screened from 5 to 20 feet below ground surface (ft bgs) were installed on October 5, 2017 (Well IDs: B78-17, B78-18, B78-19, B78-20, and B78-21). Soil cores were

collected from three wells during installation and screened with a PID. Two soil samples were collected from depths where elevated detections with the PID were encountered. The first sample was collected from B78-21 at 10 feet below ground surface [ft bgs] where PID readings showed 6.7 ppmv and the other from B78-20 at 7 ft bgs where PID readings showed 0.5 ppmv. Results of both samples indicated all analytes were below applicable soil cleanup levels (see Attachment B). Per the Tech Memo, following well installation, development and baseline groundwater sampling, CALIBRE completed the first round of nitrate/sulfate injections (see Table 3-1 for wells injected and total mass of substrate amendment per well). The initial injection event was completed on October 11, 2017 and included injections at the five recently installed IWs in addition to two previous existing IWs in the immediate area (B78-11 and B78-13).

The baseline monitoring data was collected on October 6, 2017 and the first round of performance monitoring data was collected at wells in this area on November 29, 2017 (Table 3-2 and Attachment B). Samples collected during the baseline event were targeted at depths just below the shallow silt zone in the area (sample depths around 8 ft bgs) however those results showed lower levels of benzene (<10  $\mu$ g/L) than have been historically detected from nearby monitoring wells (~ 30  $\mu$ g/L). The sample depths for the first round of performance monitoring were adjusted to focus at depths near the bottom of the well screen intervals and those results indicated higher concentrations of benzene at most wells sampled (see Table 3-2). Subsequent performance monitoring will be conducted at these deeper sample depths to monitor trends of benzene treatment. The samples were analyzed by Analytical Resources, Incorporated and the laboratory report is included in Attachment B.

The results of the performance monitoring event showed concentrations of nitrate ranging from <0.1 mg/L to 2.93 mg/L. Sulfate concentrations ranged from <0.1 mg/L to 53.9 mg/L at these same wells. Table 3-3 presents recent benzene concentration trends in this area before and after the October 2017 nitrate/sulfate injection event. Monitoring well GW-031S was sampled in mid-November and again in late November (approximately 30 days and 45 days following the initial nitrate/sulfate injection in this area) and those results show benzene concentrations decreasing from 60  $\mu$ g/L to 18  $\mu$ g/L. This decrease may be associated with increased biological activity in response to the recent nitrate/sulfate injections; continued monitoring at this area will be used to monitor this trend.

The initial benzene treatment injection event completed in October 2017 was implemented with low target concentrations of nitrate and sulfate at ~100 mg/L applied to each of the IWs. The results of the performance monitoring event show the injected amendments were rapidly consumed and Boeing has proposed to optimize the remedial action to provide additional reagents for the benzene plume treatment. The reagent concentration for the remedial optimization event is proposed at 200 mg/L (twice the concentration used during the initial injection event) to provide additional nitrate and sulfate to the impacted area. The planned IWs include B78-11, B78-13, B78-17, B78-18, B78-19, B78-20, and B78-21. The next injection event is planned for January 2018.

## 3.2 Recommendations for Groundwater Treatment Actions in Specific Areas

Table 3-4 presents a summary of groundwater monitoring results, by area, related to groundwater treatment/ERD implementation. Current recommendations are to amend selected wells at SWMU-172/174, Building 4-78/79, and Apron A areas with sucrose substrate. Each of these areas showed TOC concentrations nearing background levels or VOC detections in recent sampling events. In addition, Boeing is planning a 2<sup>nd</sup> round of nitrate/sulfate injections for the benzene plume near Building 4-78/79.

## 4.0 Conclusions and Recommendations

Performance data from the Building 4-78/79 and SWMU-172/174 SVE systems indicate continued VOC mass removal from the vadose zone along with asymptotically declining VOC concentrations in the extracted air. A key objective of the SVE systems operation is mass removal from the vadose zone to assist in groundwater cleanup. The groundwater monitoring data indicate significantly declining VOC levels within most areas of the targeted treatment areas (see groundwater sampling summary in the main text of the report); this observed groundwater restoration is the combined effect of both SVE operations for source control and the ERD treatment of the plumes. Both SVE systems were turned off at the end of this reporting period to begin rebound testing of the SVE systems. Monitoring at both SVE systems will be completed after an approximately 30 day rest period and those results will be provided in the following quarterly report.

Groundwater monitoring will continue according to the EDR, with supplemental VOC and TOC sampling at selected wells. Additional substrate injections are recommended for selected areas of the SWMU-172/174, Building 4-78/79, and Apron A sites for continued ERD treatment.

#### 5.0 References

AMEC 2014. Draft Engineering Design Report Boeing Renton Cleanup Action Plan Implementation. Prepared by AMEC Environment & Infrastructure, Inc. for The Boeing Company. July 2014.

CALIBRE 2014. Operations and Maintenance Plan for the Renton Cleanup Action Soil Vapor Extraction Systems. Prepared by CALIBRE Systems, Inc. for The Boeing Company, EHS Remediation. July 2014.

CALIBRE 2017. Bioremediation of Benzene in Groundwater; Building 4-78/79 Area, Boeing Renton Facility Rev. 1. Prepared by CALIBRE Systems, Inc. for The Boeing Company, EHS Remediation. September 2017.

California Department of Toxic Substance Control (CAL DTSC). 2006. Underground Storage Tank Program Standard Requirements for Site Assessment and Cleanup. California Environmental Protection Agency. September.

U.S. Army Corps of Engineers (USACE). 2002. Engineering and Design – Soil Vapor Extraction and Bioventing. Document ID: EM 1110-1-4001. 3 June.

## **TABLES**

Table 2-1 TO-15 Analytical Results - 4-78/79 SVE System

VPC Inle	et
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				1																				
																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
4/17/2015	2.9	280	5.2	ND	ND	8.0	ND	ND	ND	ND	98	ND	ND	1.2	ND	21	ND	ND					296	416
10/13/2015	2.7	160	11	ND	ND	2.7	ND	ND	12	ND	48	9.4	ND	ND	1,400	ND	ND	ND					176	1,646
3/18/2016	ND	49	2.5	ND	ND	ND	ND	ND	19	ND	16	6.6	13	2.3	69	ND	ND	ND					52	177
6/30/2016	1.2	100	6.0	ND	2.3	2.2	ND	ND	32	ND	49	ND	ND	ND	ND	ND	7.2	ND					112	200
9/12/2016	1.6	110	20	ND	5.9	2.2	ND	ND	ND	ND	54	26	100	ND	600	ND	ND	ND					140	920
12/14/2016	ND	17	6.3	ND	2.4	ND	ND	ND	ND	ND	18	4.5	33	ND	ND	ND	ND	ND					25.7	81.2
4/5/2017	ND	43	3.0	ND	ND	1.7	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND					47.7	58.7
8/16/2017	1.3	91	8.0	ND	ND	3.1	ND	ND	ND	ND	6.4	ND	ND	7	ND	ND	ND	0.96	ND	ND	ND	ND	103	118
12/8/2017	ND	42	2.5	ND	ND	1.3	ND	ND	ND	ND	1.7	1.7	5.2	1.9	ND	ND	ND	ND	ND	ND	ND	ND	45.8	56.3

#### **VPC Outlet**

																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
4/17/2015	ND	ND	ND	ND	ND	ND	ND	ND	21	ND	ND	ND	ND	ND	ND	ND							ND	21
10/13/2015	ND	ND	ND	ND	ND	ND	ND	ND	21	ND	ND	ND	ND	ND	ND	ND	ND						ND	21
3/18/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						ND	ND
6/30/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						ND	ND
9/12/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						ND	ND
12/14/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						ND	ND
4/5/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						ND	ND
8/16/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

#### SVE-01

																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	1 1
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
10/13/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	2,100	ND	ND						ND	2,111
6/30/2016	ND	1.2	ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND						1.2	12.2
9/12/2016	ND	ND	ND	ND	ND	ND	ND	ND	14	ND	ND	62	160	1.3	1,800	ND	ND						ND	2,037
12/8/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	27	2.0	250	ND	ND	ND	ND	ND	ND	ND	ND	290

#### SVE-05

																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
8/16/2017	2.5	39	ND	ND	ND	ND	ND	ND	ND	ND	17	ND	ND	160	320	ND	ND	4.5	1.4	1.4	ND	ND	41.5	546

#### SVE-6

																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
9/12/2016	ND	98	ND	ND	190	ND	ND	ND	ND	ND	6,900	55	360	ND	ND	ND	ND						288	7,603
8/16/2017	16	100	4.5	ND	ND	5.4	1.5	ND	ND	ND	75	ND	ND	ND	440	ND	ND	ND	ND	ND	5.0	ND	127	647
12/8/2017	5.4	37	ND	ND	ND	2.7	ND	ND	ND	ND	7.2	ND	ND	6.4	ND	ND	ND	ND	ND	ND	1.2	ND	45	60

#### SVE-8

0120																								
																						1,2,4-		1
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	ı l
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
9/12/2016	ND	4.9	ND	ND	ND	ND	ND	ND	17	2.3	3.9	290	ND	6.2	ND	ND	ND						4.9	324
4/5/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.1	ND	ND	ND	ND						ND	6.1

Table 2-1 TO-15 Analytical Results - 4-78/79 SVE System

#### SVE-10

																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
3/18/2016	ND	250	13	ND	ND	6.9	ND	ND	ND	ND	16	ND	ND	ND	ND	ND	ND						270	286
6/30/2016	1.5	250	17	ND	7.1	6.2	ND	ND	ND	ND	120	ND	ND	ND	ND	ND	ND						282	402
9/12/2016	2.6	320	97	2.1	18	7.9	2.3	1.6	ND	ND	130	ND	ND	2.9	ND	ND	ND						452	584
12/16/2016	ND	91	95	1.4	28	3.3	1.6	1.4	ND	ND	95	ND	ND	ND	ND	ND	ND						222	317
4/5/2017	1.4	240	19	ND	ND	10	ND	ND	ND	ND	20	ND	ND	ND	ND	ND	ND						270	290
8/16/2017	2.6	300	42	ND	ND	14	1.4	ND	ND	ND	34	ND	ND	9.5	260	ND	ND	2.9	1.6	ND	ND	1.5	360	670
12/8/2017	ND	180	11	ND	ND	6.3	ND	ND	ND	ND	8.9	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	197	207

#### SVE-12

																						1,2,4-		
			cis-1,2-	trans-1,2-	Vinyl						Freon						Carbon	m,p-		Ethyl		Trimethylbe	Total	1
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	1,1-DCE	Acetone	Benzene	113	Hexane	Pentane	Toluene	TPHg	MEK	Disulfide	Xylene	o-Xylene	Benzene	Chloroform	nzene	Chlorinated	Total VOCs
8/16/2017	2.8	320	16	ND	ND	7	ND	ND	ND	ND	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	346	350

#### Notes

All results are in parts per billion by volume (ppbv).

ND denotes non-detect. Reporting limits ranges from 0.2 ppbv to 21 ppbv for CVOCs.

DCA = Dichloroethane

DCE = Dichloroethene

MEK = methyl ethyl ketone or 2-butanone

PCE = Tetrachloroethene

TCA = Trichloroethane

TCE = Trichloroethene

Total Chlorinated = the sum of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, 1,1-DCA, and 1,1-DCE.

Table 2-2 PID Monitoring - 4-78/79 SVE System

Date	Days in Operation Since Startup 1	SVE-01	SVE-02	SVE-03	SVE-04	SVE-05	SVE-06	SVE-07	SVE-08	SVE-09	SVE-10	SVE-11	SVE-12	SVE-13	SVE-14	SVE-15	VPC Inlet	VPC Mid	VPC Outlet <sup>2</sup>
10/4/2017	745																224	118	32
10/5/2017	746							0	0								0		
10/5/2017 - 1 Hr	746							45	0								0		
10/5/2017 - 4 Hr	746							143	861								378		
10/6/2017	747							30	145								90		
11/30/2017	802																263		
12/8/2017	810	533		0			462		0		2,831		2,673				528		19
12/15/2017	817																389		

#### Notes:

All PID results posted are reported in parts per billion by volume (ppbv).

PID values listed are field measurements calibrated to isobutylene that have not been corrected to the ionization potentials of the target compounds Blank cells - Not all wells were measured with the PID during each sampling event.

Vapor samples for TO-15 analysis were collected on 12/8/2017.

<sup>&</sup>lt;sup>1</sup> Days in operation since system startup on April 17, 2015.

<sup>&</sup>lt;sup>2</sup> Concentrations measured are at the low end of the range of concentrations able to be measured by the PID. Data presented should be compared with analytical results presented in Table 2-1 which show no detections of COCs.

Table 2-3 VOC Mass Removal Estimate - 4-78/4-79 SVE System

Date	PID Reading (ppbv)	Corrected Value (VOC) (ppbv) <sup>1</sup>	System Flow (cfm)	Cumulative Runtime Hours	VOCs removed in Operating Period Between Monitoring Events (lbs)	Cumulative VOC Mass Removed Since Start of SVE Operations in April, 2015 (lbs)
10/4/2017	224	146	105	17,382	0.06	16.74
10/5/2017	0	0	100	17,408	0.00	16.74
10/5/2017 - 1 Hr	0	0	100	17,409	0.00	16.74
10/5/2017 - 4 Hr	378	247	100	17,412	0.00	16.75
10/6/2017	90	59	63	17,436	0.00	16.75
11/30/2017	263	172	50	18,740	0.25	17.00
12/8/2017	528	345	119	18,928	0.17	17.17
12/15/2017	389	254	119	19,094	0.11	17.28

## Notes:

PID = photoionization detector

ppbv = parts per billion by volume

cfm = cubic feet per minute

lbs = pounds

A correction factor of 0.65 has been applied to the PID vapor measurement for VOCs based on the mixture of analytes detected in the influent TO-15 analysis on 12/8/17.

TO-15 analysis results showed Trichloroethene made up of 75% of the total VOCs removed in the December 8, 2017 results.

Table 2-4 TO-15 Analytical Results for the SWMU-172/174 SVE System

#### VPC Inlet

			cis-1,2-	trans-1,2-	Vinyl										Total	Total
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Chlorinated	VOCs
4/17/2015	1500	130	120	ND	ND	13	ND	ND	ND	ND	ND	ND	ND	ND	1,763	1,763
10/13/2015	400	31	13	ND	ND	3.3	ND	ND	ND	ND	ND	ND	ND	ND	447	447
3/8/2016	82	5.4	3.1	ND	ND	ND	ND	ND	1.1	2.2	ND	ND	ND	ND	91	94
6/30/2016	230	18	10	ND	ND	1.8	ND	11	ND	ND	2.4	ND	ND	ND	260	273
9/12/2016	230	16	8.3	ND	ND	1.9	ND	ND	ND	ND	1.2	ND	ND	ND	256	257
12/14/2016	100	6.2	3.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	110
5/30/2017 - 30 mir	520	220	17	ND	ND	13	2.7	ND	ND	ND	ND	ND	ND	ND	773	773
5/30/2017 - 100 mir	530	200	17	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	761	761
5/30/2017 - 225 mir	510	130	16	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	668	668
8/16/2017	180	16	7.8	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	206	206
12/8/2017	99	7.6	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	110
SVE-3	<b>;</b>															
			cis-1,2-	trans-1,2-	Vinyl										Total	Total
Date	PCE	TCE	DCE	DCE	Chloride	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Chlorinated	VOCs
5/30/2017 - 30 mir	540	51	18	ND	ND	14	2.6	ND	2.2	ND	ND	ND	ND	ND	626	628
5/30/2017 - 100 mir	200	16	6.5	ND	ND	5.5	ND	ND	ND	ND	ND	ND	ND	ND	228	228
8/16/2017	350	30	15	ND	ND	3.5	ND	ND	ND	ND	1.3	ND	ND	ND	399	400
12/8/2017	170	13	5.8	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	191	191
VPC Outlet	t															
			cis-1,2-	trans-1,2-	Vinvl										Total	Total
Date	PCE	TCE	DCE	1	· '	1,1,1-TCA	1,1-DCA	Acetone	Toluene	m,p-Xylene	Chloroform	o-Xylene	Pentane	Hexane	Chlorinated	VOCs
4/17/2015		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.1	5.1
10/13/2015		ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	11
3/8/2016		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6/30/2016	ND.	ND	ND	ND	ND	ND	ND	ND	15	1.6	ND	1.2	6.2	1.2	ND	25.2
9/12/2016	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/14/2016		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

#### Notes:

All results are in parts per billion by volume (ppbv).

ND = non-detect.

DCE = Dichloroethene

PCE = tetrachloroethene

TCE = trichloroethene

Total Chlorinated = the sum of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, and 1,1-DCA.

A remedial optimization operational change was made between the vapor sampling on 3/8/2016 and 6/30/2016 to increase VOC extraction.

Results from 5/30/17 represent rebound samples following system down time for blower and motor repairs. TO-15 samples were collected 30 and 100 minutes after system startup at the VPC inlet and SVE-3, and 225 minutes after startup at the VPC inlet.

Table 2-5 PID Monitoring - SWMU-172/174 SVE System

	Days in Operation							
Date	Since Startup 1	SVE-01	SVE-02	SVE-03	<b>VPC Inlet</b>	VPC Mid	<b>VPC Outlet</b>	Notes
10/4/2017	738	84	34	569	243	120	120	0.5 gal condensate in knockout tank
11/30/2017	795				1,720			System down; 0.5 gal condensate in knockout tank
11/30/2017	795				1,545			Check system at 1500; 5 hrs after restart.
12/8/2017	803			2,173	1,220		0	TO-15 samples from SVE-3 and influent.
12/15/2017	810							No readings collected; air filter had become clogged. Shut system down for rebound testing.

## Notes:

<sup>&</sup>lt;sup>1</sup> Days in operation since system startup on April 17, 2015.

<sup>&</sup>lt;sup>2</sup> Concentrations measured are at the low end of the range of concentrations able to be measured by the PID. Data presented should be compared with analytical results presented in Table 2-4 which show no detections of COCs.

Blank cells - Not all wells were measured with the PID during each sampling event.

Table 2-6 VOC Mass Removal Estimate - SWMU 172/174 SVE System

Date	PID Reading (ppbv)	Corrected Value (PCE) (ppbv) <sup>1</sup>	System Flow (cfm)	Cumulative Runtime Hours	VOCs removed in Operating Period Between Monitoring Events (lbs)	Cumulative VOC Mass Removed Since Start of SVE Operations in April, 2015 (lbs)
10/4/2017	243	139	98	16,410	0.05	12.30
11/30/2017	1,720	985	90	17,522	0.37	12.67
11/30/2017	1,545	885	90	17,527	0.01	12.68
12/8/2017	1,220	699	86	17,716	0.28	12.95
12/15/2017		0	0	17,880	0.00	12.95

#### Notes:

PID = photoionization detector ppbv = parts per billion by volume cfm = cubic feet per minute lbs = pounds

TO-15 analysis results showed Tetrachloroethene made up 90% of the total VOCs removed at the influent on 12/8/17. When comparing the August 2016 and December 2017 analytical results the PID readings recorded in November and December 2017 appear high. See Table 2-4 for analytical results.

<sup>&</sup>lt;sup>1</sup> A correction factor of 0.57 has been applied to the PID vapor measurement for VOCs based on the mixture of analytes detected in the TO-15 analysis at the influent sample point from 12/8/17.

Table 3-1. October 2017 Injection Summary

<u>Well</u>	Volume Total (gal)	NaNO3 (lbs)	MgSO4 (lbs)	DAP (lbs)	Concentration NO3 Injected (mg/L)
B78-11	543	0.60	0.52	1.52	97
B78-13	536	0.74	0.52	1.52	121
B78-17	528	0.73	0.52	1.52	121
B78-18	488	0.73	0.52	1.52	131
B78-19	539	0.73	0.52	1.52	119
B78-20	544	0.74	0.52	1.52	119
B78-21	545	0.74	0.52	1.52	119

Table 3-2. Baseline and Performance Monitoring Groundwater Data; Benzene Treatment Area Renton 4-78/79

		Sample Depth			cis-1,2-				Benzene	Nitrate		Nitrite		Sulfate		
Sample ID	Date	(ft bgs)	TCE (ug/L)		DCE (ug/L)		VC (ug/L)		(ug/L)	(mg-N/L)		(mg-N/L)		(mg/L)		Duplicate Well ID
B78-11-8-113017	11/30/2017	8	0.42		0.98		1.11		9.66	<0.100	U	<0.100	U	1.94		
B78-13-15-112917	11/29/2017	15	0.24		1.29		2.02		9.92	0.135		<0.100	U	0.652		
B78-17-9-100617	10/6/2017	9	<0.2	U	0.17	J	0.33		4.84							
B78-17-15-112917	11/29/2017	15	1.25		0.81		1.31		6.52	<0.100	U	<0.100	U	17.1	D	
B78-18-8-100617	10/6/2017	8	<0.2	U	0.07	J	0.29		0.72							
B78-18-15-112917	11/29/2017	15	<0.2	U	<0.2	U	0.35	М	3.10	<0.100	U	<0.100	U	0.343		
DUP-01-112917	11/29/2017	15	<0.2	U	<0.2	U	0.36		2.96	<0.100	U	<0.100	U	1.68		B78-18-15
B78-19-9-100617	10/6/2017	9	<0.2	U	0.06	J	0.22		0.69							
B78-19-15-112917	11/29/2017	15	<0.2	U	<0.2	U	0.27	М	0.36	<0.100	U	<0.100	U	0.255		
B78-20-8-100617	10/6/2017	8	<0.2	U	<0.2	U	0.14	J	8.81							
B78-20-15-113017	11/30/2017	15	0.41		<0.2	U	<0.2	U	25.9	2.93	D	<0.100	U	53.9	D	
B78-21-8-100617	10/6/2017	8	<0.2	U	0.13	J	0.21		1.42							
Dup01-100617	10/6/2017	8		U	0.15	J	0.20	J	2.01							B78-21-8
B78-21-15-112917	11/29/2017	15	<0.2	U	0.31	М	0.26		2.27	0.101		<0.100	U	4.43	D	
	_															
GW-244S-13-112917	11/29/2017	13	3.48		8.06		5.68		7.97	<0.100	U	<0.100	U	0.753		
GW-031S-23-113017	11/30/2017	23	<0.2	U	<0.2	U	<0.2	U	17.6	<0.100	U	<0.100	U	2.54	D	

Table 3-3. Benzene in 4-78/79 Building groundwater monitoring wells ( $\mu g/L$ )

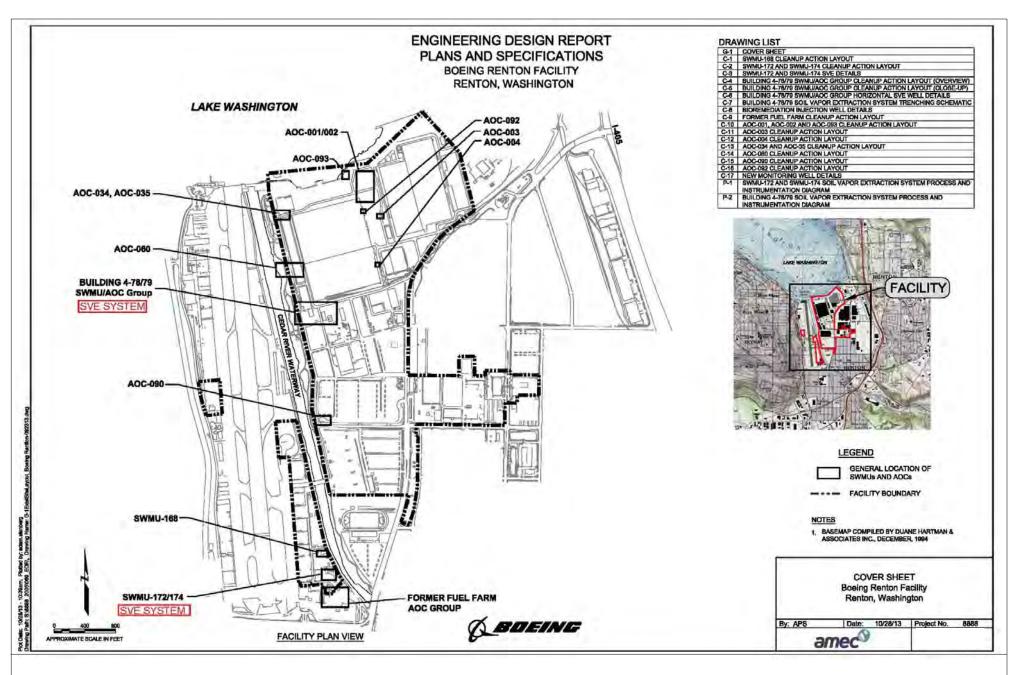
Sampling date	GW031S	GS244S	B78-11
2/3/2016	7.7	19	56
5/11/2016	23	19	NS
8/26/2016	7	21	NS
11/9/2016	79	22	NS
3/3/2017	75	13	NS
5/11/2017	29	11	28
8/16/2017	5.0	9.8	NS
October 2017 - Nitrate	e/Sulfate In	jection	
11/13-11/14/2017	60	7.3	NS
11/29-11/30/2017	18	7.9	9.7

NS = Not Sampled

Table 3-4 Groundwater Monitoring Results Summary and Recommended ERD Treatment - November 2017

<b>GW Treatment Area</b>	Source and downgradient	CPOC wells	Treatment IWs	ERD Treatment
SWMU-172/174	All detections are less than 1.0 ug/L.	All detections are less than 1.2 ug/L.	Prior data, in May 2017 central area IWS showed total CVOCs range from 5.3 ug/L to 17 ug/L. TOC near background.	Substrate injection in selected IWs/areas (B172-1 through B172-10, B172-13, and B172-14).
Building 4-78/4-79 SWMU/AOC Group	Most source area MWs are ND or less than 1.0 ug/L. One central well shows an increase in total CVOCs at 1,430 ug/L. Benzene remains in selected wells/area (<10 typically). GW-031S saw significant drop from Nov 13 to Nov 29 sampling - 60 ug/L to 18 ug/L.	Six of seven CPOC wells are ND for CVOCs. The one well with detections of CVOCs is less than 0.25 ug/L.	Prior data, 4 of 5 wells with low detections where sum of CVOCs are less than 3 ug/L. One central well shows total CVOCs at 2,440 ug/L. TOC near background.	Substrate injection in selected IWs/areas around GW-033S.
AOC-001/002	Prior data, MW near source at 2.1 ug/L; downgradient all detections are less than 3 ug/L (GW192S)	All detections are less than 1.0 ug/L.	Not sampled	Inject 2 infiltration galleries at source.
AOC-003	Not sampled	Detections at 0.67 ug/L.	Prior data, in May 2017 one of four IWs sampled – VC detection less than 0.3 ug/L	No action
Lot 20 / former 10-71	All MWs are ND.			No action
AOC-60	Prior data, detections less than or equal to 3 ug/L	Prior data, all detections less than 0.11 ug/L		Inject MWs GW-012S and GW-147S
AOC – 90	Prior data, Detections of VC are less than 1 ug/L; benzene in 1 well at 1.69 ug/L (GW189S), the rest are ND	Prior data, detection in GW208S at 0.33 ug/L, GW207S at 0.24 ug/L, all the rest are ND		No action
Apron A	Two wells sampled, one is ND and the other with VC at 0.94 ug/L.			No action
Building 4-70		Prior data, CVOCs at 0.9 ug/L and 0.2 ug/L.		No action

#### **FIGURES**



CALIBRE Systems, Inc.

Figure 1-1 Site Location/ AOC Outlines

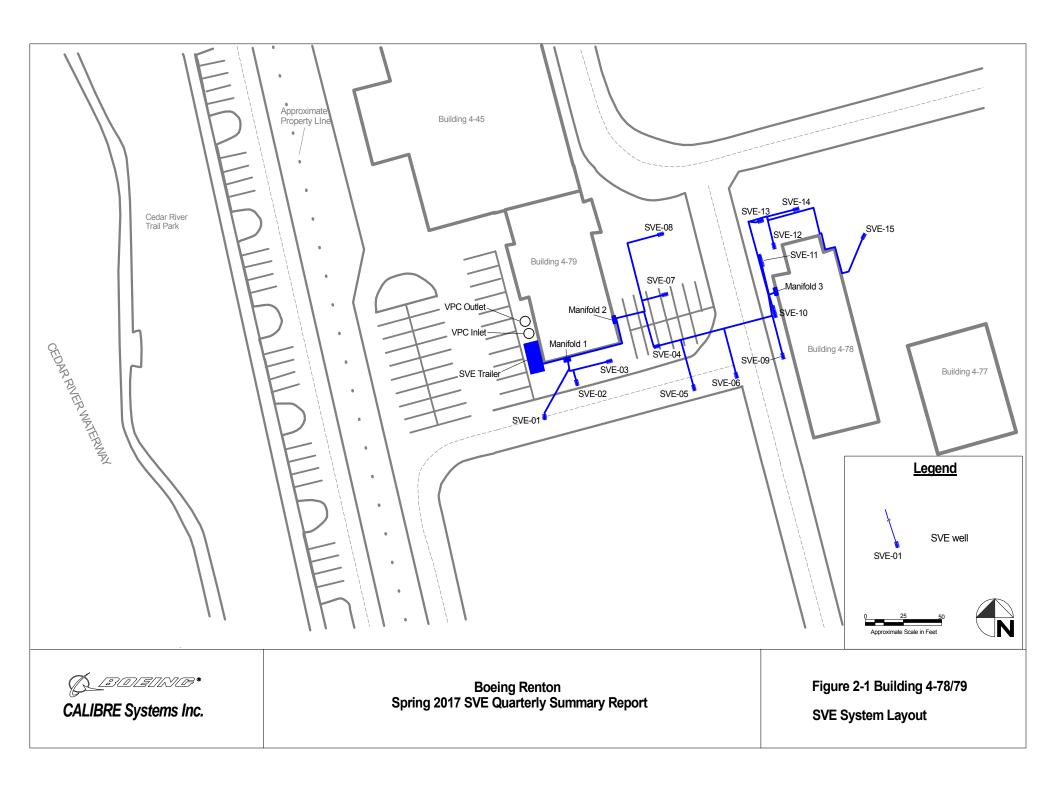


Figure 2-2 Cumulative VOC Mass Removed - 4-78/79 SVE System

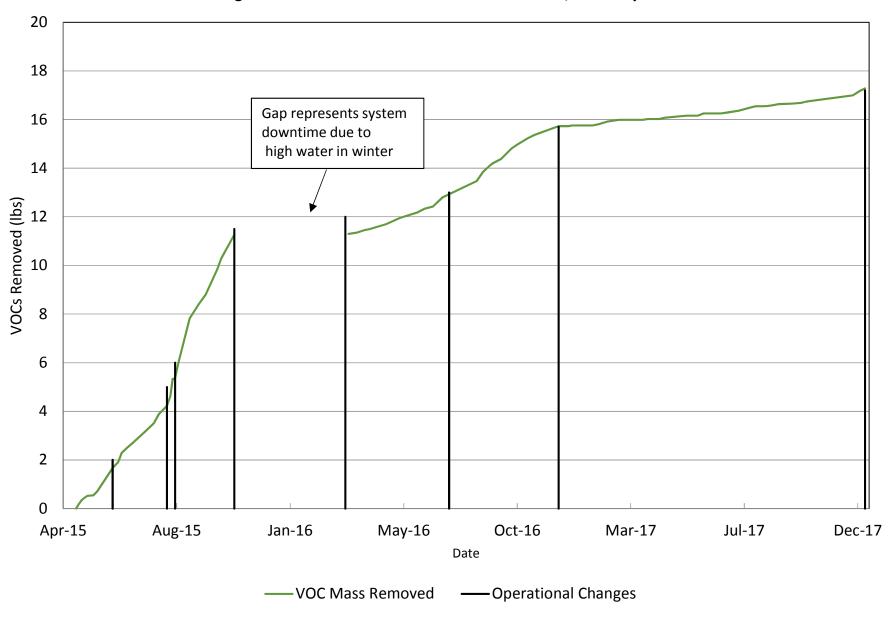
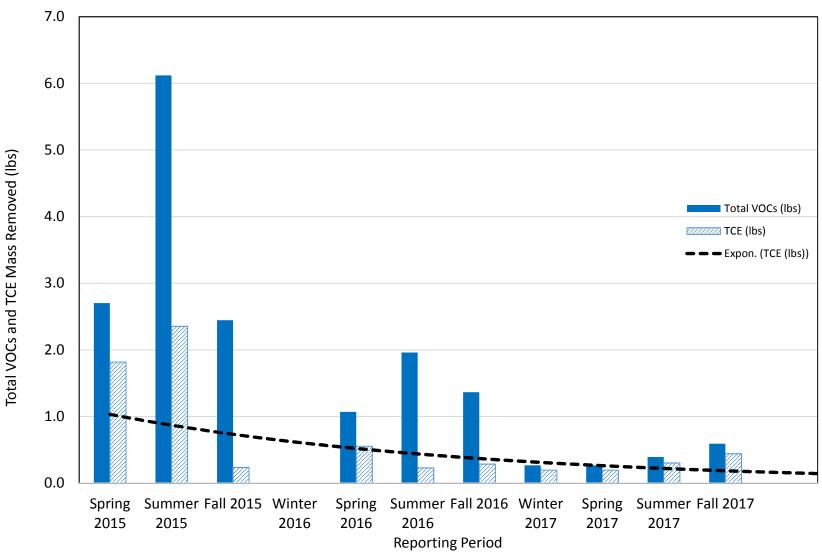


Figure 2-3 Quarterly Mass Removal of Total VOCs and TCE - 4-78/79 SVE System



<sup>\*</sup>The dashed line represents an exponential curve fit to the bar chart of the TCE mass removal data.

<sup>\*</sup>Building 4-78/79 SVE system ran infrequently during Winter 2016 due to increased water generation.

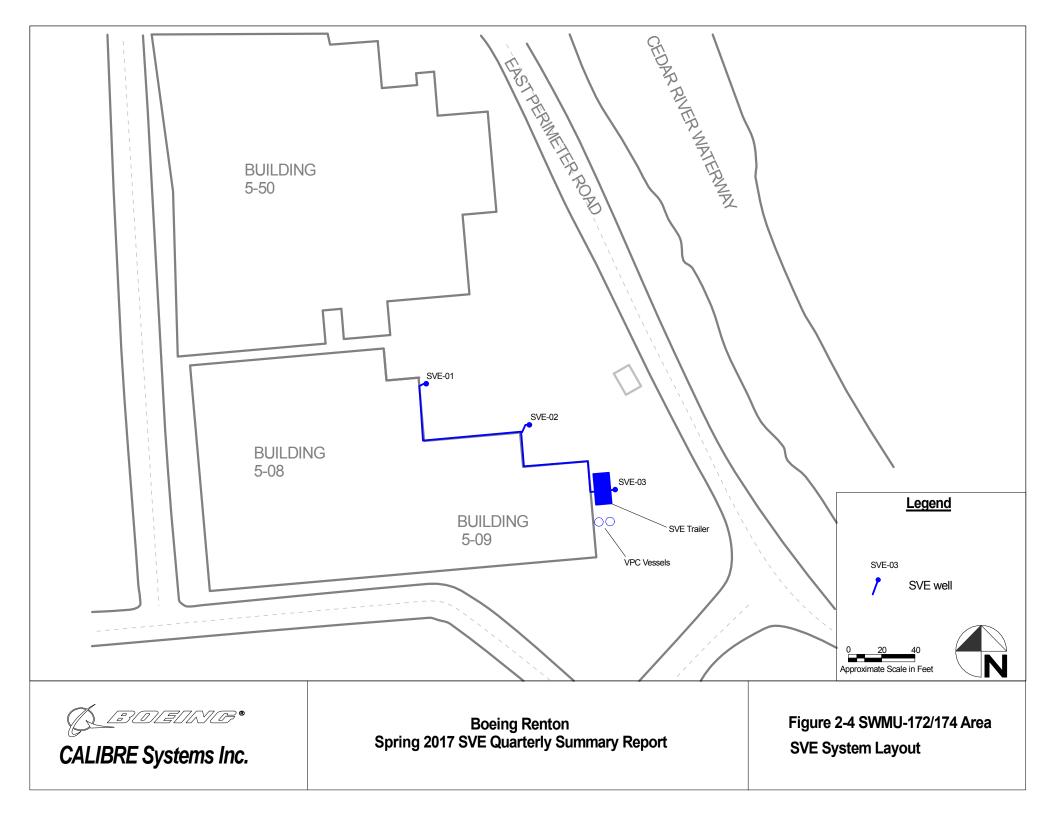
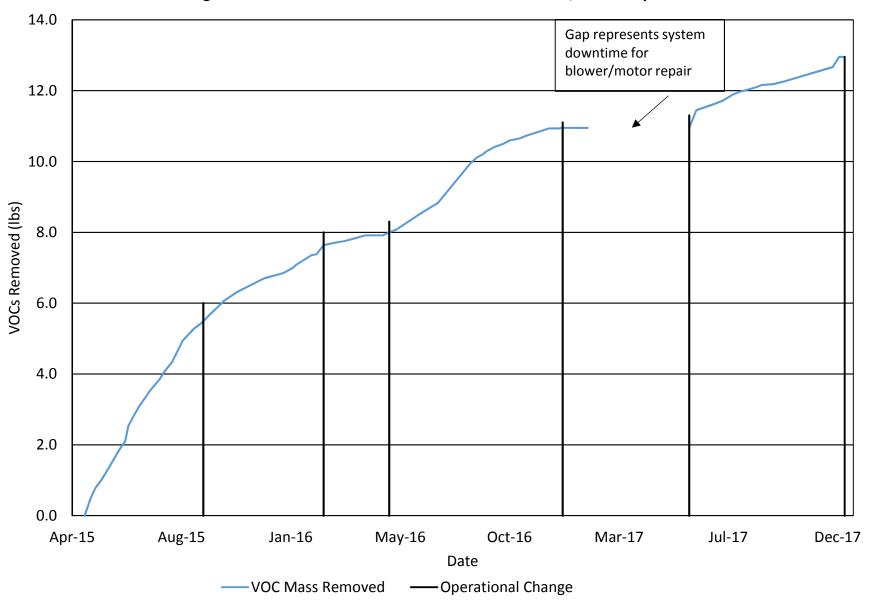


Figure 2-5 Cumulative VOC Mass Removed - SWMU-172/174 SVE System



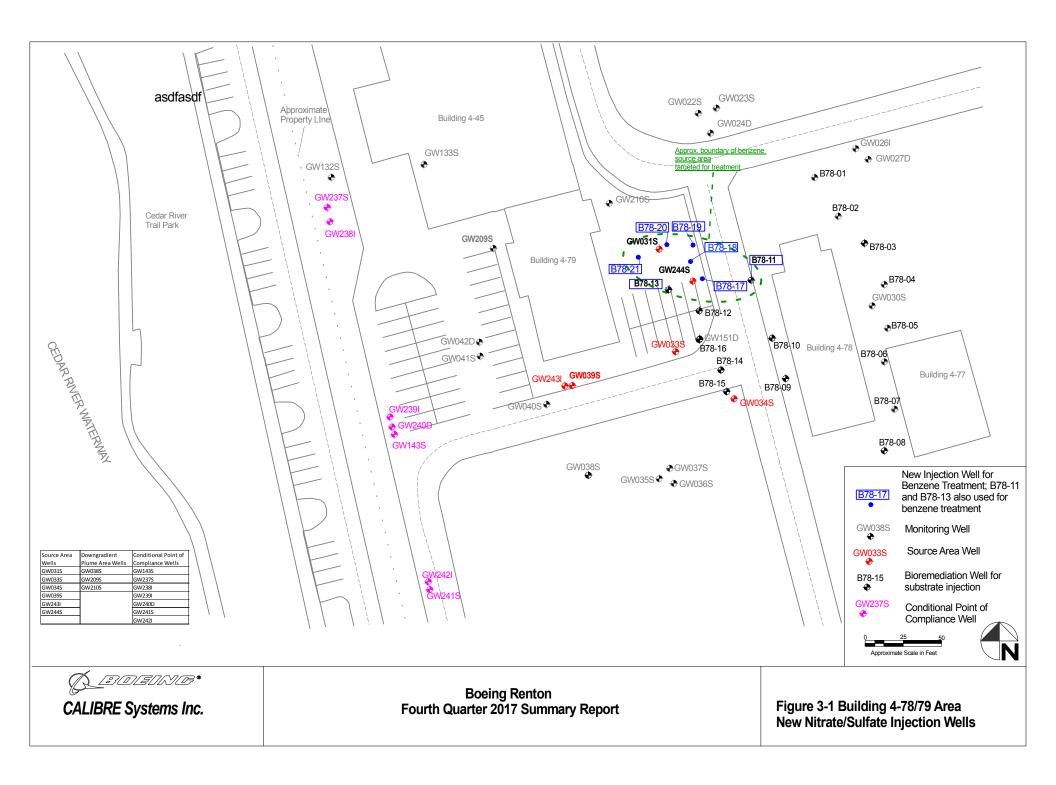
<sup>\*</sup>SWMU 172/174 SVE system did not run Winter 2017 due to equipment failure.

**System** 4.0 Total VOCs and PCE Mass Removed (lbs) 3.0 Total VOCs (lbs) PCE (lbs) 2.0 Expon. (PCE (lbs)) 1.0 0.0 Spring Summer Fall 2015 Winter Spring Summer Fall 2016 Winter Spring Summer Fall 2017 2017 2015 2015 2016 2016 2016 2017 2017 **Reporting Period** 

Figure 2-6 Quarterly Mass Removal of Total VOCs and PCE - SWMU-172/174 SVE

<sup>\*</sup>The dashed line represents an exponential curve fit to the bar chart of the PCE mass removal data.

<sup>\*</sup>SWMU 172/174 SVE system did not run Winter 2017 due to equipment failure



### **Attachment A: Field Log Forms**

# Renton Cleanup Action SVE System – SWMU 172/174 Field Operations Log Form

nspection Date: _ Periodic systems of the control o	check: vacuum pressure, m	Date of last inspection: 9/27/17  noisture separator, water storage drums  I VPC outlet with PID.  Manifesting interval is variable	
2) Check each Sv	Oper	rational Parameters - Monitoring interval is variable.	
Inspection Time:		Motor Hours: 1,582.6	
Blower	Current Value	Other Notes	
Vacuum gauge	37"Hz0	System on 12 gal condensate in KOTank	
Pressure gauge	18" Hz0	12 gal condensate in Kotank	
System flow rate	98 SLFM		
Blower Temperature	115°F		
Temp.at lag VPC discharge	1 = 93.20F 2= 7590F	lts, TEFC motor fan, any unusual noise/vibration	

PID Model: P	PB RAE	3000	Details:	PID check after monitoring:						
Calibration time			PID chec							
Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>			
SVE-01	1/15	82 ppb	84 PAB	3"Ho	VYCFM	2"HED				
SVE-02	8017	TIPPS	34PPB	3.5 4/20	16cfm	2.5"40				
SVE-03	(102	530000	569 997	3 Mtro	>30cFm	17.54/20				
VPC Inlet	1054	237776	243992							
VPC Midpoint	1050	98795	120775							
VPC Outlet	1047	120276	(14,200							
Other vapor point										

<sup>1.</sup> Flow rate calculated from the equation Flow Rate (cfm) =  $12.24 \times \sqrt{differential}$  pressure.

Questions? Call Justin Net At the Completion of a mo	ste @ (360) 981-5606 nitoring event scan monitoring forms and	email to Justin Neste: Justin.Nest	e@calibresys.com
Signature	JWSTIN NUSTC	Signature	10/4/17 Date

### Renton Cleanup Action SVE System – SWMU 172/174 Field Operations Log Form

Inspection Date:	11/30/17	D:	ate of last inspe	ection:		_	
Periodic systems ch 1) Check flowrate, v		moisture se	enarator water	storage drums			
2) Check each SVE	well, VPC inlet,	and VPC out	let with PID.				
			Lavores	onitoring interval	is variable.		
Inspection Time:	9410	Motor F	10urs: 269	5.2			
Blower	Current Value				er Notes		
Vacuum gauge	371120	59.	stam Do	onn			
Pressure gauge	18 "Hz0	PES	terted	System			
System flow rate	90 cfm	~	1/2 gal	condus	of civil	ke Tan	K
Blower Temperature Temp.at lag	69°Facha	Major					
VPC discharge Other notes: chec	k oil level, drive	belts, TEFC I	motor fan, any ι	unusual noise/vib	oration		
PID Model:			Details:				
Calibration time/ da	ate:		PID che	ck after monitori	ng:		
Sampling Point	Time PID	Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated
SVE-01							
SVE-02							
SVE-03				1			
VPC Inlet	153 17	EUpp b	1673ppb	le 1500 -	1488 000/	1545 ppb	
VPC Midpoint					11.	7,3	
VPC Outlet							
Other vapor point							
Flow rate calcu	lated from the equat	ion Flow Rate (c	$f(m) = 12.24 \times \sqrt{di}$	fferential pressure			

Questions? Call Justin Neste @ (360) 981-5606
At the Completion of a monitoring event scan monitoring forms and email to Justin Neste: Justin.Neste@calibresys.com

Signature Tustin Nist In Signature 11 33/1

## Renton Cleanup Action SVE System – SWMU 172/174 Field Operations Log Form

	12/8/17	b	are ni lasi inspection	11/	31/17		
Princelle Susteins 1. Check Rowson 2. Check earl St			eparajor water stora let with PID arameters - Monito				
Blower	0900 Surrent V 39"Itw	White I		Oth	er Notes Coq 20	-70-15	
Pression conside System flow conse Temperature Temperature Coher notes:	10"H20 86 SEFT 98°F	n	SVE-3-12081			-70-15	
Sampling Point SVE-07 SVE-07	12/8	117 0910 PID Reading	PID check a PID Roading (2)	O PPB / ofter monitor	Flow Rate (gauge)	Millerentini Pressure	Flow Rm Lawritate
Similar versioner that this are	0928	1,873 ppb 1196 ppb	2,173 RPB 1220 PPB				
		О <i>РРЬ</i>	= F = alettin		ny Marta	<b>ルナニ</b>	
		Justin	Nur		760	K 11	18/17

## Renton Cleanup Action SVE System – SWMU 172/174 Field Operations Log Form

		Opera	ational Parameters - Monitoring interval is variable.
Inspection Time:	0915		Motor Hours: 3047.9
Blower	Curren	t Value	Other Notes
Vacuum gauge	St. Hrd	36"tw	Hishiac & no flow. Removed filter or wood systembar kon a flow responds. Filter 13 clogged. Replace filter house come of system peraneturs Jamp back to norman. will address.
Pressure gauge	o"Had	12"Ha	of system peraneturs Jump back to normer! will anderse
System flow rate	o "this	1750FM	Down - Alan a trapil to impellers to prevent sciring of
Blower Temperature	1984 /	10204	Enphied warm pump @ KO Tank. Sinut system down for resound testing.
Temp.at lag VPC discharge			400 120000
Other notes: ch	eck oil level	drive belts	s, TEFC motor fan, any unusual noise/vibration

Calibration time/	date: 11	15/17 0315	PID check	PID check after monitoring:						
Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>			
SVE-01										
SVE-02										
SVE-03										
VPC Inlet										
VPC Midpoint										
VPC Outlet										
Other vapor point										

<sup>1.</sup> Flow rate calculated from the equation Flow Rate (cfm) =  $12.24 \times \sqrt{differential}$  pressure.

Questions? Call Justin Neste @ (360) 981-5606	
At the Completion of a monitoring event scan monitoring forms and email to Justin Neste: Justin Neste@calibresys.com	m

	James News	0.500	
Signature	Printed Name	Signature	Date

## Renton Cleanup Action SVE System – 4-78/79 Field Operations Log Form

	/E well, VPC inlet, and	noisture separator, water storage drums I VPC outlet with PID.	
Inspection Time:		Motor Hours: 1,492.7	
Blower	Current Value	Other Notes	
Vacuum gauge	45"Hz0	System on , Nocondensate oil levels good ,	
Pressure gauge	26" Hzo		
System flow rate	105 SCFM		
Blower Temperature	122°F		
Temp.at lag VPC discharge	1=105.4°F		

PID Model:	PB R	AE 3000		PID check after monitoring:					
Calibration time	date:	(4/17	0955						
Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>	Well Off	
SVE-01				ing C Chi					
SVE-02									
SVE-03				4			1 1		
SVE-04				-3240					
SVE-05									
SVE-06									
SVE-07		A							
SVE-08									
SVE-09									
SVE-10									
SVE-11									
SVE-12									
SVE-13									
SVE-14									
SVE-15									
Other:									

Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>	Well
VPC Inlet	1000	224000	209 000					
VPC Midpoint	1004	107,000	118 Deh					
VPC Outlet	1007	32000	24 275					

1. Flow rate calculated from the equation Flow Rate  $(cfm) = 12.24 \times \sqrt{differential} \ pressure$ .

Questions? Call Justin Neste @ (360) 981-5606

At the Completion of a monitoring event scan monitoring forms and e-mail to Justin Neste @ Justin.Neste@calibresys.com

Signature Total Neme Joseph 10/4/17

Printed Name Signature 10/4/17

# Renton Cleanup Action SVE System - 4-78/79 Field Operations Log Form

nspection Date: _	11/30/17		Date of last ins	oection:				
Periodic systems of Check flowrate, 2) Check each SV	vacuum pres	let and VPC	e separator, wate outlet with PID. I Parameters -			ble.		
Inspection Time:	2017	Mot	or Hours: 28	4120				
	0917 Current V		20	1010	Other Note	es		
Vacuum gauge	38"4							
Pressure gauge System flow rate Blower Temperature Temp.at lag VPC discharge Other notes: ch	7 "//2 50 CF 127°F eck oil level, d	m	FC motor fan, ar	y unusual n	oise/vibration			
DID Madel	an /2 // -			Details:	/	(a. a.C.		
	PB AAE 3				after monitor	0-09ppm	,	
Calibration time/	date:   1   30/	17 0919	5	FID CHECK	attor mornton			ior in
Sampling Point	Time	ID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>	Off
SVE-01								
SVE-02								
SVE-03								
SVE-04								
SVE-05								
SVE-06								
SVE-07								
SVE-08								
SVE-09								
SVE-10								
SVE-11								
SVE-12								
SVE-13								
SVE-14								
SVE-15								
Other:								
			Pa	ge   0  1	-14-			

Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>	Off
VPC Inlet	0923	263pph	258 ppb					
VPC Midpoint								
VPC Outlet								

1. Flow rate calculated from the equation Flow Rate (cfm) =  $12.24 \times \sqrt{differential}$  pressure.

Questions? Call Justin Neste @ (360) 981-5606

At the Completion of a monitoring event scan monitoring forms and e-mail to Justin Neste @ Justin.Neste@calibresys.com

Signature

Tromale Tromale Transfer 1/50/17

Renton Cleanup Action SVE System – 4-78/79 Field Operations Log Form

Motor Hours: Inspection Time: 0840 Other Notes **Current Value** Blower System Running Vacuum gauge 40 "HZ 4-78-SUE-IN-120817 @1005 Pressure 4-78-50E-1-120817 @1015 gauge 119 SUFM 4-78-5UE-6-120817 @ 1048 System flow 4-78-5VÉ-10 -120817 @ 1105 rate Blower 110°F Temperature Temp.at lag

VPC discharge

Other notes: check oil level, drive belts, TEFC motor fan, any unusual noise/vibration

Other:\_\_\_

PID Model: PPB PAE 3000

Calibration time/ date: (2/8/17)

Details: Opp b / 10.08 pp b

PID check after monitoring:

Well

Calibration tin	ne/ date: (2	18/17		PID check	after monitor	ing:	
Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>
SVE-01	1012	533 de 200	473 ppb				
SVE-02		533					
SVE-03	1027	OPPP	O Pps				
SVE-04				-			
SVE-05							
SVE-06	1040	310 ppb	462 ppb				
SVE-07							
SVE-08	1046	O ppb					
SVE-09		, ,		7			
SVE-10	1052	2,624006	2,831ppb				
SVE-11		, ,,,,	, 11				
SVE-12	1058	2,58980	2,673 APS				
SVE-13							
SVE-14							
SVE-15							
						41	

Sampling Point	Time	PID Reading (1)	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>	Well
VPC Inlet	1000	513796	528 ppb					
VPC Midpoint								
VPC Outlet	1102	19986	O PPB					

<sup>1.</sup> Flow rate calculated from the equation Flow Rate (cfm) =  $12.24 \times \sqrt{differential}$  pressure.

Questions? Call Justin Neste @ (360) 981-5606

At the Completion of a monitoring event scan monitoring forms and e-mail to Justin Neste @ Justin.Neste@calibresys.com

Signature

i vegtin Neste

Signature

12/8/17

## Renton Cleanup Action SVE System - 4-78/79 Field Operations Log Form

L Can Date:	12/15/17	Date of last inspection: 12/8/17	_
Periodic systems		i tura a resistar suprar storage drums	

1) Check flowrate, vacuum, pressure, moisture separator, water storage drums

2) Check each SVE well, VPC inlet, and VPC outlet with PID.

Inspection Time:	0810	Motor Hours: 3208.4
Blower	Current Value	Other Notes
Vacuum gauge	36" HW	ousite for systems have down to begin rebound testing. After massive juffment concentrations short system down. Beauty and our filterest
Pressure gauge	34" 110	Poured - I top oil or impeller. Closed filter cor & more times
System flow rate	119 SUFM	Ran worter pumpe Ko tank to make sort pump is empty of mate,
Blower Temperature	1140 8	
Temp.at lag		elts, TEFC motor fan, any unusual noise/vibration

Details: PID Model: PZBRAE 3000 O ppb 10.08 7PM PID check after monitoring: Calibration time/ date: 12/15/17 08/5 Well Differential Flow Rate Flow Rate PID Reading Vacuum PID Reading Sampling Off Calculated1 Pressure (gauge) (2) (1) Point Time SVE-01 SVE-02 SVE-03 SVE-04 SVE-05 SVE-06 SVE-07 SVE-08 SVE-09 SVE-10 SVE-11 SVE-12 SVE-13 SVE-14 SVE-15 Other:

Sampling Point	Time	PID Reading	PID Reading (2)	Vacuum	Flow Rate (gauge)	Differential Pressure	Flow Rate Calculated <sup>1</sup>	Well
VPC Inlet	0830	389 ppb	350 ppb 3	57896				
VPC Midpoint								
VPC Outlet								

1. Flow rate calculated from the equation Flow Rate  $(cfm) = 12.24 \times \sqrt{differential}$  pressure.

Questions? Call Justin Neste @ (360) 981-5606

At the Completion of a monitoring event scan monitoring forms and e-mail to Justin Neste @ Justin.Neste@calibresys.com

Signature Signature 12/
Signature Date

				W	ell Sampling		Sheet					
Date		101	0 117		Site Location	ocation Renton 4-79						
Samplers		JN	MP		Well ID			B78-21				
Casing N		7.10	PUL		Constructed	Dept	h	20'				
Casing D			2"		Condition o							
Field Me								Neu				
Time			0750		Depth Meas	sured I	From:					
Depth to	Water		5.32					p of access p	ort			
Deptil to	Truces		3.3.		X			ark on PVC				
					-			ark of protect				
							_	her				
Purging	Inform	ations					100	ilei				
	IIIIOI III	ation.	Dedicated		Non-dedica	ted		Per	istaltic			
Pump: Bailer:			PVC		Stainless St	4-12		Oth				
7-1-10-10-10-1	ust Time		FVC	Duess	End Time	001	1	Oth	O1.			
Purge Sta			read	rurge	End Time		4					
Approxi												
Water M	ionitori	ng Con		Con	duativity	D.O				Turbidity		
Time	Wal P	L same	Temperature		ductivity (cm) us/cm			pH	ORP (mV)	(NTU)		
Time	VOI. P	urged	(°C)					5.55		267.1		
0301	1	- 1	18.19		77.5	0.0	2		-54.1	-		
1306	0.5		15.0		554.0			591		1908		
23.11	1.00		17.6		Stole	-0.0	-	6.09	-115.6	145.6		
816	1.5	6-1	17.4	'3	84.0	-0.0	Dr.f	6.12	-121,7	142.3		
								_				
							-					
	<b>N</b>											
			( )									
Samplin	g Data:		T 0			7		21 1				
Time			0821	Sample		1	578	-21-8-	100617			
Vol. Purg			2.0901	Duplicates			out	01-1006	17 0080	0		
Temperat			17.2901		C Volumes							
Conducti		/cm)	-0.05 3X	1 -4								
D.O. (mg	/L)		-0.05									
pН			6.12									
ORP (mV	7)		-122.5									
Turbidity	(NTU)	1 1 1	1238									
Sampling		:										
PVC Bai	ler		SS Bailer		Dedicated P	ump		Tef	lon Bailer			
Analyses	to be P	erform										
Volatile		V	VOCs	Care C				1 5 5 5				
Organics		X	8260B	SVOC	by 8270C			Sulfate	375.2			
						J. J		RSK-175	(methane,			
Total Me	tals		RCRA 8 or	SVOC	by 8270C/S	IM		ethane, e	thene)			
Dissolved	1		Priority		rganic Carbo	n						
Metals			Pollutants	415.1				Other				
Samplin	g Notes	:	81 San	PIL				Well	II Valores (C-1/6	4)		
Work								iam. We	ell Volume (Gal/f	i)		
W11 24	- Iden								0.041			
								inch	0.163			
							-	inch	0.653			
								inch	1.469			
									n(ft) - DTW(ft)) x	Well Dia <sup>2</sup> x		
							0.0	1408 = 1	Well Volume			

				W	ell Sampling		Sheet					
Date	- 1	01 0	6 1 1		Site Location			Rentan				
Samplers		7	WMP		Well ID			B78-19				
Casing N			PUL		Constructed	l Depth	1	20				
Casing D			2"		Condition of Well New							
	easureme	nts:										
Time	- Carlo		0845		Depth Meas	sured F	rom:			ľ		
Depth to	Water		4.30	To				of access	port			
2					×		Mar	k on PVC	casing			
							Mar	k of prote	ctive casing			
							Oth	er				
Purging	Informa	tion:										
Pump:			Dedicated		Non-dedica				ristaltic			
Bailer:	1,11		PVC		Stainless St	eel		Ot	her:			
Purge Sta	art Time			Purge	End Time							
	nate Volu	ıme Pu	irged									
	Ionitorin											
			Temperature		ductivity	D.O.			and the second	Turbidity		
Time	Vol. Pu	irged	(°C)	(m§	Hem) uskin	(mg/	L)	pН	ORP (mV			
0350	ø		18.7		20.3	0.5	6	6.12	-43.5			
0855	8.5		17.2	4	31.7	0.1	5	6.16	-76.0			
2900	10		18.2		5D 9	0,1	3	6.20				
0905	1.5		18.1		29.4	0.11		6.2	1 -100.2	- 43.4		
				1								
				-								
				+								
Samplin	g Data:											
Time			0910	Sampl			\$78	19-9	-100617			
Vol. Pur			2.0	Duplio						-		
Tempera			18.1	QA/Q	C Volumes							
Conduct	ivity (mS/	(cm)	430.0									
D.O. (mg	g/L)		0-11									
pH			10.22									
ORP (m'			-106.3									
Turbidity			35.0	1								
	g Device:				ne receive			1 12	0 5 11			
PVC Bai			SS Bailer		Dedicated I	ump		Te	eflon Bailer			
	s to be Pe	rform						1				
Volatile		V	VOCs		1 00=00			0.10	275.0			
Organics		X	8260B	SVOC	s by 8270C				375.2			
Total Me	etals				s by 8270C/S			1-(-)(-)(-)(-)(-)(-)(-)(-)(-)(-)(-)(-)(-)	75 (methane, ethene)			
Dissolve	d		Priority	Total (	Organic Carbo	on		Other				
Metals	NT.		Pollutants	413.1			17	/ell				
Samplin	ng Notes:	9	Sample				240.7		Vell Volume (Gal	I/ <del>(1</del> )		
No od	0 w	my 27	Sumple clear					inch w	0.041	111)		
			1.11.4					inch	0.163			
							-		0.163			
							_	inch	1.469			
								inch	1.409 4b(A) DTW(A)			

Or: (total depth(ft) - DTW(ft)) x Well Dia<sup>2</sup> x 0.0408 = 1 Well Volume

				ell Sampling		JAKOW 6	7				
Date	10/	06 / 17		Site Locati	on		Renton 4-79				
Samplers		N MP		Well ID			B78-18				
Casing M		PUL		Constructe			20	1			
Casing D	iameter	7"		Condition	of Well		Ne	W.			
	asurements:										
Time		0932		Depth Mea	sured F						
Depth to	Water	5.71					of access po				
				X			k on PVC ca				
						Marl	k of protectiv	ve casing			
						Othe	er				
Purging	Information:										
Pump:		Dedicated		Non-dedica			Peris				
Bailer:			Stainless S	teel	T	Othe	:				
Purge Sta		112777	Purge	End Time							
	nate Volume						1				
Water M	lonitoring Co								Terrorium		
		Temperature		ductivity	D.O.			2221-24	Turbidity		
Time	Vol. Purgeo	(°C)		Jem)US/cm	15/cm (mg/L)		pН	ORP (mV)	(NTU)		
7937	The state of the s	18.6	4	30.7			6.28	-77.0	534.0		
0942	3.5 you	18.7	48	8.7	0.00		6.17	-34.2	481,0		
947	1-0901	18.7	46	2.5	0.0		6.15	-39.7	35 € €		
0952	1.5501	18-3	4.0	14.9	-0.0	5	6.15	-95.6	264.6		
Sampling	n Data.										
Time	5 Data.	0957	Sampl	e ID	18	78-	18-8-10	10617			
Vol. Purg	red	2.0001	Duplic								
Temperat		17.3		C Volumes							
Conducti	vity (mS/cm)	483.2									
	vity (mS/cm) /L)	-0.06									
Conducti D.O. (mg pH		-0.06									
D.O. (mg	/L)	-0.06 6.19 -98.4									
D.O. (mg pH	/L) ` /)	-0.06									
D.O. (mg pH ORP (mV	/L) /) (NTU)	-0.06 60.14 -98.4 2343									
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail	/L) /) (NTU) g Device: er	-0.06 6.14 -98.4 23'13 SS Bailer		Dedicated 1	Pump		Teflo	n Bailer			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses	/L) /) (NTU) g Device:	-0.06 6.19 -98.4 23'1.3 SS Bailer med:			Pump		Teflo	n Bailer			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile	/L) /) (NTU) g Device: er	-0.04 -0.14 -78.4 1.34.3 SS Bailer med: VOCs		Dedicated l	Pump	1					
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile	/L) /) (NTU) g Device: er	-0.06 6.19 -98.4 23'1.3 SS Bailer med:			Pump		Sulfate 3	75.2			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile Organics Total Me	(NTU) g Device: ler to be Perfor	-0.04 -98.4 1.3'1.3 SS Bailer med: VOCs 8260B RCRA 8 or	SVOC:	Dedicated Is by 8270C	SIM			75.2 (methane,			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile Organics Total Met	(NTU) g Device: ler to be Perfor	SS Bailer med: VOCs 8260B	SVOC:	Dedicated l	SIM		Sulfate 3 RSK-175	75.2 (methane,			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile Organics Total Met Dissolved Metals	/L) /) (NTU) g Device: ler to be Perfor  tals	SS Bailer  SS Bailer  WOCs 8260B  RCRA 8 or Priority Pollutants	SVOCS SVOCS Total C	Dedicated Is by 8270C	SIM	We	Sulfate 3 RSK-175 ethane, etl Other ell um. Well	75.2 (methane, nene)  Volume (Gal/ft)			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile Organics Total Met Dissolved Metals	/L) /) (NTU) g Device: ler to be Perfor  tals	SS Bailer  SS Bailer  WOCs 8260B  RCRA 8 or Priority Pollutants	SVOCS SVOCS Total C	Dedicated Is by 8270C	SIM	Dia 1 ir	Sulfate 3 RSK-175 ethane, eth Other ell am. Well	75.2 (methane, nene)  Volume (Gal/ft) 0.041			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile Organics Total Met Dissolved Metals	/L) /) (NTU) g Device: ler to be Perfor  tals	COC   COC	SVOCS SVOCS Total C	Dedicated Is by 8270C	SIM	Dia 1 ir 2 ir	Sulfate 3 RSK-175 ethane, etl Other ell um. Well nch	75.2 (methane, nene)  Volume (Gal/ft) 0.041 0.163			
D.O. (mg pH ORP (mV Turbidity Sampling PVC Bail Analyses Volatile Organics Total Met Dissolved Metals	/L) /) (NTU) g Device: ler to be Perfor  tals	SS Bailer  SS Bailer  WOCs 8260B  RCRA 8 or Priority Pollutants	SVOCS SVOCS Total C	Dedicated Is by 8270C	SIM	Dia 1 ir	Sulfate 3 RSK-175 ethane, eth Other ell am. Well ach ach	75.2 (methane, nene)  Volume (Gal/ft) 0.041			

0.0408 = 1 Well Volume

Turbidity (NTU) -1 715.0
mV) (NTU) -1 715.0 7 211
7 715.0
7 7110
6-11
15 167.8
1
7 1
Gal/ft)
(Gal/ft)
41
CO. I
63
53

			W	ell Sampling		sneet					
Date	10/0	0 117		Site Location	on		Renton 4-79				
Samplers	JN			Well ID			B78-	20-8-10	0617		
Casing N	<b>laterial</b>			Constructed							
Casing D	iameter			Condition of	of Well						
Field Me	easurements:										
Time				Depth Mea	sured I						
Depth to	Water	5,71		W. Tritt			of access por				
							k on PVC cas				
							k of protectiv	e casing			
						Othe	er				
	Information:						T 1	1			
Pump:		Dedicated		Non-dedica			Perista				
Bailer:		PVC		Stainless St	teel	1	Other	8			
Purge Sta			Purge	End Time							
	nate Volume Pr										
Water N	Ionitoring Con		102	*	T			-	T1.!.1!		
	Day a live	Temperature	Cor	ductivity	D.O	_	-TT	OPD (-10	Turbidity		
Time	Vol. Purged	(°C)		item) in Spen	(mg/L)		pH	ORP (mV)	(NTU)		
1102	1	\$ 189		235.6			6.27	-62-3	335.7		
1107	0.5	18.8		76.3	0.4		6.19	-73.5	263.6		
1112	10	18.5		577.0	0.4		6.18	75.7	334.8		
Till	1.25	13.2	2	5781	0.	40	6.16	-78.8	169.6		
1122									-		
Samplin Time Vol. Pur		1119	Sample ID Duplicates				20-8-10	00617			
	ture (°C)		QA/QC Volumes								
	ivity (mS/cm)		A.n.A	0 10101110							
D.O. (mg											
pH	91)										
ORP (m'	V)										
Turbidity											
	g Device:						4				
		COD 1	Dedicated Pump				Teflon Bailer				
	ler	SS Bailer	-	Domoutou	-						
PVC Bai				Decidated							
PVC Bai	iler s to be Perforn	VOCs									
PVC Bai Analyses Volatile	s to be Perforn	ned:	SVOC	s by 8270C			Sulfate 3				
PVC Bai Analyse: Volatile Organics	s to be Perform	VOCs 8260B		s by 8270C			RSK-175 (	methane,			
PVC Bai Analyses Volatile Organics Total Me	s to be Perform	VOCs 8260B RCRA 8 or	SVOC	s by 8270C	SIM			methane,			
PVC Bai Analyses Volatile Organics Total Me Dissolve	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM		RSK-175 (ethane, eth	methane,			
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or	SVOC	s by 8270C	SIM	-	RSK-175 (ethane, eth	methane,			
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM		RSK-175 (ethane, eth	methane, ene)	20		
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM	Di	RSK-175 (ethane, eth Other Vell am. Well	methane, ene)	t)		
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM	Di 1 i	RSK-175 (ethane, ethane, ethane, ethane, ethane) Other Vell am. Well inch	wethane, ene)  Volume (Gal/fi	E)		
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM	Di 1 i 2 i	RSK-175 (ethane, ethane, ethan	Volume (Gal/fi 0.041 0.163	t)		
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM	Di 1 i 2 i 4 i	RSK-175 (ethane, ethane, ethan	Volume (Gal/fi 0.041 0.163 0.653	t)		
PVC Bai Analyse Volatile Organics Total Me Dissolve Metals	s to be Perform	VOCs 8260B RCRA 8 or Priority	SVOC Total (	s by 8270C	SIM	Di 1 i 2 i 4 i	Other Vell am. Well inch inch	Volume (Gal/fi 0.041 0.163			

Well Sampling Data Sheet
Site Location

					Well Sampling Data Sheet					
Date	11	13	0 1 17		Site Location	2				
Samplers		Til	1 pro		Well ID	878-20				
Casing Materia	1		PUL		Constructed Depth	2	Zor			
Casing Diamete	er		2"		Condition of Well	0	K			
Field Measure										
Time			0654		Depth Measured From:					
Depth to Water	T T		4.36			Top of access	port			
Dopar to water			. 50		~	Mark on PVC				
						Mark of prote		ng.		
						Other	ctive casin	5		
D Y C	4:					Outer				
Purging Inform	uation	•	Dedicated	T	Non-dedicated		Peristal	tic		
Pump:	-		PVC		Stainless Steel		Other:			
Bailer:			PVC	D			Other:			
Purge Start Tim				Purge E	nd Time					
Approximate V										
Water Monitor	ring Co	onditio	ns:			1			I m + + ++	
Time	Vol	. Purge	d Tempera	ture (°C)	Conductivity (mS/cm)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	
0703	1	W. St	d Tempera	.36	0.370	4.33	6.26	-338	72.3	
0 708	1	5.59			0.365	3.76	6.25	-401	57.2	
27.7	1	Deja			0.360	2.92	6,22		45.2	
112					0.357		6.23			
2718		5-jeil				2,39	-	-583	36.1	
123	2	Dejes	.1 13.	34	D.357	4.00	6,20	-629	3600	
Sampling Data Fime Vol. Purged (ga Femperature (°C Conductivity (m	l) C)		0728 2.5-ged 13.75 0.358	Sample Duplicat QA/QC		878-20	-15-11	3017		
D.O. (mg/L)			6.19	-						
pH			-686	1						
ORP (mV)				1						
Turbidity (NTU			33.0	1						
Sampling Device	ce:			1	B #		TZ			
PVC Bailer			SS Bailer	I -	Dedicated Pump		Teflon I	Bailer		
Analyses to be	Perfor	med:	VOC			1 1		-		
Valatila O	00	7	VOCs 8260B	SVOC	by 8270C	Sulfate	275 2		×	
Volatile Organic	US	-	0200B	SVOCS	0y 02/0C		(methane			
Total Metals			RCRA 8 or	SVOCs	by 8270C/SIM	ethane, et	The state of the s	,		
i otal ivictais			Priority		ganic Carbon		evil; h	PATONE	44	
Dissolved Meta	ls		Pollutants	415.1	D	Other		trite	×	
Sampling Note				-		Well				
Clary Stryly reducing oder in 16 briges notice hereve ore very low.								olume (Gal/fi 0.041 0.163 0.653 1.469	r)	
very low.		01 100		- 104	A sell	Or:(total depth = 1 Well Vol		V(ft)) x Well	Dia <sup>2</sup> x 0.0408	

				Well Sampling Data Sneet	t					
Date	11/	30 117		Site Location		RL	utor			
Samplers		30 /17		Well ID						
Casing Material		200		Constructed Depth		25				
Casing Diameter		7.1		Condition of Well		01	4			
Field Measuren										
Time	ichts.			Depth Measured From:						
Depth to Water		4.87		Top of access port						
Depui to water		1.07		Mark on PV						
				X	-		ctive casin	g		
					Other	or protec		8		
					Other					
Purging Inform	ation:	Dedicated	1	Non-dedicated			Peristal	tic		
Pump:	-		-	Stainless Steel			Other:	LIC		
Bailer:		PVC	D				Other.			
Purge Start Time			Purge E	and Time	-					
Approximate Vo										
Water Monitor	ing Cond	itions:			_		T		Turbidity	
Time	Vol. Pu	rged Tempera	ture (°C)	Conductivity (mS/cm)	D.O.	(mg/L)	pН	ORP (mV)	(NTU)	
0745	of of	14.6		0.416	7	81	6.45	-872	480	
0750	0.5		7	0.420	6.5		6.47	-930	550	
0755		14,	75	0.431		82	6.50	-981		
0800	10	14. (	in of	0.421		42	6.48	-1013	39.4	
0300	112		- /	0.12	1	1	200			
		0805 2.0 14.66 0.419 5.00 6.52 -1043	Sample Duplica QA/QC		Cru	W-0	315-3	13-1130	()	
Turbidity (NTU	J)	36.2								
Sampling Device	ce:		1	In the same			m a	D-31		
PVC Bailer		SS Bailer		Dedicated Pump			Teflon	Danier		
Analyses to be	Performe	ed:	1		1 1	-				
	_	VOCs	SVOC-	by 8270C		Sulfate	375.2		-	
Volatile Organic	cs 7	8260B	SVUCS	by 8270C			(methane	2.		
Total Metals		RCRA 8 or	SVOCs	by 8270C/SIM		ethane, e		,		
I Otal Micials	-	Priority		rganic Carbon						
Dissolved Meta	ls	Pollutants	415.1				STD.	17.1	4.	
Sampling Note	es:				Dia 1 2	Vell meter inch inch inch	Well V	Volume (Gal/ 0.041 0.163 0.653	ft)	

	-			V	Vell Sampling Data Sheet				
Date		11/3	0117		Site Location	E	end of		
Samplers			IN ME		Well ID	B	78-11		
Casing Materi	al		PVC		Constructed Depth		1171		
Casing Diame			2"		Condition of Well	/	E		
Field Measur	ement	s:							
Time			0815		Depth Measured From:				
Depth to Wate	r		n.el	/		ss port			
					+	Mark on PV	C casing		
						Mark of pro	tective casin	ng	
						Other			
<b>Purging Infor</b>	matio	n:							
Pump:			Dedicated		Non-dedicated		Perista	ltic	
Bailer:			PVC		Stainless Steel		Other:		
Purge Start Tir	me			Purge Er	nd Time				
Approximate \		e Purged							
Water Monito	oring (	Conditio	ons:						
Time	17.	ol. Purge	ed Tempera	ture (°C)	Conductivity (mS/cm)	D.O. (mg/L	) pH	ORP (mV)	Turbidity
08/7	V	of Purge	ed Tempera				6.27		(NTU)
2832		10.50	1	-	0.415	7 31	6.41	-1156	721
3837	-	1.0	13:	Do	0.410	4	10-24	-071	436
15 42		1.000	7 1		0.431	w-53	10-37	1183	354
12 20	-	Syn	, , , ,		0.15	0.77	16.27	.0)	551
Sampling Dat Time Vol. Purged (g			0347 2,600	Sample I Duplicate		878-11	-8-113	017	
Voi. Purged (g Temperature (°			12.51	QA/QC					
Conductivity (		0)	0.450	QIDQC	VOLUM				
D.O. (mg/L)	ino/cill	.,	10-110	1					
pH			6.39	1					
ORP (mV)			-1200	1					
Turbidity (NT	U)		381	1					
Sampling Dev				-					
PVC Bailer			SS Bailer		Dedicated Pump		Teflon	Bailer	
Analyses to be	Perfo	ormed:							
		-	VOCs	12.52.57	N sicro	100	7000		
Volatile Organ	ics	+	8260B	SVOCs	by 8270C		375.2		
Total Metals			RCRA 8 or Priority		by 8270C/SIM ganic Carbon		75 (methane ethene)	9,	
Dissolved Met	als		Pollutants	415.1	and Caroon	Other			
Sampling No.	tes:		1.0100000			Well			
Sampling Notes:  water wery torbid initially.  Sample						Diameter 1 inch 2 inch 4 inch 6 inch	Well V	Volume (Gal/f 0.041 0.163 0.653 1.469	t)
								W(ft)) x Well	Dia <sup>2</sup> x 0.040

Date		11/20	117		Site Location	Renton					
Samplers			mp		Well ID 87			73-21			
Casing Materia	al		PUL		Constructed Depth	20					
Casing Diamet			2"		Condition of Well		OK				
Field Measure		:									
Fime	ments		1230		Depth Measured From:						
Depth to Water	-		4.91		2-5-11-11-11-11-11-11-11-11-11-11-11-11-1		of access p	ort			
Depui to water			1.11		×	-	on PVC c				
						-	of protect		ng		
						Othe					
Davieste - Y - C	mott					June					
Purging Infor	matio	u.	Dedicated		Non-dedicated			Perista	ltic		
Pump: Bailer:	-		PVC		Stainless Steel			Other:			
			1235	Purae E	nd Time						
Purge Start Tir		. D 1		ruige E	no i inc						
Approximate \				1							
Water Monito	oring (	onditio	ns:					TUT I		Turbidity	
Γime	V	ol. Purge	d Tempera	ture (°C)	Conductivity (mS/cm)		. (mg/L)	pH	ORP (mV	(NTU)	
1237		×			0.471 mS/cm	4.4		HH	-520	119	
247	2	5500	1 15.5	5	0.469	3.3		6.40	-618	86.3	
257					0.475	2.2		6.11	-552	30.3	
302		1.0 gal 15.11 1.55-1 15.55		)	0.476	1.31	)	6.15	-605	28-3	
Γime Vol. Purged (g	Vol. Purged (gal) 2.05-1		Sample Duplica QA/QC		B7	8 21-	15 - 11	2917			
	HIS/CH	1)	1.69	1							
D.O. (mg/L) pH			6.16								
ORP (mV)			-638	1							
Turbidity (NT	TD		22.8	1							
Sampling Dev			0-0	_							
PVC Bailer	ice.		SS Bailer		Dedicated Pump			Teflon	Bailer		
Analyses to be	o Done	ormad.	55 Danei		Doublet Lamb			2 011011			
Analyses to be	e reri	ormeu:	VOCs			T					
Volatile Organ	nics	X	8260B	SVOCs	by 8270C		Sulfate 3	75.2		X	
, Dimile Organ	-1-4	1					RSK-175	(methan	e,		
Total Metals			RCRA 8 or		by 8270C/SIM		ethane, eth	nene)			
10 10 10 10 10 10 10 10 10 10 10 10 10 1	7.7		Priority		rganic Carbon		Bougart,	N. treat	1.2 X		
Dissolved Met			Pollutants	415.1		+ 1	Other Well	iv. tri	1-4		
Sampling No 15 Soup Clear wo		الد	reducing	octo-		Di 1 2 4	ameter inch inch inch inch		Volume (Ga 0.041 0.163 0.653 1.469 W(ft)) x We	l/ft) ell Dia <sup>2</sup> x 0.040	
							Well Voli		w(II)) x we	n Dia x 0.040	

Date	11/20	1 /17		Site Location	(	zentur	1	
Samplers		NP		Well ID	13"	18-13		
Casing Material		PUL		Constructed Depth				
Casing Diameter		211		Condition of Well	C	K		
Field Measureme	nts:							
Time		1318		Depth Measured From:				
Depth to Water		4.90			Top of acce	ss port		
Depui to water		1.10		7	Mark on PV			
						tective casir	ıg	
					Other		-	
Di. a Informat	ione							
Purging Informat	ion.	Dedicated		Non-dedicated		Perista	ltic	
Pump: Bailer:		PVC		Stainless Steel		Other:		
Batter: Purge Start Time		1 10	Puroe F	nd Time				
Approximate Volu	me Durace	1	1 dige E	no Imio	1			
Approximate Volu Water Monitoring								
water Monitorin	g Conditio			La Contractor de la Con	13574C	37 70 1	2002 0 034	Turbidity
Time	Vol. Purge			Conductivity (mS/cm)	D.O. (mg/l		ORP (mV)	(NTU)
132	gh	17.3		0.544	3.89	5.64	-720	17.7
1325	0.59	1 15.13	3	0.560	3.02			10.3
330	1.0301		5	0.552	3.02	4.17		
335	1.500	1 15.	70	V.539	3.36	6.19		12.9
	2.0 cy 4		3	12.518	3 23	614		12.8
Sampling Data: Time Vol. Purged (gal) Temperature (°C) Conductivity (mS/D.O. (mg/L) pH ORP (mV)	ime (345  ol. Purged (gal) (2554)  emperature (°C) (15.89)  conductivity (mS/cm) (0.50)  0.0. (mg/L) (0.78)		Sample Duplica QA/QC		B78-1	3-15-10	29/7	
Turbidity (NTU)		12.2						
Sampling Device:		Transfer or		In the same		m a	n-h-	
PVC Bailer		SS Bailer		Dedicated Pump		Teflon	Baller	
Analyses to be Pe	rformed:	L VOC-	1		1 1			
Valatila Oni	X	VOCs 8260B	SVOC	by 8270C	Sulfat	e 375.2		X
Volatile Organics	1-	8200B	SVOCS	03 02100		175 (methan	e,	
Total Metals		RCRA 8 or		by 8270C/SIM	ethan	e, ethene)		
		Priority		rganic Carbon	Benz	ene, N.T.		×
Dissolved Metals		Pollutants	415.1		Other	NIT	17-4	
Sampling Notes:	ner ste	educing	odor		Diamete 1 inch 2 inch 4 inch 6 inch		Volume (Gal/ 0.041 0.163 0.653 1.469 W(ft)) x Well	

					Well Sampling Data Sheet	t				
Date	tu		117		Site Location			tun		
Samplers	1	NN	P		Well ID		Low-	2445	5	
Casing Materia	1		PUL		Constructed Depth		15			
Casing Diamete			2"		Condition of Well		OL			
Field Measure	ments:									
Time			1350		Depth Measured From:					
Depth to Water	• 7		4.89			Top	of access 1	port		
Departo water			1.0		*	_	on PVC			
						-	of protec		σ	
						Othe		tive cusin	5	
D . I.C.						Out	1			
Purging Inform	mation:	In	edicated	1	Non-dedicated			Peristal	tic	
Pump:	-				Stainless Steel			Other:	iic	
Bailer:		P	VC	D D	The state of the s			Other.		
Purge Start Tim				Purge E	nd Time	-				
Approximate V										
Water Monito	ring Con	ditions:			T	1		1		T. 1'1'
Time	Vol 1	Purged	Tempera	ture (°C)	Conductivity (mS/cm)	D.O	. (mg/L)	pН	ORP (mV)	Turbidity (NTU)
1353	-	3~1	15.1		0.448		.18	6.04	-929	193
1358		gal	15.9		0.456		97	4.36	-981	173
	9.5	Ject				5.0		6.20	-1002	143
13/03	1.0	eyer 1	16.0	<u> </u>	0.468					
1403	1:3-	gal	16.0	)	01474	4.	22	6.18	-1017	113
Time Vol. Purged (ga Temperature (°C Conductivity (n D.O. (mg/L)	C)	1	113 2050 1013 2017	Sample Duplicat QA/QC		CTU	U-2445	- 13 -	112917	
pH		6	.14							
ORP (mV)			1033							
Turbidity (NTU	U)	i	40							
Sampling Devi										
PVC Bailer		SS	S Bailer		Dedicated Pump			Teflon l	Bailer	
Analyses to be	Perform	ed:								
	1	V	OCs	12.55×1	STATE OF THE PARTY		F.103.77			
Volatile Organi	ics	82	260B	SVOCs	by 8270C	-	Sulfate 3			X
		T I U.		OX * 0 =	1 000000000		RSK-175		,	
Total Metals			CRA 8 or		by 8270C/SIM		ethane, et			
Dissolved	Ja		iority	1 otal Or 415.1	ganic Carbon	1	Senzene	rhiprat	1 3	<b>&gt;</b>
Dissolved Meta Sampling Note		Po	llutants	413.1			Other Well	Nitril	(	
131 50 Clear o	aug 1-	c , NO	ider			Dia 1 2 4 6	ameter inch inch inch inch		0.041 0.163 0.653 1.469	
Clear	nutil	C NO	idur			2 4 6 Or:(to	inch inch inch			0.163 0.653

						5			
Date	11.7207			Site Location		Rent			
Samplers	JN			Well ID	i	378	-17		
Casing Material		PUL		Constructed Depth		201			
Casing Diamete		211		Condition of Well		CK			
Field Measurer	ments:								
Time		1359		Depth Measured From:					
Depth to Water		41.55			Top of a	ccess po	ort		
Depin to water		, ,		7	Mark on	PVC ca	sing		
					Mark of	protecti	ve casing	2	
					Other				
D I f	undian.								
Purging Inform	nation:	Dedicated		Non-dedicated			Peristalt	ic	
Pump:		PVC		Stainless Steel		-	Other:		
Bailer:		PVC	Dunca E	nd Time			Other.		
Purge Start Tim			Purge E	nd 1 me					
Approximate V									
Water Monitor	ring Conditio	ns:		1					Turbidity
Time	Vol. Purge	d Tempera	ture (°C)	Conductivity (mS/cm)	D.O. (m	ng/L)	pH	ORP (mV	(NTU)
427	W alge	14.8		0.593	4.2		9.11	-1094	79.8
1-127	0.5 ye		77	0.688	3.99	7 0	1.27	-1217	7 76.3
432	1.090			0.718	3.5		7.42		
	1.5901	15.0			3		6.80	-1211	110
437	1.590	15.0	01	0.684	2.4		0.3	6 2.1	110
Sampling Data Time Vol. Purged (ga Temperature (°C Conductivity (n D.O. (mg/L) pH ORP (mV)	nl) C) nS/cm)	1947 15.73 0466 244 057 -1208	Sample Duplica QA/QC		B78-	17 -	15-11	2917	
Turbidity (NTI		111	_						
Sampling Devi	ice:	00 D-11		Dadicated Duma		Т	Teflon I	Bailer	
PVC Bailer		SS Bailer		Dedicated Pump			1 CHOIL	Janet	
Analyses to be	Performed:	VOCs						1	
Volatile Organi	ice	8260B	SVOCs	by 8270C	Su	Ifate 37	75.2		×
volatile Organi	103	02000	51003	-, -,			methane	,	
Total Metals		RCRA 8 or	SVOCs	by 8270C/SIM		ane, eth			
Tomi Momis		Priority		rganic Carbon		nzene	, Wit	wit	GAL.
Dissolved Meta	als	Pollutants	415.1		Oti	her	N.75	74	×
Sampling Not		educing	, odor.		We Diame 1 inc 2 inc	eter ch	Well V	olume (Ga 0.041 0.163 0.653	l/ft)

Well Sampling Data Sheet Renton Site Location 1129 117 Date 378-18 JNW Well ID Samplers PUC 20 Constructed Depth Casing Material 211 OK Condition of Well Casing Diameter **Field Measurements:** 14 30 Depth Measured From: Time 4-18 Top of access port Depth to Water Mark on PVC casing X Mark of protective casing Other **Purging Information:** Peristaltic Non-dedicated Dedicated Pump: Other: Stainless Steel PVC Bailer: Purge End Time Purge Start Time Approximate Volume Purged **Water Monitoring Conditions:** Turbidity ORP (mV) pH D.O. (mg/L) Vol. Purged Temperature (°C) Conductivity (mS/cm) (NTU) Time 6.33 -1210 116 0.714 8.30 16.15 1450 Desert -1216 0.730 10.33 601.5 7.53 16.47 1455 0.5401 -1737 68.7 6-76 33 1500 16.52 0.732 1.0 cycr 6.309 -1246 75.01 10.03 16.50 77-727 1505 · Sign 5.39 6.28 1751-79.8 0.716 1510 2000-1 110.50 Sampling Data: B78-18-15-112917 Dup-01-112917 1515 Sample ID Time 2.5 gen **Duplicates** Vol. Purged (gal) 16.43 QA/QC Volumes Temperature (°C) 0.703 Conductivity (mS/cm) 4.37 D.O. (mg/L) 6,45 pH -1280 ORP (mV) 21.4 Turbidity (NTU) Sampling Device: **Dedicated Pump** Teflon Bailer SS Bailer **PVC** Bailer Analyses to be Performed: VOCs V Sulfate 375.2 SVOCs by 8270C 1 8260B Volatile Organics RSK-175 (methane, SVOCs by 8270C/SIM ethane, ethene) RCRA 8 or **Total Metals** Benzem Nitroit **Total Organic Carbon** Priority X N.15:12 Other 415.1 Pollutants Dissolved Metals Well Sampling Notes: 15' Sample Clear water, ceducing order Diameter Well Volume (Gal/ft)

> Or:(total depth(ft) - DTW(ft)) x Well Dia2 x 0.0408 = 1 Well Volume

0.041

0.163 0.653

1.469

1 inch

2 inch

4 inch

6 inch

				-	ven Sampling Data Sheet				
Date	11	129	1 17		Site Location		uton		
Samplers	13	7.0	mo		Well ID	137	18-197-	15	
Casing Materia	1	7.	Puc		Constructed Depth		201		
Casing Diamete			2"		Condition of Well		K		
Field Measure			-						
	ments:		1500		Depth Measured From:				
Time			442		Deput Measured From.	Top of access	s nort		
Depth to Water			1014			Mark on PV			
					7	-			
						Mark of prot	ective casin	ıg	
						Other			
<b>Purging Inform</b>	nation:			1	T-0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1 4		
Pump:			Dedicated		Non-dedicated		Perista	ltic	
Bailer:		P	PVC		Stainless Steel		Other:		
Purge Start Tim	ne			Purge E	nd Time				
Approximate V		urged							
Water Monito							Organia de		
				(00)	C 1 1 1 1 ( C C/2 )	D.O. (ma/L)	-II	OPP (mV)	Turbidity
Time	Vol.	Purged	Tempera		Conductivity (mS/cm)	D.O. (mg/L)		ORP (mV)	(NTU)
1529	1	/		27	0.730	1.83	6.45	-1311	87.1
1534	0.	Sycul	16.2		0.72	1.33	16.5E		65.3
1539	1.0	gal	16.0	18	0.684	1.08	6,54	-580	74.9
1544	1,5	Juject!	16	15	0.651	1,94	6.5	-693	101
15 40	21	Jeg -1	16.	34	0.622	094	653	-744	65.8
	Time :								
Sampling Data					1				7.
Time			1554	Sample	ID	1378-19	-15-	12917	
	-D		2.591	Duplica		2 - 5 17			
Vol. Purged (ga		10	11 23	1	Volumes				
Temperature (°			0 597	QA/QC	VOIUMES	1			
Conductivity (r	nS/cm)		0-70	-					
D.O. (mg/L)			- T-	-					
рН		- 1	- 37	-					
ORP (mV)		-		4					
Turbidity (NT	U)		59.1						
Sampling Devi	ice:								
PVC Bailer		5	SS Bailer		Dedicated Pump		Teflon	Bailer	
Analyses to be	Perfor	med:							
		1	VOCs	1	Grands		3222		×
Volatile Organi	ics	1	3260B	SVOCs	by 8270C	Sulfate			***
				avioa	L., 9270C/CD 4		75 (methan	e,	
Total Metals			RCRA 8 or		by 8270C/SIM	ethane,		- 1 de	
			Priority		rganic Carbon	Other	audito		×
Dissolved Meta		P	Pollutants	415.1		Well	Wits	(1,0)	
Sampling Not						Diameter	Well	olume (Gal/f	ft)
15' sam	012		1			1 inch	ii oli	0.041	/
2	1	المعالم	dur			2 inch		0.163	
15' san	colnei	10				4 inch		0.163	
~						2000000		1.469	
						6 inch	Dige See		
								W(ft)) x Well	Dia <sup>2</sup> x 0.040
						= 1 Well V	olume		

### **Attachment B: Laboratory Data Package**



12 October 2017

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

RE: Boeing Renton 4-79

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

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

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

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

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

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

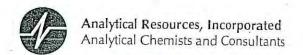
Analytical Resources, Inc.



# Chain of Custody Record & Laboratory Analysis Request

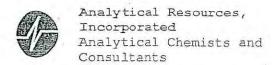
ARI Assigned Number:	Turn-around	Turn-around Requested:	brod		Page:	oţ		Analytical Resources, Incorporated Analytical Chemists and Consultants	ed
100		Phone:	Phone: 06/206/89/8-04	8540	Date: 10/06/17	lce Present?	112	4611 South 134th Place, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)	0 5
Client Contact:		)			No. of Coolers:	Cooler Temps:		www.arilabs.com	3
Client Project Name: Zenton	4-79 /2	3					Analysis Requested	Notes/Comments	
Client Project #:	0,	Neste	M Payel		4				
Sample ID	Date	Time	Matrix	No. Containers	JOC_2				
B78-21-8-100617	10/00/17	1280	CIW	3	×				7 = 1
678-19-9-1-878	10/06/17	0160	200	M	×				711
F18-18-8-100617	~1/00/ON	1560	22	W	×				
B18-17-9-100617	ribolos	оно!	Com	2	X				
578-20-8-100617	10/00/17 1119	1110	(nu	P^1	×				
Dup 01-100617	ribajoi	0800	Com	3	λ				
TrisBlank	10/06/17	4	An	W	×				
4-79-IDW-100617	10/01/17	1136	(200)	M	×				
Comments/Special Instructions	Relinquished by: (Signature)		13	Received by: (Signature)	1 the 200		Relinquished by: (Signature)	Received by: (Signature)	
	Printed Name:	LUSTIN NASTA	SF &	Printed Name:	1072		Printed Name:	Printed Name:	
Ton McKeon	Company:	HIBRE	14	Company:	ARI		Сотралу:	Сотрапу:	-
	Date & Time: (0/06/		1257	Date & Time:	2	15:	Date & Time:	Date & Time:	

meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program signed agreement between ARI and the Client. Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



## **Cooler Receipt Form**

Calibr	2				
ARI Client: Boeing		Project Name: Boei	ng Rem	ton	
COC No(s):	NA	Delivered by: Fed-Ex UPS Cou	O		
Assigned ARI Job No: 177	50113	Tracking No:			NA
Preliminary Examination Phase		ridding No			CINA
Were intact, properly signed and	dated custody seals attached	to the outside of to cooler?		YES	NO
Were custody papers included w				YES	NO
Were custody papers properly fil			7		1,5
Temperature of Cooler(s) (°C) (re Time: 12:57				YES	NO
If cooler temperature is out of co	mpliance fill out form 00070F	19,1	Temp Gun ID:	# Doo	5200
Cooler Accepted by:	B.H.	Date: 10/6/17 Time	e: 12:5	1	<u> </u>
Sec. 1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (	Marie Control of the	s and attach all shipping documents			
Log-In Phase:		and account an empping documents			_
Was a temperature blank include				YES	NO
What kind of packing material	vas used? Bubble Wri	ap Wet Ice Gel Packs Baggies Foam	Block Paper C	Other:	
Was sufficient ice used (if approp			NA	YES	NO
Were all bottles sealed in individu				YES	NO
				YES	NO
				YES	NO
		nber of containers received?		YES	NO
				YES	NO
				YES	NO
		preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air but	bles?	***************************************	NA	YES	(NO)
Was sufficient amount of sample	sent in each bottle?			(YES)	NO
Date VOC Trip Blank was made	at ARI	***************************************	NA	1012	2/17
Was Sample Split by ARI:	YES Date/Time:	Equipment:		Split by:_	
o 1 1 1	3. H. nat	10/0/10			
Samples Logged by:	Dat	Time.	6:53		
	** Notity Project Manag	ger of discrepancies or concerns **	4		
1					
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Samp	ole ID on Co	OC
	*				
Additional Notes, Discrepancie	s, & Resolutions:	d one vial of B78-19	K-8-100	(01)	had
peabubbles.	1-1-10001 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 6 70,0	COT 1	nad
;	1-1-1-				***************************************
0 11	10/9/17				
By: 13. H Da	te: 10/68.H.	1			
Small Air Bubbles Peabubb	FULLOF LAN PARTIES	Small → "sm" (<2 mm)			
-2nm 2-4 mm	- Timai	Peabubbles $\Rightarrow$ "pb" (2 to < 4 mm)			
	9 9 9	Large → "lg" (4 to < 6 mm)			
	——	Headspace → "hs" (>6 mm)			



# Cooler Temperature Compliance Form

1750113		
Cooler#: Tempe	erature(°C):  💍	
Sample ID	Bottle Count	Bottle Type
Samples had temp		
above le°C.		
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Cooler#:Temps	rature(°C):	
Sample ID	Bottle Count	Bottle Type
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Cooler#: Tempe	rature(°C):	
Sample ID	Bottle Count	Bottle Type
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1		
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700		
Cooler#:Tempe	rature(°C):	· ·
Sample ID	Bottle Count	Bottle Type
		- Carlo Typo
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The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B78-21-8-100617	17J0113-01	Water	06-Oct-2017 08:21	06-Oct-2017 12:57
B78-19-9-100617	17J0113-02	Water	06-Oct-2017 09:10	06-Oct-2017 12:57
B78-18-8-100617	17J0113-03	Water	06-Oct-2017 09:57	06-Oct-2017 12:57
B78-17-9-100617	17J0113-04	Water	06-Oct-2017 10:40	06-Oct-2017 12:57
B78-20-8-100617	17J0113-05	Water	06-Oct-2017 11:19	06-Oct-2017 12:57
Dup01-100617	17J0113-06	Water	06-Oct-2017 08:00	06-Oct-2017 12:57
TripBlank	17J0113-07	Water	06-Oct-2017 00:00	06-Oct-2017 12:57
4-79-IDW-100617	17J0113-08	Water	06-Oct-2017 11:36	06-Oct-2017 12:57





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### **Case Narrative**

### Volatiles - EPA Method SW8260C

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

Initial and continuing calibrations were within method requirements with the exception flagged analytes in the associated forms. All samples which contain analyte are flagged with a "Q" qualifier and all are out of control low.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The LCS/LCSD percent recoveries and RPD were within control limits with the exception of Idomethane RPD which is flagged in the associated forms.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-21-8-100617 17J0113-01 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 08:21

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:03

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared: 11 Oct 2017	i mai voidine.	TO IIIE					
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	0.17	ug/L	J
Vinyl Chloride	75-01-4	1	0.06	0.20	0.21	ug/L	
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	1.95	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.85	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.16	ug/L	J
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	0.09	ug/L	J
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	0.13	ug/L	J
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	1.42	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.57	ug/L	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-21-8-100617 17J0113-01 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 08:21

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:03

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	1.81	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.25	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	1.79	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.42	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	2.20	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	1.06	ug/L	
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.40	ug/L	
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.35	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	0.51	ug/L	
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.12	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	0.16	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	0.09	ug/L	J
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	0.52	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-21-8-100617 17J0113-01 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 08:21

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	100	%	
Surrogate: Toluene-d8				80-120 %	99.0	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	95.2	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	99.9	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-19-9-100617 17J0113-02 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 09:10

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:23

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared: 11 Oct 2017	i mai voiume.	TO IIIE					
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	0.14	ug/L	J
Vinyl Chloride	75-01-4	1	0.06	0.20	0.22	ug/L	
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	3.71	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	4.19	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.18	ug/L	J
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	0.16	ug/L	J
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	0.06	ug/L	J
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	0.69	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.44	ug/L	
						-	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-19-9-100617 17J0113-02 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 09:10

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:23

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	0.47	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.36	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	2.57	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.78	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	3.35	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	0.26	ug/L	
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.16	ug/L	J
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.83	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	3.53	ug/L	
s-Butylbenzene	135-98-8	1	0.02	0.20	0.03	ug/L	J
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.08	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	1.10	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-19-9-100617 17J0113-02 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 09:10

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:23

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	96.9	%	
Surrogate: Toluene-d8				80-120 %	99.2	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	96.7	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	100	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-18-8-100617 17J0113-03 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 09:57

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:43

Sample Preparation:

Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared. If Set 2017	Tillal volullie.						
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	0.29	ug/L	
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	7.39	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.84	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	0.58	ug/L	J
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.47	ug/L	
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	0.08	ug/L	J
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	0.07	ug/L	J
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	0.72	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.65	ug/L	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-18-8-100617 17J0113-03 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 09:57

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:43

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	2.22	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.36	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	1.41	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.38	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	1.80	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	0.19	ug/L	J
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.06	ug/L	J
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.66	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	2.71	ug/L	
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.06	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	0.19	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	0.14	ug/L	J
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	1.29	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	0.11	ug/L	J

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-18-8-100617 17J0113-03 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 09:57

 Instrument: NT2
 Analyzed: 11-Oct-2017 16:43

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	98.3	%	
Surrogate: Toluene-d8				80-120 %	99.6	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	95.4	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	102	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### B78-17-9-100617 17J0113-04 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 10:40

 Instrument: NT2
 Analyzed: 11-Oct-2017 13:20

Sample Preparation: Preparation M

Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL
Prepared: 11-Oct-2017 Final Volume: 10 mL

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	0.33	ug/L	
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	8.23	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.11	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.57	ug/L	
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	0.26	ug/L	
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	0.17	ug/L	J
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	4.84	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	1.25	ug/L	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-17-9-100617 17J0113-04 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 10:40

 Instrument: NT2
 Analyzed: 11-Oct-2017 13:20

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	1.78	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.13	ug/L	J
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	0.43	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.20	ug/L	J
Xylenes, total	1330-20-7	1	0.09	0.60	0.63	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	0.03	ug/L	J
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.04	ug/L	J
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.10	ug/L	J
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	0.15	ug/L	J
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.04	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	0.11	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-17-9-100617 17J0113-04 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 10:40

 Instrument: NT2
 Analyzed: 11-Oct-2017 13:20

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	96.7	%	
Surrogate: Toluene-d8				80-120 %	96.4	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	97.8	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	103	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-20-8-100617 17J0113-05 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 11:19

 Instrument: NT2
 Analyzed: 11-Oct-2017 13:41

Sample Preparation:

Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL
Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared. If Set 2017	i mai voiame:						
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	0.14	ug/L	J
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	1.09	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	3.39	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	0.58	ug/L	J
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.08	ug/L	J
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	8.81	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.79	ug/L	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-20-8-100617 17J0113-05 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 11:19

 Instrument: NT2
 Analyzed: 11-Oct-2017 13:41

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	1.15	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.75	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	3.42	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.67	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	4.10	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	1.82	ug/L	
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.42	ug/L	
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.18	ug/L	J
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	0.61	ug/L	
s-Butylbenzene	135-98-8	1	0.02	0.20	0.10	ug/L	J
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.15	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	0.06	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	0.42	ug/L	
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	1.09	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

B78-20-8-100617 17J0113-05 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 11:19

 Instrument: NT2
 Analyzed: 11-Oct-2017 13:41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	106	%	
Surrogate: Toluene-d8				80-120 %	99.8	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	94.1	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	102	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### Dup01-100617 17J0113-06 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 08:00

 Instrument: NT2
 Analyzed: 11-Oct-2017 14:01

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL
Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared: 11 Oct 2017	i mai voidine.	TO IIIE					
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	0.16	ug/L	J
Vinyl Chloride	75-01-4	1	0.06	0.20	0.20	ug/L	J
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	2.16	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	2.85	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.15	ug/L	J
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	0.15	ug/L	J
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	2.01	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.73	ug/L	
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Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### Dup01-100617 17J0113-06 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 08:00

 Instrument: NT2
 Analyzed: 11-Oct-2017 14:01

		Detection Reporting					
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	1.83	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.29	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	2.39	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.50	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	2.89	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	1.51	ug/L	
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.53	ug/L	
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.45	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	0.63	ug/L	
s-Butylbenzene	135-98-8	1	0.02	0.20	0.02	ug/L	J
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.12	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	0.17	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	0.10	ug/L	J
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	0.68	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

Dup01-100617 17J0113-06 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 08:00

 Instrument: NT2
 Analyzed: 11-Oct-2017 14:01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	98.6	%	
Surrogate: Toluene-d8				80-120 %	99.5	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	99.1	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	99.4	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### TripBlank 17J0113-07 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 00:00

 Instrument: NT2
 Analyzed: 11-Oct-2017 10:23

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL
Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared: 11 Oct 2017	i mai voidine.	TO IIIE					
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	0.81	ug/L	J
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	0.81	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	ND	ug/L	U
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Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### TripBlank 17J0113-07 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 00:00

 Instrument: NT2
 Analyzed: 11-Oct-2017 10:23

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.04	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.03	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.09	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.02	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.04	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.02	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

### TripBlank 17J0113-07 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 00:00

 Instrument: NT2
 Analyzed: 11-Oct-2017 10:23

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	93.7	%	
Surrogate: Toluene-d8				80-120 %	98.3	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	97.3	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	101	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

4-79-IDW-100617 17J0113-08 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 11:36

 Instrument: NT2
 Analyzed: 11-Oct-2017 14:22

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0288 Sample Size: 10 mL
Prepared: 11-Oct-2017 Final Volume: 10 mL

Trepared: 11 Oct 2017	i mai voidine.	TO IIIE					
				Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.09	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.06	0.20	0.15	ug/L	J
Bromomethane	74-83-9	1	0.25	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.09	0.20	3.76	ug/L	
Trichlorofluoromethane	75-69-4	1	0.04	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.48	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.04	0.20	ND	ug/L	U
Acetone	67-64-1	1	2.06	5.00	4.75	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.05	0.20	ND	ug/L	U
Bromoethane	74-96-4	1	0.04	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.23	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.49	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.60	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.04	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.05	0.20	0.22	ug/L	
Vinyl Acetate	108-05-4	1	0.07	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.05	0.20	0.07	ug/L	J
2-Butanone	78-93-3	1	0.81	5.00	1.00	ug/L	J
2,2-Dichloropropane	594-20-7	1	0.05	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.04	0.20	0.06	ug/L	J
Chloroform	67-66-3	1	0.03	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.06	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.04	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.03	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.04	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.07	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.03	0.20	2.63	ug/L	
Trichloroethene	79-01-6	1	0.05	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.04	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.05	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.15	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.25	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	0.97	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.06	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.04	0.20	0.59	ug/L	
						_	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

4-79-IDW-100617 17J0113-08 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 11:36

 Instrument: NT2
 Analyzed: 11-Oct-2017 14:22

		Detection	Reporting				
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.08	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	0.90	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.13	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.06	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.05	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.05	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.07	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.02	0.20	1.19	ug/L	
Ethylbenzene	100-41-4	1	0.04	0.20	0.31	ug/L	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.04	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.05	0.40	1.47	ug/L	
o-Xylene	95-47-6	1	0.03	0.20	0.36	ug/L	
Xylenes, total	1330-20-7	1	0.09	0.60	1.83	ug/L	
Styrene	100-42-5	1	0.05	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.06	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.06	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.13	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.32	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.02	0.20	0.45	ug/L	
Bromobenzene	108-86-1	1	0.06	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.02	0.20	0.12	ug/L	J
2-Chlorotoluene	95-49-8	1	0.02	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.02	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.03	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.02	0.20	0.40	ug/L	
1,2,4-Trimethylbenzene	95-63-6	1	0.02	0.20	1.45	ug/L	
s-Butylbenzene	135-98-8	1	0.02	0.20	0.04	ug/L	J
4-Isopropyl Toluene	99-87-6	1	0.03	0.20	0.09	ug/L	J
1,3-Dichlorobenzene	541-73-1	1	0.04	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.04	0.20	0.09	ug/L	J
n-Butylbenzene	104-51-8	1	0.02	0.20	0.09	ug/L	J
1,2-Dichlorobenzene	95-50-1	1	0.04	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.37	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.11	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.07	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.12	0.50	0.82	ug/L	
1,2,3-Trichlorobenzene	87-61-6	1	0.11	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.05	0.20	ND	ug/L	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

4-79-IDW-100617 17J0113-08 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/06/2017 11:36

 Instrument: NT2
 Analyzed: 11-Oct-2017 14:22

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.07	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	5.00	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				80-129 %	99.7	%	
Surrogate: Toluene-d8				80-120 %	96.6	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	98.1	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	102	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFJ0288-BLK2)					red: 11-Oct-	-2017 Ana	lyzed: 11-C	Oct-2017 09:	:19		
Chloromethane	ND	0.09	0.50	ug/L							U
Vinyl Chloride	ND	0.06	0.20	ug/L							U
Bromomethane	ND	0.25	1.00	ug/L							U
Chloroethane	ND	0.09	0.20	ug/L							U
Trichlorofluoromethane	ND	0.04	0.20	ug/L							U
Acrolein	ND	2.48	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.04	0.20	ug/L							U
Acetone	ND	2.06	5.00	ug/L							U
1,1-Dichloroethene	ND	0.05	0.20	ug/L							U
Bromoethane	ND	0.04	0.20	ug/L							U
Iodomethane	ND	0.23	1.00	ug/L							U
Methylene Chloride	ND	0.49	1.00	ug/L							U
Acrylonitrile	ND	0.60	1.00	ug/L							U
Carbon Disulfide	0.08	0.04	0.20	ug/L							J
trans-1,2-Dichloroethene	ND	0.05	0.20	ug/L							U
Vinyl Acetate	ND	0.07	0.20	ug/L							U
1,1-Dichloroethane	ND	0.05	0.20	ug/L							U
2-Butanone	ND	0.81	5.00	ug/L							U
2,2-Dichloropropane	ND	0.05	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.04	0.20	ug/L							U
Chloroform	ND	0.03	0.20	ug/L							U
Bromochloromethane	ND	0.06	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.04	0.20	ug/L							U
1,1-Dichloropropene	ND	0.03	0.20	ug/L							U
Carbon tetrachloride	ND	0.04	0.20	ug/L							U
1,2-Dichloroethane	ND	0.07	0.20	ug/L							U
Benzene	ND	0.03	0.20	ug/L							U
Trichloroethene	ND	0.05	0.20	ug/L							U
1,2-Dichloropropane	ND	0.04	0.20	ug/L							U
Bromodichloromethane	ND	0.05	0.20	ug/L							U
Dibromomethane	ND	0.15	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.25	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	0.97	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.06	0.20	ug/L							U
Toluene	ND	0.04	0.20	ug/L							U

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	2	Ziiiit								110100
Blank (BFJ0288-BLK2) trans-1,3-Dichloropropene ND	0.00	0.20		red: 11-Oct	-2017 Ana	ıyzed: 11-C	oct-2017 09:	:19		U
trans-1,3-Dichloropropene ND 2-Hexanone ND	0.08 0.90	0.20 5.00	ug/L ug/L							U
1,1,2-Trichloroethane ND	0.90	0.20	ug/L ug/L							U
1,3-Dichloropropane ND	0.13	0.20	ug/L ug/L							U
Tetrachloroethene ND	0.05	0.20	ug/L ug/L							U
Dibromochloromethane ND	0.05	0.20	ug/L ug/L							U
1,2-Dibromoethane ND	0.07	0.20	ug/L ug/L							U
Chlorobenzene ND	0.02	0.20	ug/L ug/L							U
Ethylbenzene ND	0.04	0.20	ug/L							U
1,1,1,2-Tetrachloroethane ND	0.04	0.20	ug/L							U
m,p-Xylene 0.07	0.05	0.40	ug/L							J
o-Xylene ND	0.03	0.20	ug/L							U
Xylenes, total 0.09	0.09	0.60	ug/L							J
Styrene ND	0.05	0.20	ug/L							U
Bromoform ND	0.06	0.20	ug/L							U
1,1,2,2-Tetrachloroethane ND	0.06	0.20	ug/L							U
1,2,3-Trichloropropane ND	0.13	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene ND	0.32	1.00	ug/L							U
n-Propylbenzene 0.04	0.02	0.20	ug/L							J
Bromobenzene ND	0.06	0.20	ug/L							U
Isopropyl Benzene ND	0.02	0.20	ug/L							U
2-Chlorotoluene 0.03	0.02	0.20	ug/L							J
4-Chlorotoluene ND	0.02	0.20	ug/L							U
t-Butylbenzene 0.03	0.03	0.20	ug/L							J
1,3,5-Trimethylbenzene ND	0.02	0.20	ug/L							U
1,2,4-Trimethylbenzene 0.03	0.02	0.20	ug/L							J
s-Butylbenzene 0.04	0.02	0.20	ug/L							J
4-Isopropyl Toluene 0.05	0.03	0.20	ug/L							J
1,3-Dichlorobenzene 0.05	0.04	0.20	ug/L							J
1,4-Dichlorobenzene 0.06	0.04	0.20	ug/L							J
n-Butylbenzene 0.09	0.02	0.20	ug/L							J
1,2-Dichlorobenzene 0.05	0.04	0.20	ug/L							J
1,2-Dibromo-3-chloropropane ND	0.37	0.50	ug/L							U
1,2,4-Trichlorobenzene 0.17	0.11	0.50	ug/L							J
Hexachloro-1,3-Butadiene 0.45	0.07	0.50	ug/L							J

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFJ0288-BLK2)				Prepa	ared: 11-Oct	-2017 Ana	lyzed: 11-0	Oct-2017 09:	:19		
Naphthalene	0.24	0.12	0.50	ug/L							J
1,2,3-Trichlorobenzene	0.20	0.11	0.50	ug/L							J
Dichlorodifluoromethane	ND	0.05	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.07	0.50	ug/L							U
2-Pentanone	ND	5.00	5.00	ug/L							U
Surrogate: 1,2-Dichloroethane-d4		5.15		ug/L	5.00		103	80-129			
Surrogate: Toluene-d8		4.78		ug/L	5.00		95.6	80-120			
Surrogate: 4-Bromofluorobenzene		4.90		ug/L	5.00		98.0	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		4.91		ug/L	5.00		98.2	80-120			
LCS (BFJ0288-BS2)				Prepa	ared: 11-Oct	-2017 Ana	lyzed: 11-0	Oct-2017 08:	:39		
Chloromethane	8.83	0.09	0.50	ug/L	10.0		88.3	60-138			
Vinyl Chloride	9.26	0.06	0.20	ug/L	10.0		92.6	66-133			
Bromomethane	7.64	0.25	1.00	ug/L	10.0		76.4	72-131			Q
Chloroethane	9.87	0.09	0.20	ug/L	10.0		98.7	60-155			
Trichlorofluoromethane	9.24	0.04	0.20	ug/L	10.0		92.4	80-129			
Acrolein	43.9	2.48	5.00	ug/L	50.0		87.9	52-144			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.70	0.04	0.20	ug/L	10.0		97.0	76-129			
Acetone	46.6	2.06	5.00	ug/L	50.0		93.1	58-142			
1,1-Dichloroethene	9.21	0.05	0.20	ug/L	10.0		92.1	69-135			
Bromoethane	9.11	0.04	0.20	ug/L	10.0		91.1	78-128			
Iodomethane	5.79	0.23	1.00	ug/L	10.0		57.9	56-147			Q
Methylene Chloride	9.38	0.49	1.00	ug/L	10.0		93.8	65-135			
Acrylonitrile	8.55	0.60	1.00	ug/L	10.0		85.5	64-134			
Carbon Disulfide	9.03	0.04	0.20	ug/L	10.0		90.3	78-125			
trans-1,2-Dichloroethene	9.13	0.05	0.20	ug/L	10.0		91.3	78-128			
Vinyl Acetate	7.33	0.07	0.20	ug/L	10.0		73.3	55-138			Q
1,1-Dichloroethane	9.35	0.05	0.20	ug/L	10.0		93.5	76-124			
2-Butanone	48.2	0.81	5.00	ug/L	50.0		96.4	61-140			
2,2-Dichloropropane	8.73	0.05	0.20	ug/L	10.0		87.3	78-125			
cis-1,2-Dichloroethene	9.56	0.04	0.20	ug/L	10.0		95.6	80-121			
Chloroform	9.07	0.03	0.20	ug/L	10.0		90.7	80-122			
Bromochloromethane	9.87	0.06	0.20	ug/L	10.0		98.7	80-121			
1,1,1-Trichloroethane	8.95	0.04	0.20	ug/L	10.0		89.5	79-123			
1,1-Dichloropropene	9.60	0.03	0.20	ug/L	10.0		96.0	80-120			

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFJ0288-BS2)			Pren	ared: 11-Oct	-2017 Ana	lvzed: 11-C	Oct-2017 08:	39		
Carbon tetrachloride 7.97	0.04	0.20	ug/L	10.0		79.7	53-137			Q
1,2-Dichloroethane 9.02	0.07	0.20	ug/L	10.0		90.2	75-123			•
Benzene 9.52	0.03	0.20	ug/L	10.0		95.2	80-120			
Trichloroethene 10.1	0.05	0.20	ug/L	10.0		101	80-120			
1,2-Dichloropropane 9.30	0.04	0.20	ug/L	10.0		93.0	80-120			
Bromodichloromethane 8.78	0.05	0.20	ug/L	10.0		87.8	80-121			
Dibromomethane 9.32	0.15	0.20	ug/L	10.0		93.2	80-120			
2-Chloroethyl vinyl ether 9.10	0.25	1.00	ug/L	10.0		91.0	74-127			
4-Methyl-2-Pentanone 46.2	0.97	5.00	ug/L	50.0		92.4	67-133			
cis-1,3-Dichloropropene 9.28	0.06	0.20	ug/L	10.0		92.8	80-124			
Toluene 9.21	0.04	0.20	ug/L	10.0		92.1	80-120			
trans-1,3-Dichloropropene 8.83	0.08	0.20	ug/L	10.0		88.3	71-127			
2-Hexanone 45.4	0.90	5.00	ug/L	50.0		90.8	69-133			
1,1,2-Trichloroethane 9.40	0.13	0.20	ug/L	10.0		94.0	80-121			
1,3-Dichloropropane 10.0	0.06	0.20	ug/L	10.0		100	80-120			
Tetrachloroethene 9.81	0.05	0.20	ug/L	10.0		98.1	80-120			
Dibromochloromethane 9.35	0.05	0.20	ug/L	10.0		93.5	65-135			
1,2-Dibromoethane 9.46	0.07	0.20	ug/L	10.0		94.6	80-121			
Chlorobenzene 9.95	0.02	0.20	ug/L	10.0		99.5	80-120			
Ethylbenzene 9.73	0.04	0.20	ug/L	10.0		97.3	80-120			
1,1,1,2-Tetrachloroethane 9.19	0.04	0.20	ug/L	10.0		91.9	80-120			
m,p-Xylene 20.4	0.05	0.40	ug/L	20.0		102	80-121			
o-Xylene 9.88	0.03	0.20	ug/L	10.0		98.8	80-121			
Xylenes, total 30.3	0.09	0.60	ug/L	30.0		101	76-127			
Styrene 10.1	0.05	0.20	ug/L	10.0		101	80-124			
Bromoform 6.65	0.06	0.20	ug/L	10.0		66.5	51-134			Q
1,1,2,2-Tetrachloroethane 8.99	0.06	0.20	ug/L	10.0		89.9	77-123			
1,2,3-Trichloropropane 8.73	0.13	0.50	ug/L	10.0		87.3	76-125			
trans-1,4-Dichloro 2-Butene 7.65	0.32	1.00	ug/L	10.0		76.5	55-129			Q
n-Propylbenzene 9.55	0.02	0.20	ug/L	10.0		95.5	78-130			
Bromobenzene 9.20	0.06	0.20	ug/L	10.0		92.0	80-120			
Isopropyl Benzene 9.54	0.02	0.20	ug/L	10.0		95.4	80-128			
2-Chlorotoluene 9.22	0.02	0.20	ug/L	10.0		92.2	78-122			
4-Chlorotoluene 9.21	0.02	0.20	ug/L	10.0		92.1	80-121			
t-Butylbenzene 9.42	0.03	0.20	ug/L	10.0		94.2	78-125			

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P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	resurt										- 10100
LCS (BFJ0288-BS2)	0.40	0.02	0.20		ared: 11-Oct-	201/ Ana	•		:39		
1,3,5-Trimethylbenzene	9.48	0.02	0.20	ug/L	10.0		94.8	80-129			
1,2,4-Trimethylbenzene	9.33	0.02	0.20	ug/L	10.0		93.3	80-127			
s-Butylbenzene	9.56	0.02	0.20	ug/L	10.0		95.6	78-129			
4-Isopropyl Toluene	9.71	0.03	0.20	ug/L	10.0		97.1	79-130			
1,3-Dichlorobenzene	9.41	0.04	0.20	ug/L	10.0		94.1	80-120			
1,4-Dichlorobenzene	9.34	0.04	0.20	ug/L	10.0		93.4	80-120			
n-Butylbenzene	9.84	0.02	0.20	ug/L	10.0		98.4	74-129			
1,2-Dichlorobenzene	9.21	0.04	0.20	ug/L	10.0		92.1	80-120			
1,2-Dibromo-3-chloropropane	7.39	0.37	0.50	ug/L	10.0		73.9	62-123			Q
1,2,4-Trichlorobenzene	9.97	0.11	0.50	ug/L	10.0		99.7	64-124			
Hexachloro-1,3-Butadiene	9.69	0.07	0.50	ug/L	10.0		96.9	58-123			
Naphthalene	9.99	0.12	0.50	ug/L	10.0		99.9	50-134			
1,2,3-Trichlorobenzene	9.77	0.11	0.50	ug/L	10.0		97.7	49-133			
Dichlorodifluoromethane	7.73	0.05	0.20	ug/L	10.0		77.3	48-147			Q
Methyl tert-butyl Ether	8.95	0.07	0.50	ug/L	10.0		89.5	71-132			
2-Pentanone	38.4	5.00	5.00	ug/L	50.0		76.8	69-134			Q
Surrogate: 1,2-Dichloroethane-d4		4.80		ug/L	5.00		95.9	80-129			
Surrogate: Toluene-d8		4.89		ug/L	5.00		97.7	80-120			
Surrogate: 4-Bromofluorobenzene		5.25		ug/L	5.00		105	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		4.89		ug/L	5.00		97.9	80-120			
LCS Dup (BFJ0288-BSD2)				Pren	ared: 11-Oct-	2017 Ana	alvzed: 11-0	Oct-2017 08	:59		
Chloromethane	8.94	0.09	0.50	ug/L	10.0	2017 1111	89.4	60-138	1.26	30	
Vinyl Chloride	10.1	0.06	0.20	ug/L	10.0		101	66-133	8.80	30	
Bromomethane	9.01	0.25	1.00	ug/L	10.0		90.1	72-131	16.60	30	Q
Chloroethane	10.7	0.09	0.20	ug/L	10.0		107	60-155	7.61	30	•
Trichlorofluoromethane	10.1	0.04	0.20	ug/L	10.0		101	80-129	9.34	30	
Acrolein	49.1	2.48	5.00	ug/L	50.0		98.2	52-144	11.10	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.5	0.04	0.20	ug/L	10.0		105	76-129	7.59	30	
Acetone	52.8	2.06	5.00	ug/L	50.0		106	58-142	12.60	30	
1,1-Dichloroethene	10.1	0.05	0.20	ug/L	10.0		101	69-135	9.41	30	
Bromoethane	10.3	0.04	0.20	ug/L	10.0		103	78-128	12.40	30	
Iodomethane	7.86	0.23	1.00	ug/L	10.0		78.6	56-147	30.30	30	*, Q
Methylene Chloride	10.3	0.49	1.00	ug/L	10.0		103	65-135	9.76	30	, 🔾
Acrylonitrile	9.39	0.60	1.00	ug/L	10.0		93.9	64-134	9.33	30	

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P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

	ъ.	Detection	Reporting	TT 1.	Spike	Source	N/BEG	%REC	DDD	RPD	N.
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS Dup (BFJ0288-BSD2)				Prepa	ared: 11-Oct-	2017 Ana	lyzed: 11-0	Oct-2017 08:	:59		
Carbon Disulfide	9.79	0.04	0.20	ug/L	10.0		97.9	78-125	8.08	30	
trans-1,2-Dichloroethene	9.89	0.05	0.20	ug/L	10.0		98.9	78-128	7.92	30	
Vinyl Acetate	8.10	0.07	0.20	ug/L	10.0		81.0	55-138	10.00	30	Q
1,1-Dichloroethane	10.4	0.05	0.20	ug/L	10.0		104	76-124	11.10	30	
2-Butanone	51.8	0.81	5.00	ug/L	50.0		104	61-140	7.10	30	
2,2-Dichloropropane	9.79	0.05	0.20	ug/L	10.0		97.9	78-125	11.50	30	
eis-1,2-Dichloroethene	10.5	0.04	0.20	ug/L	10.0		105	80-121	9.23	30	
Chloroform	10.3	0.03	0.20	ug/L	10.0		103	80-122	12.60	30	
Bromochloromethane	11.1	0.06	0.20	ug/L	10.0		111	80-121	11.50	30	
1,1,1-Trichloroethane	9.87	0.04	0.20	ug/L	10.0		98.7	79-123	9.84	30	
1,1-Dichloropropene	10.5	0.03	0.20	ug/L	10.0		105	80-120	8.93	30	
Carbon tetrachloride	9.20	0.04	0.20	ug/L	10.0		92.0	53-137	14.40	30	Q
1,2-Dichloroethane	9.82	0.07	0.20	ug/L	10.0		98.2	75-123	8.47	30	
Benzene	10.6	0.03	0.20	ug/L	10.0		106	80-120	10.80	30	
Trichloroethene	10.7	0.05	0.20	ug/L	10.0		107	80-120	4.98	30	
1,2-Dichloropropane	10.6	0.04	0.20	ug/L	10.0		106	80-120	13.00	30	
Bromodichloromethane	9.76	0.05	0.20	ug/L	10.0		97.6	80-121	10.60	30	
Dibromomethane	10.0	0.15	0.20	ug/L	10.0		100	80-120	7.05	30	
2-Chloroethyl vinyl ether	10.3	0.25	1.00	ug/L	10.0		103	74-127	12.60	30	
4-Methyl-2-Pentanone	51.0	0.97	5.00	ug/L	50.0		102	67-133	9.88	30	
eis-1,3-Dichloropropene	10.3	0.06	0.20	ug/L	10.0		103	80-124	10.20	30	
Toluene	10.1	0.04	0.20	ug/L	10.0		101	80-120	9.16	30	
rans-1,3-Dichloropropene	9.87	0.08	0.20	ug/L	10.0		98.7	71-127	11.10	30	
2-Hexanone	52.0	0.90	5.00	ug/L	50.0		104	69-133	13.50	30	
1,1,2-Trichloroethane	10.5	0.13	0.20	ug/L	10.0		105	80-121	10.70	30	
1,3-Dichloropropane	11.0	0.06	0.20	ug/L	10.0		110	80-120	8.88	30	
Tetrachloroethene	11.2	0.05	0.20	ug/L	10.0		112	80-120	13.50	30	
Dibromochloromethane	10.4	0.05	0.20	ug/L	10.0		104	65-135	10.70	30	
1,2-Dibromoethane	10.4	0.07	0.20	ug/L	10.0		104	80-121	9.92	30	
Chlorobenzene	10.8	0.02	0.20	ug/L	10.0		108	80-120	8.25	30	
Ethylbenzene	10.5	0.04	0.20	ug/L	10.0		105	80-120	7.87	30	
1,1,1,2-Tetrachloroethane	10.1	0.04	0.20	ug/L	10.0		101	80-120	9.73	30	
n,p-Xylene	21.6	0.05	0.40	ug/L	20.0		108	80-121	5.40	30	
o-Xylene	10.8	0.03	0.20	ug/L	10.0		108	80-121	8.67	30	
Xylenes, total	32.4	0.09	0.60	ug/L	30.0		108	76-127	6.48	30	

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P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Volatile Organic Compounds - Quality Control**

# Batch BFJ0288 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

		Detection	Reporting		Spike	Source		%REC		RPD	
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS Dup (BFJ0288-BSD2)				Prepa	ared: 11-Oct	-2017 Ana	lyzed: 11-0	Oct-2017 08	:59		
Styrene	11.0	0.05	0.20	ug/L	10.0		110	80-124	8.29	30	
Bromoform	7.38	0.06	0.20	ug/L	10.0		73.8	51-134	10.40	30	Q
1,1,2,2-Tetrachloroethane	9.94	0.06	0.20	ug/L	10.0		99.4	77-123	10.00	30	
1,2,3-Trichloropropane	9.38	0.13	0.50	ug/L	10.0		93.8	76-125	7.11	30	
rans-1,4-Dichloro 2-Butene	8.14	0.32	1.00	ug/L	10.0		81.4	55-129	6.17	30	Q
n-Propylbenzene	10.0	0.02	0.20	ug/L	10.0		100	78-130	4.77	30	
Bromobenzene	10.0	0.06	0.20	ug/L	10.0		100	80-120	8.43	30	
Isopropyl Benzene	10.1	0.02	0.20	ug/L	10.0		101	80-128	5.61	30	
2-Chlorotoluene	9.79	0.02	0.20	ug/L	10.0		97.9	78-122	5.93	30	
1-Chlorotoluene	9.82	0.02	0.20	ug/L	10.0		98.2	80-121	6.34	30	
-Butylbenzene	9.93	0.03	0.20	ug/L	10.0		99.3	78-125	5.25	30	
,3,5-Trimethylbenzene	10.2	0.02	0.20	ug/L	10.0		102	80-129	7.33	30	
,2,4-Trimethylbenzene	9.89	0.02	0.20	ug/L	10.0		98.9	80-127	5.81	30	
-Butylbenzene	10.2	0.02	0.20	ug/L	10.0		102	78-129	6.60	30	
-Isopropyl Toluene	10.3	0.03	0.20	ug/L	10.0		103	79-130	5.88	30	
,3-Dichlorobenzene	10.2	0.04	0.20	ug/L	10.0		102	80-120	7.74	30	
,4-Dichlorobenzene	9.99	0.04	0.20	ug/L	10.0		99.9	80-120	6.74	30	
n-Butylbenzene	10.4	0.02	0.20	ug/L	10.0		104	74-129	5.69	30	
,2-Dichlorobenzene	9.93	0.04	0.20	ug/L	10.0		99.3	80-120	7.53	30	
,2-Dibromo-3-chloropropane	8.55	0.37	0.50	ug/L	10.0		85.5	62-123	14.50	30	Q
1,2,4-Trichlorobenzene	10.7	0.11	0.50	ug/L	10.0		107	64-124	7.47	30	
Hexachloro-1,3-Butadiene	10.3	0.07	0.50	ug/L	10.0		103	58-123	5.90	30	
Naphthalene	10.9	0.12	0.50	ug/L	10.0		109	50-134	8.98	30	
1,2,3-Trichlorobenzene	10.8	0.11	0.50	ug/L	10.0		108	49-133	9.80	30	
Dichlorodifluoromethane	8.22	0.05	0.20	ug/L	10.0		82.2	48-147	6.21	30	Q
Methyl tert-butyl Ether	9.93	0.07	0.50	ug/L	10.0		99.3	71-132	10.40	30	
2-Pentanone	45.0	5.00	5.00	ug/L	50.0		90.0	69-134	15.80	30	Q
Surrogate: 1,2-Dichloroethane-d4		4.98		ug/L	5.00		99.6	80-129			
Surrogate: Toluene-d8		5.11		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene		5.20		ug/L	5.00		104	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		4.83		ug/L	5.00		96.6	80-120			

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P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Certified Analyses included in this Report**

Analyte Certifications

EPA 8260C in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromoethane	DoD-ELAP,NELAP,CALAP,WADOE
lodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE





Chlorobenzene

The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

DoD-ELAP, ADEC, NELAP, CALAP, WADOE

trans-1,3-Dichloropropene DoD-ELAP,ADEC,NELAP,CALAP,WADOE

2-Hexanone DoD-ELAP,NELAP,CALAP,WADOE

1,1,2-TrichloroethaneDoD-ELAP,ADEC,NELAP,CALAP,WADOE1,3-DichloropropaneDoD-ELAP,ADEC,NELAP,CALAP,WADOETetrachloroetheneDoD-ELAP,ADEC,NELAP,CALAP,WADOEDibromochloromethaneDoD-ELAP,ADEC,NELAP,CALAP,WADOE

1,2-Dibromoethane DoD-ELAP,NELAP,CALAP,WADOE

Ethylbenzene DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene DoD-ELAP,ADEC,NELAP,CALAP,WADOE
o-Xylene DoD-ELAP,ADEC,NELAP,CALAP,WADOE

Styrene DoD-ELAP,NELAP,CALAP,WADOE Bromoform DoD-ELAP,NELAP,CALAP,WADOE

1,1,2,2-TetrachloroethaneDoD-ELAP,ADEC,NELAP,CALAP,WADOE1,2,3-TrichloropropaneDoD-ELAP,ADEC,NELAP,CALAP,WADOEtrans-1,4-Dichloro 2-ButeneDoD-ELAP,ADEC,NELAP,CALAP,WADOE

n-Propylbenzene DoD-ELAP,NELAP,CALAP,WADOE Bromobenzene DoD-ELAP,NELAP,CALAP,WADOE Isopropyl Benzene DoD-ELAP,NELAP,CALAP,WADOE

2-Chlorotoluene DoD-ELAP,ADEC,NELAP,CALAP,WADOE
4-Chlorotoluene DoD-ELAP,ADEC,NELAP,CALAP,WADOE

t-Butylbenzene DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene DoD-ELAP,NELAP,CALAP,WADOE
s-Butylbenzene DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene DoD-ELAP,NELAP,CALAP,WADOE

1,3-DichlorobenzeneDoD-ELAP,ADEC,NELAP,CALAP,WADOE1,4-DichlorobenzeneDoD-ELAP,ADEC,NELAP,CALAP,WADOE

n-Butylbenzene DoD-ELAP,NELAP,CALAP,WADOE

DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,2-Dichlorobenzene 1,2-Dibromo-3-chloropropane DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1.2.4-Trichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Hexachloro-1,3-Butadiene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Naphthalene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1.2.3-Trichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Dichlorodifluoromethane DoD-ELAP, ADEC, NELAP, CALAP, WADOE Methyl tert-butyl Ether DoD-ELAP,ADEC,NELAP,CALAP,WADOE

n-Hexane WADOE 2-Pentanone WADOE

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The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	UST-033	09/01/2017
CALAP	California Department of Public Health CAELAP	2748	02/28/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006	05/11/2018
WADOE	WA Dept of Ecology	C558	06/30/2018
WA-DW	Ecology - Drinking Water	C558	06/30/2018



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Relative Percent Difference

RPD

[2C]

The Boeing Company Project: Boeing Renton 4-79

Indicates this result was quantified on the second column on a dual column analysis.

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 12-Oct-2017 14:51

# **Notes and Definitions**

<b>T</b> T	This could be in a distance of the could be a could be a could be a country of the country of th
U	This analyte is not detected above the applicable reporting or detection limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
J	Estimated concentration value detected below the reporting limit.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
D	The reported value is from a dilution
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis



06 November 2017

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

RE: Boeing Renton 4-79

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

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

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

Associated Work Order(s)

Associated SDG ID(s)

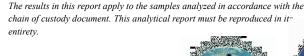
N/A

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

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

Analytical Resources, Inc.



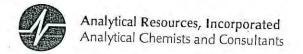
PJLA Testing
Accreditation # 66169

# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	Turn-around Requested:	Requested: Sternderal	Sl		Page:	1	) jo		Analyti	Analytical Chemists and Consultants
ARI Client Company: Boeing		Phone:	Phone: 206-898-0438	83	Date:	ri/20/01	Ice Present?		Tukwill	4611 South 134th Place, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (622)
Client Contact: Corr 1 Borc 1					No. of Coolers:		Cooler Temps:		www.a	www.arilabs.com
Client Project Name:	61-4						Analysis	Analysis Requested	-	Notes/Comments
	plers:	JN 255 L				10	L			
Sample ID	Date	Time	Matrix	No. Containers	s Joh	a-HFT	J-H4T			
B78-21-7-100515	10/05/17	5101	Soil	2	×	×	X			
378-20-10-100515	10/05/17	1150	1:05	7	*	×	X			
Comments/Special Instructions	Relinquished by: (Signature)	770	13	Received by:	1	True	Relinquished by:	d by:	Received by:	2
cc Tom Mckeon	Printed Name:	lame: Naste	57-6	Printed Name:	1	Du	Printed Name:	.e:	Printed Name:	163
Justin Nustr	Company: CALIBRE	182E		Company:			Company:		Company:	
	Date & Time: // 7	7 1415	is	Date & Time:	11 17	1	Date & Time:	100	Date & Time:	

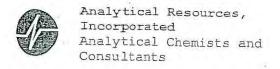
said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



# **Cooler Receipt Form**

Temp Gun ID#: NO 2 Set  Time: LIST  If cooler temperature is out of compliance fill out form 00070F  Cooler Accepted by: Date: LOS/17 Time: LIST  Complete custody forms and attach all shipping documents  Log-In Phase:  Was a temperature blank included in the cooler?  What kind of packing material was used? Bubble Wrap Webbe Gel Packs Baggies Foam Block Paper Other:  Was sufficient ice used (if appropriate)?  Were all bottles sealed in individual plastic bags?  Were all bottles are in individual plastic bags?  Were all bottle labels complete and legible?  Did all bottle labels complete and legible?  Did all bottle labels and tags agree with custody papers?  Were all bottle labels and tags agree with custody papers?  Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs).  Was sufficient amount of semple sent in each bottle?  Was Sample Split by ARI  Was Sample Split by ARI  A YES Date/Time: Equipment:  Sample ID on Bottle  Sample ID on Bot	ARI Client: Boeing  COC No(s):	Tracking No:ttached to the outside of to cooler?	YES NO NO
Was a temperature blank included in the cooler?  What kind of packing material was used?  Bubble Wrap Wet De Gel Packs Baggies Foam Block Paper Other:  Was sufficient ice used (if appropriate)?  Was a temperature blank included in the cooler?  Was sufficient ice used (if appropriate)?  Was a temperature blank included in the cooler?  Was sufficient ice used (if appropriate)?  Were all bottles sarrive in good condition (unbroken)?  Were all bottle labels complete and legible?  Did all bottle labels complete and legible?  Were all bottle labels and tags agree with custody papers?  Were all bottle labels and tags agree with custody papers?  Were all bottle sused correct for the requested analyses?  Do any of the analyses (bottles) require preservation? (attach preservation sheat, excluding VOCs).  Was sufficient amount of sample sent in each bottle?  Was Sample Split by ARI  A YES Date/Time:  Equipment  ** Notify Project Manager of discrepancies or concerns **  Samples Logged by:  Date:  Sample ID on Bottle  Large ""Ig" (4 to < 6 mm)	Imperature of Cooler(s) (°C) (recommended 2.0-6.0 °C) Time:	C for chemistry) 14.7 0070F	
Was a temperature blank included in the cooler?  What kind of packing material was used? Bubble Wrap Wet De Gel Packs Baggies Foam Block Paper Other.  Was sufficient ice used (if appropriate)? NA YES (N) Were all bottles sealed in individual plastic bags? YES (N) Were all bottles arrive in good condition (unbroken)? YES (N) Were all bottle labels complete and legible? YES (N) Did the number of containers listed on COC match with the number of containers received? YES (N) Did the number of containers listed on COC match with the number of containers received? YES (N) Did all bottle labels and tags agree with outsday papers? YES (N) Were all bottle used correct for the requested analyses? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and tags agree with outsday papers? YES (N) Were all bottle labels and t	Complete custod	y forms and attach all shipping documents	
Sample ID on Bottle Sample ID on COC Sample ID on Bottle Sample ID on COC  Additional Notes, Discrepancies, & Resolutions:  By: Date:  Small Air Bubbles  -2 num  -2 n	What kind of packing material was used? Bub Was sufficient ice used (if appropriate)? Were all bottles sealed in individual plastic bags? Did all bottles arrive in good condition (unbroken)?  Were all bottle labels complete and legible?  Did the number of containers listed on COC match with the Did all bottle labels and tags agree with custody papers? Were all bottles used correct for the requested analyses. Do any of the analyses (bottles) require preservation? (a Were all VOC vials free of air bubbles?  Was sufficient amount of sample sent in each bottle?  Date VOC Trip Blank was made at ARI  Was Sample Split by ARI ARI YES Date/Tin Samples Logged by:	the number of containers received?  ttach preservation sheet, excluding VOCs)  Equipment:  Date: 10/S/17 Time:	NA YES NO NA YES NO NA YES NO NA YES NO
By: Date:  Small Air Bubbles  -2num  2-4 mm  Peabubbles'  2-4 mm  Peabubbles > "pb" (2 to <4 mm)  Large > "lg" (4 to <6 mm)	Sample ID on Bottle Sample ID on C	Descriptions of the second of	Sample ID on COC
Large → "lg" (4 to < 6 mm)	By: Date:  Small Air Bubbles Peabubbles LARGE Air Bubb -2mm 2-4 mm > 4 mm	Peabubbles $\Rightarrow$ "pb" (2 to <4 mm)	
Land to the second seco	·	Headspace → "hs" (>6 mm)	



# Cooler Temperature Compliance Form

Cooler#:T	emperature(°C):	
Sample ID	Bottle Count	Bottle Type
Samples recreated		
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above 6		
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Cooler#:Te	emperature(°C):	
Sample ID	Bottle Count	Bottle Type
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Cooler#:Te	mperature(°C):	
Sample ID	Bottle Count	Bottle Type
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2-1-4		
Cooler#: Ter	mperature(°C):	
sumple 18	Bottle Count	Bottle Type
		N
	у	10/2/5
ompleted by:	Date	10/5/17 Time: 14/5



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B78-21-7-100515	17J0089-01	Solid	05-Oct-2017 10:15	05-Oct-2017 14:15
B78-20-10-100515	17J0089-02	Solid	05-Oct-2017 11:50	05-Oct-2017 14:15





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### Case Narrative

#### Volatiles - EPA Method SW8260C

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

Initial and continuing calibrations were within method requirements with the exception of Chloromethane, Vinyl Chloride, Bromomethane, Chloroethane, Trichlorofluoromethane, Carbon Tetrachloride and Styrene which were all out of control high. All samples which contain analyte are flagged with a "Q" qualifier within this report.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The LCS/LCSD percent recoveries and RPD were within control limits with the exception of those analytes flagged in the associated forms.

Samples 17J0089-01 and 17J0089-02 were reanalyzed due to analytes flagged with "E" qualifiers which indicates analytes exceeded the initial calibration range. The samples were reanalyzed and labeled 17J0089-01RE1 and 17J0089-02RE1. This resulted in all analytes falling within calibration range.

#### Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

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

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

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

The LCS percent recoveries were within control limits.

#### Gasoline Range Organics - WA-Ecology Method NW-TPHG

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

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

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

The LCS percent recoveries were within control limits.

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-21-7-100515 17J0089-01 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 10:15

 Instrument: NT5
 Analyzed: 06-Oct-2017 19:24

Sample Preparation: Preparation Method: No Prep - Volatiles

Preparation Batch: BFJ0196 Sample Size: 5.27 g (wet) Dry Weight: 3.56 g
Prepared: 06-Oct-2017 Final Volume: 5 g % Solids: 67.55

Prepared: 06-Oct-2017	Final Volume:	Final Volume: 5 g			% Solids: 67.55			
			Detection	Reporting				
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes	
Chloromethane	74-87-3	1	0.37	1.40	ND	ug/kg	U	
Vinyl Chloride	75-01-4	1	0.33	1.40	ND	ug/kg	U	
Bromomethane	74-83-9	1	0.26	1.40	ND	ug/kg	U	
Chloroethane	75-00-3	1	0.65	1.40	ND	ug/kg	U	
Trichlorofluoromethane	75-69-4	1	0.37	1.40	ND	ug/kg	U	
Acrolein	107-02-8	1	5.35	7.02	ND	ug/kg	U	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.40	2.81	ND	ug/kg	U	
Acetone	67-64-1	1	0.68	7.02	138	ug/kg		
1,1-Dichloroethene	75-35-4	1	0.47	1.40	ND	ug/kg	U	
Bromoethane	74-96-4	1	0.62	2.81	ND	ug/kg	U	
Iodomethane	74-88-4	1	0.30	1.40	ND	ug/kg	U	
Methylene Chloride	75-09-2	1	0.89	2.81	ND	ug/kg	U	
Acrylonitrile	107-13-1	1	1.45	7.02	ND	ug/kg	U	
Carbon Disulfide	75-15-0	1	0.79	1.40	ND	ug/kg	U	
trans-1,2-Dichloroethene	156-60-5	1	0.37	1.40	ND	ug/kg	U	
Vinyl Acetate	108-05-4	1	0.54	7.02	ND	ug/kg	U	
1,1-Dichloroethane	75-34-3	1	0.29	1.40	ND	ug/kg	U	
2-Butanone	78-93-3	1	0.72	7.02	48.1	ug/kg		
2,2-Dichloropropane	594-20-7	1	0.41	1.40	ND	ug/kg	U	
cis-1,2-Dichloroethene	156-59-2	1	0.34	1.40	ND	ug/kg	U	
Chloroform	67-66-3	1	0.33	1.40	ND	ug/kg	U	
Bromochloromethane	74-97-5	1	0.45	1.40	ND	ug/kg	U	
1,1,1-Trichloroethane	71-55-6	1	0.32	1.40	ND	ug/kg	U	
1,1-Dichloropropene	563-58-6	1	0.44	1.40	ND	ug/kg	U	
Carbon tetrachloride	56-23-5	1	0.30	1.40	ND	ug/kg	U	
1,2-Dichloroethane	107-06-2	1	0.27	1.40	ND	ug/kg	U	
Benzene	71-43-2	1	0.42	1.40	4.43	ug/kg		
Trichloroethene	79-01-6	1	0.30	1.40	ND	ug/kg	U	
1,2-Dichloropropane	78-87-5	1	0.23	1.40	ND	ug/kg	U	
Bromodichloromethane	75-27-4	1	0.36	1.40	ND	ug/kg	U	
Dibromomethane	74-95-3	1	0.21	1.40	ND	ug/kg	U	
2-Chloroethyl vinyl ether	110-75-8	1	0.39	7.02	ND	ug/kg	U	
4-Methyl-2-Pentanone	108-10-1	1	0.59	7.02	ND	ug/kg	U	
cis-1,3-Dichloropropene	10061-01-5	1	0.32	1.40	ND	ug/kg	U	
Toluene	108-88-3	1	0.21	1.40	1.32	ug/kg	J	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-21-7-100515 17J0089-01 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 10:15

 Instrument: NT5
 Analyzed: 06-Oct-2017 19:24

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.30	1.40	ND	ug/kg	U
2-Hexanone	591-78-6	1	0.62	7.02	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.40	1.40	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.29	1.40	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.36	1.40	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.37	1.40	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.25	1.40	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.31	1.40	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.28	1.40	45.3	ug/kg	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.33	1.40	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.55	2.81	100	ug/kg	
o-Xylene	95-47-6	1	0.31	1.40	15.9	ug/kg	
Xylenes, total	1330-20-7	1	0.87	2.81	116	ug/kg	
Styrene	100-42-5	1	0.19	1.40	ND	ug/kg	U
Bromoform	75-25-2	1	0.42	1.40	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.36	1.40	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	0.73	2.81	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.61	7.02	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.38	1.40	101	ug/kg	
Bromobenzene	108-86-1	1	0.21	1.40	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.33	1.40	18.6	ug/kg	
2-Chlorotoluene	95-49-8	1	0.42	1.40	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.39	1.40	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.43	1.40	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.36	1.40	166	ug/kg	
1,2,4-Trimethylbenzene	95-63-6	1	0.32	1.40	352	ug/kg	E
s-Butylbenzene	135-98-8	1	0.34	1.40	3.01	ug/kg	
4-Isopropyl Toluene	99-87-6	1	0.33	1.40	4.57	ug/kg	
1,3-Dichlorobenzene	541-73-1	1	0.32	1.40	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.33	1.40	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.37	1.40	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.41	1.40	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.82	7.02	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	0.47	7.02	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.58	7.02	ND	ug/kg	U
Naphthalene	91-20-3	1	0.60	7.02	219	ug/kg	
1,2,3-Trichlorobenzene	87-61-6	1	0.43	7.02	ND	ug/kg	U
Dichlorodifluoromethane	75-71-8	1	0.29	1.40	ND	ug/kg	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-21-7-100515 17J0089-01 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 10:15

 Instrument: NT5
 Analyzed: 06-Oct-2017 19:24

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.32	1.40	ND	ug/kg	U
2-Pentanone	107-87-9	1	7.02	7.02	ND	ug/kg	U
Surrogate: 1,2-Dichloroethane-d4				80-149 %	108	%	
Surrogate: Toluene-d8				77-120 %	103	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	92.6	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	98.7	%	



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-21-7-100515 17J0089-01 (Solid)

**Volatile Organic Compounds** 

 Method: NWTPHg
 Sampled: 10/05/2017 10:15

 Instrument: NT2
 Analyzed: 11-Oct-2017 15:23

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0290 Sample Size: 5.63 g (wet) Dry Weight: 3.80 g
Prepared: 11-Oct-2017 Final Volume: 5 mL % Solids: 67.55

Reporting Limit Analyte CAS Number Dilution Result Units Notes 50 Gasoline Range Organics (Tol-Nap) 8980 25300 ug/kg HC ID: GRO Surrogate: Toluene-d8 80-120 % 104 % Surrogate: 4-Bromofluorobenzene 78-123 % 105 %



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-21-7-100515 17J0089-01 (Solid)

**Petroleum Hydrocarbons** 

 Method: NWTPH-Dx
 Sampled: 10/05/2017 10:15

 Instrument: FID4
 Analyzed: 16-Oct-2017 14:01

Sample Preparation: Preparation Method: EPA 3546 (Microwave)

Preparation Batch: BFJ0213 Sample Size: 10.12 g (wet) Dry Weight: 6.84 g
Prepared: 09-Oct-2017 Final Volume: 1 mL % Solids: 67.55

Prepared: 09-Oct-2017	Final Volume:	% Sc	% Solids: 67.55			
Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)		1	7.31	11.9	mg/kg	
HC ID: DRO Motor Oil Range Organics (C24-C38)		1	14.6	73.6	mg/kg	
HC ID: RRO						
Surrogate: o-Terphenyl			50-150 %	93.0	%	



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-21-7-100515 17J0089-01 (Solid)

Extractions

 Method: PSEP 1986
 Sampled: 10/05/2017 10:15

 Instrument: N/A
 Analyzed: 06-Oct-2017 13:01

·

Sample Preparation: Preparation Method: No Prep-Organics

Preparation Batch: BFJ0189 Sample Size: 1 g (wet)
Prepared: 06-Oct-2017 Final Volume: 1 g

Analyte CAS Number Dilution Result Units Notes

Total Solids 1 0.01 67.55 %





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-21-7-100515 17J0089-01RE1 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 10:15

 Instrument: NT5
 Analyzed: 13-Oct-2017 16:58

Sample Preparation: Preparation Method: No Prep - Volatiles

Preparation Batch: BFJ0269 Sample Size: 5.1 g (wet) Dry Weight: 3.45 g
Prepared: 13-Oct-2017 Final Volume: 5 g % Solids: 67.55

Prepared: 13-Oct-2017 Final Volume: 5 g			% Solids: 67.55				
			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.38	1.45	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.34	1.45	ND	ug/kg	U
Bromomethane	74-83-9	1	0.27	1.45	ND	ug/kg	U
Chloroethane	75-00-3	1	0.67	1.45	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	0.39	1.45	ND	ug/kg	U
Acrolein	107-02-8	1	5.53	7.26	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.42	2.90	ND	ug/kg	U
Acetone	67-64-1	1	0.70	7.26	772	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.49	1.45	ND	ug/kg	U
Bromoethane	74-96-4	1	0.64	2.90	ND	ug/kg	U
Iodomethane	74-88-4	1	0.31	1.45	ND	ug/kg	U
Methylene Chloride	75-09-2	1	0.92	2.90	1.73	ug/kg	J
Acrylonitrile	107-13-1	1	1.49	7.26	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.81	1.45	1.30	ug/kg	J
trans-1,2-Dichloroethene	156-60-5	1	0.39	1.45	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	0.55	7.26	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.29	1.45	ND	ug/kg	U
2-Butanone	78-93-3	1	0.74	7.26	234	ug/kg	
2,2-Dichloropropane	594-20-7	1	0.42	1.45	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.35	1.45	ND	ug/kg	U
Chloroform	67-66-3	1	0.34	1.45	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.47	1.45	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.33	1.45	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.45	1.45	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.31	1.45	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.28	1.45	ND	ug/kg	U
Benzene	71-43-2	1	0.43	1.45	141	ug/kg	
Trichloroethene	79-01-6	1	0.31	1.45	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.24	1.45	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.37	1.45	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.21	1.45	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	0.40	7.26	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	0.61	7.26	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.33	1.45	ND	ug/kg	U
Toluene	108-88-3	1	0.22	1.45	11.1	ug/kg	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-21-7-100515 17J0089-01RE1 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 10:15

 Instrument: NT5
 Analyzed: 13-Oct-2017 16:58

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.31	1.45	ND	ug/kg	U
2-Hexanone	591-78-6	1	0.64	7.26	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.42	1.45	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.30	1.45	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.37	1.45	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.39	1.45	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.26	1.45	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.32	1.45	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.29	1.45	18.3	ug/kg	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.34	1.45	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.57	2.90	440	ug/kg	
o-Xylene	95-47-6	1	0.33	1.45	62.7	ug/kg	
Xylenes, total	1330-20-7	1	0.89	2.90	502	ug/kg	
Styrene	100-42-5	1	0.20	1.45	ND	ug/kg	U
Bromoform	75-25-2	1	0.43	1.45	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.37	1.45	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	0.75	2.90	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.63	7.26	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.39	1.45	48.8	ug/kg	
Bromobenzene	108-86-1	1	0.22	1.45	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.34	1.45	18.4	ug/kg	
2-Chlorotoluene	95-49-8	1	0.44	1.45	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.40	1.45	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.44	1.45	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.37	1.45	22.7	ug/kg	
1,2,4-Trimethylbenzene	95-63-6	1	0.33	1.45	33.6	ug/kg	
s-Butylbenzene	135-98-8	1	0.35	1.45	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.34	1.45	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.33	1.45	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.34	1.45	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.38	1.45	4.75	ug/kg	
1,2-Dichlorobenzene	95-50-1	1	0.43	1.45	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.85	7.26	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	0.48	7.26	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.60	7.26	ND	ug/kg	U
Naphthalene	91-20-3	1	0.62	7.26	5.90	ug/kg	J
1,2,3-Trichlorobenzene	87-61-6	1	0.44	7.26	ND	ug/kg	U
Dichlorodifluoromethane	75-71-8	1	0.30	1.45	ND	ug/kg	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-21-7-100515 17J0089-01RE1 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 10:15

 Instrument: NT5
 Analyzed: 13-Oct-2017 16:58

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.34	1.45	ND	ug/kg	U
2-Pentanone	107-87-9	1	7.26	7.26	ND	ug/kg	U
Surrogate: 1,2-Dichloroethane-d4				80-149 %	99.8	%	
Surrogate: Toluene-d8				77-120 %	96.3	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	91.3	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	94.3	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-20-10-100515 17J0089-02 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 11:50

 Instrument: NT5
 Analyzed: 06-Oct-2017 19:46

Sample Preparation: Preparation Method: No Prep - Volatiles

Preparation Batch: BFJ0196 Sample Size: 5.59 g (wet) Dry Weight: 2.93 g
Prepared: 06-Oct-2017 Final Volume: 5 g % Solids: 52.49

Chloromethane       74-87-3       1       0.45       1         Vinyl Chloride       75-01-4       1       0.40       1         Bromomethane       74-83-9       1       0.32       1         Chloroethane       75-00-3       1       0.79       1         Trichlorofluoromethane       75-69-4       1       0.45       1         Acrolein       107-02-8       1       6.49       8         1,1,2-Trichloro-1,2,2-Trifluoroethane       76-13-1       1       0.49       3         Acetone       67-64-1       1       0.82       8         1,1-Dichloroethene       75-35-4       1       0.57       1         Bromoethane       74-96-4       1       0.75       3	% Solids: 52.49			
Chloromethane 74-87-3 1 0.45 1 Vinyl Chloride 75-01-4 1 0.40 1 Bromomethane 74-83-9 1 0.32 1 Chloroethane 75-00-3 1 0.79 1 Trichlorofluoromethane 75-69-4 1 0.45 1 Acrolein 107-02-8 1 6.49 8 1,1,2-Trichloro-1,2,2-Trifluoroethane 76-13-1 1 0.49 3 Acetone 67-64-1 1 0.82 8 1,1-Dichloroethene 75-35-4 1 0.57 1 Bromoethane 74-96-4 1 0.75 3	ing			
Vinyl Chloride       75-01-4       1       0.40       1         Bromomethane       74-83-9       1       0.32       1         Chloroethane       75-00-3       1       0.79       1         Trichlorofluoromethane       75-69-4       1       0.45       1         Acrolein       107-02-8       1       6.49       8         1,1,2-Trichloro-1,2,2-Trifluoroethane       76-13-1       1       0.49       3         Acetone       67-64-1       1       0.82       8         1,1-Dichloroethene       75-35-4       1       0.57       1         Bromoethane       74-96-4       1       0.75       3	mit Result	Units	Notes	
Bromomethane       74-83-9       1       0.32       1         Chloroethane       75-00-3       1       0.79       1         Trichlorofluoromethane       75-69-4       1       0.45       1         Acrolein       107-02-8       1       6.49       8         1,1,2-Trichloro-1,2,2-Trifluoroethane       76-13-1       1       0.49       3         Acetone       67-64-1       1       0.82       8         1,1-Dichloroethene       75-35-4       1       0.57       1         Bromoethane       74-96-4       1       0.75       3	.70 ND	ug/kg	U	
Chloroethane       75-00-3       1       0.79       1         Trichlorofluoromethane       75-69-4       1       0.45       1         Acrolein       107-02-8       1       6.49       8         1,1,2-Trichloro-1,2,2-Trifluoroethane       76-13-1       1       0.49       3         Acetone       67-64-1       1       0.82       8         1,1-Dichloroethene       75-35-4       1       0.57       1         Bromoethane       74-96-4       1       0.75       3	.70 ND	ug/kg	U	
Trichlorofluoromethane     75-69-4     1     0.45     1       Acrolein     107-02-8     1     6.49     8       1,1,2-Trichloro-1,2,2-Trifluoroethane     76-13-1     1     0.49     3       Acetone     67-64-1     1     0.82     8       1,1-Dichloroethene     75-35-4     1     0.57     1       Bromoethane     74-96-4     1     0.75     3	.70 ND	ug/kg	U	
Acrolein     107-02-8     1     6.49     8       1,1,2-Trichloro-1,2,2-Trifluoroethane     76-13-1     1     0.49     3       Acetone     67-64-1     1     0.82     8       1,1-Dichloroethene     75-35-4     1     0.57     1       Bromoethane     74-96-4     1     0.75     3	.70 ND	ug/kg	U	
1,1,2-Trichloro-1,2,2-Trifluoroethane     76-13-1     1     0.49     3       Acetone     67-64-1     1     0.82     8       1,1-Dichloroethene     75-35-4     1     0.57     1       Bromoethane     74-96-4     1     0.75     3	.70 ND	ug/kg	U	
Acetone     67-64-1     1     0.82     8       1,1-Dichloroethene     75-35-4     1     0.57     1       Bromoethane     74-96-4     1     0.75     3	.52 ND	ug/kg	U	
1,1-Dichloroethene     75-35-4     1     0.57     1       Bromoethane     74-96-4     1     0.75     3	.41 ND	ug/kg	U	
Bromoethane 74-96-4 1 0.75 3	.52 865	ug/kg		
	.70 ND	ug/kg	U	
Iodomethane 74-88-4 1 0.37 1	.41 ND	ug/kg	U	
	.70 ND	ug/kg	U	
Methylene Chloride 75-09-2 1 1.08 3	.41 ND	ug/kg	U	
Acrylonitrile 107-13-1 1 1.76 8	.52 ND	ug/kg	U	
Carbon Disulfide 75-15-0 1 0.95 1	.70 1.51	ug/kg	J	
trans-1,2-Dichloroethene 156-60-5 1 0.45 1	.70 ND	ug/kg	U	
Vinyl Acetate 108-05-4 1 0.65 8	.52 ND	ug/kg	U	
1,1-Dichloroethane 75-34-3 1 0.35 1	.70 ND	ug/kg	U	
2-Butanone 78-93-3 1 0.87 8	.52 <b>245</b>	ug/kg		
2,2-Dichloropropane 594-20-7 1 0.50 1	.70 ND	ug/kg	U	
cis-1,2-Dichloroethene 156-59-2 1 0.41 1	.70 ND	ug/kg	U	
Chloroform 67-66-3 1 0.40 1	.70 ND	ug/kg	U	
Bromochloromethane 74-97-5 1 0.55 1	.70 ND	ug/kg	U	
1,1,1-Trichloroethane 71-55-6 1 0.39 1	.70 ND	ug/kg	U	
1,1-Dichloropropene 563-58-6 1 0.53 1	.70 ND	ug/kg	U	
Carbon tetrachloride 56-23-5 1 0.36 1	.70 ND	ug/kg	U	
1,2-Dichloroethane 107-06-2 1 0.33 1	.70 ND	ug/kg	U	
Benzene 71-43-2 1 0.50 1	.70 468	ug/kg	E	
Trichloroethene 79-01-6 1 0.36 1	.70 ND	ug/kg	U	
1,2-Dichloropropane 78-87-5 1 0.28 1	.70 ND	ug/kg	U	
Bromodichloromethane 75-27-4 1 0.43 1	.70 ND	ug/kg	U	
Dibromomethane 74-95-3 1 0.25 1	.70 ND	ug/kg	U	
2-Chloroethyl vinyl ether 110-75-8 1 0.47 8	.52 ND	ug/kg	U	
4-Methyl-2-Pentanone 108-10-1 1 0.72 8	.52 ND	ug/kg	U	
cis-1,3-Dichloropropene 10061-01-5 1 0.39 1	.70 ND	ug/kg	U	
Toluene 108-88-3 1 0.26 1	.70 24.2	ug/kg		

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-20-10-100515 17J0089-02 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 11:50

 Instrument: NT5
 Analyzed: 06-Oct-2017 19:46

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.37	1.70	ND	ug/kg	U
2-Hexanone	591-78-6	1	0.75	8.52	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.49	1.70	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.36	1.70	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.44	1.70	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.45	1.70	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.30	1.70	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.37	1.70	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.34	1.70	26.1	ug/kg	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.40	1.70	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.67	3.41	498	ug/kg	
o-Xylene	95-47-6	1	0.38	1.70	75.5	ug/kg	
Xylenes, total	1330-20-7	1	1.05	3.41	574	ug/kg	
Styrene	100-42-5	1	0.24	1.70	ND	ug/kg	U
Bromoform	75-25-2	1	0.51	1.70	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.43	1.70	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	0.88	3.41	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.74	8.52	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.46	1.70	46.5	ug/kg	
Bromobenzene	108-86-1	1	0.26	1.70	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.40	1.70	19.9	ug/kg	
2-Chlorotoluene	95-49-8	1	0.51	1.70	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.47	1.70	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.52	1.70	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.43	1.70	20.2	ug/kg	
1,2,4-Trimethylbenzene	95-63-6	1	0.39	1.70	33.5	ug/kg	
s-Butylbenzene	135-98-8	1	0.41	1.70	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.40	1.70	1.51	ug/kg	J
1,3-Dichlorobenzene	541-73-1	1	0.39	1.70	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.40	1.70	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.45	1.70	3.82	ug/kg	
1,2-Dichlorobenzene	95-50-1	1	0.50	1.70	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	1.00	8.52	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	0.57	8.52	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.70	8.52	ND	ug/kg	U
Naphthalene	91-20-3	1	0.73	8.52	12.1	ug/kg	
1,2,3-Trichlorobenzene	87-61-6	1	0.52	8.52	ND	ug/kg	U
Dichlorodifluoromethane	75-71-8	1	0.35	1.70	ND	ug/kg	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-20-10-100515 17J0089-02 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 11:50

 Instrument: NT5
 Analyzed: 06-Oct-2017 19:46

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.39	1.70	ND	ug/kg	U
2-Pentanone	107-87-9	1	8.52	8.52	ND	ug/kg	U
Surrogate: 1,2-Dichloroethane-d4				80-149 %	123	%	
Surrogate: Toluene-d8				77-120 %	108	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	91.0	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	97.7	%	



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-20-10-100515 17J0089-02 (Solid)

**Volatile Organic Compounds** 

 Method: NWTPHg
 Sampled: 10/05/2017 11:50

 Instrument: NT2
 Analyzed: 11-Oct-2017 15:43

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFJ0290 Sample Size: 5.13 g (wet) Dry Weight: 2.69 g
Prepared: 11-Oct-2017 Final Volume: 5 mL % Solids: 52.49

Reporting Limit Analyte CAS Number Dilution Result Units Notes 50 13800 Gasoline Range Organics (Tol-Nap) 14200 ug/kg HC ID: GRO Surrogate: Toluene-d8 80-120 % 104 % Surrogate: 4-Bromofluorobenzene 78-123 % 102 %



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-20-10-100515 17J0089-02 (Solid)

**Petroleum Hydrocarbons** 

 Method: NWTPH-Dx
 Sampled: 10/05/2017 11:50

 Instrument: FID4
 Analyzed: 16-Oct-2017 14:23

Sample Preparation: Preparation Method: EPA 3546 (Microwave)

Preparation Batch: BFJ0213 Sample Size: 10.11 g (wet) Dry Weight: 5.31 g
Prepared: 09-Oct-2017 Final Volume: 1 mL % Solids: 52.49

Prepared: 09-Oct-2017	Final Volume: 1 mL		% Solids: 52.49			
Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)		1	9.42	33.7	mg/kg	
HC ID: DRO Motor Oil Range Organics (C24-C38)		1	18.8	373	mg/kg	
HC ID: RRO						
Surrogate: o-Terphenyl			50-150 %	84.5	%	



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

B78-20-10-100515 17J0089-02 (Solid)

**Extractions** 

 Method: PSEP 1986
 Sampled: 10/05/2017 11:50

 Instrument: N/A
 Analyzed: 06-Oct-2017 13:01

Sample Preparation: Preparation Method: No Prep-Organics

Preparation Batch: BFJ0189 Sample Size: 1 g (wet)
Prepared: 06-Oct-2017 Final Volume: 1 g

Analyte CAS Number Dilution Result Units Notes

Total Solids 1 0.01 52.49 %





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-20-10-100515 17J0089-02RE1 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 11:50

 Instrument: NT5
 Analyzed: 13-Oct-2017 17:20

Sample Preparation: Preparation Method: No Prep - Volatiles

Preparation Batch: BFJ0269 Sample Size: 5.4 g (wet) Dry Weight: 2.83 g
Prepared: 13-Oct-2017 Final Volume: 5 g % Solids: 52.49

Chloromethane	Prepared: 13-Oct-2017	Final Volume:	% Solids: 52.49					
Chloromethane								
Vinyl Chloride         75-01-4         1         0.41         1.76         ND         ug/kg         U           Bromomethane         74-88-9         1         0.33         1.76         ND         ug/kg         U           Trichlorothane         75-90-3         1         0.41         1.76         ND         ug/kg         U           Trichlorothoromethane         75-90-4         1         0.47         1.76         ND         ug/kg         U           Acetolin         107-02-8         1         0.51         3.53         ND         ug/kg         U           Acetone         67-64-1         1         0.88         8.82         225         ug/kg         U           Acetone         75-35-4         1         0.59         1.76         ND         ug/kg         U           Bromoethane         74-96-4         1         0.78         3.53         ND         ug/kg         U           I-Diodinorthane         74-96-4         1         0.78         3.53         ND         ug/kg         U           Methylene Chloride         75-10-1         1         0.78         3.53         ND         ug/kg         U           Carbon Disulfide	Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
Bromomethane	Chloromethane	74-87-3	1	0.46	1.76	ND	ug/kg	U
Chloroethane         75-00-3         1         0.81         1.76         ND         ug/kg         U           Trichlorofuoromethane         75-69-4         1         0.47         1.76         ND         ug/kg         U           Acrolein         107-02-8         1         0.47         1.76         ND         ug/kg         U           1,1,2-Trichloro-1,2,2-Trifluoroethane         67-61-1         1         0.51         3.53         ND         ug/kg         U           Acetone         67-64-1         1         0.85         8.82         225         ug/kg         U           Bromoethane         74-96-4         1         0.78         3.53         ND         ug/kg         U           Iodomethane         74-96-4         1         0.78         3.53         ND         ug/kg         U           Methylene Chloride         75-09-2         1         0.38         1.76         ND         ug/kg         U           Carbon Disulfide         75-09-2         1         0.99         1.76         ND         ug/kg         U           Vinyl Acetate         107-13-1         1         0.99         1.76         ND         ug/kg         U	Vinyl Chloride	75-01-4	1	0.41	1.76	ND	ug/kg	U
Trichlorofluoromethane         75-69-4         1         0.47         1.76         ND         ug/kg         U           Acrolein         107-02-8         1         6.72         8.82         ND         ug/kg         U           L1-Drichloro-1,2-2-Trifluoroethane         76-13-1         1         0.51         3.53         ND         ug/kg         U           Acetone         67-64-1         1         0.85         8.82         225         ug/kg         U           I.1-Dichloroethene         75-35-4         1         0.59         1.76         ND         ug/kg         U           Bomonethane         74-96-4         1         0.78         3.53         ND         ug/kg         U           Iodomethane         74-96-4         1         0.78         3.53         ND         ug/kg         U           Methylene Chloride         75-90-2         1         1.12         3.53         ND         ug/kg         U           Carbon Disulfide         75-15-0         1         0.47         1.76         ND         ug/kg         U           Carbon Disulfide         75-15-0         1         0.47         1.76         ND         ug/kg         U	Bromomethane	74-83-9	1	0.33	1.76	ND	ug/kg	U
Acrolein         107-02-8         1         6.72         8.82         ND         ug/kg         U           1,1,2-Trifhloro-1,2,2-Trifhuoroethane         76-13-1         1         0.51         3.53         ND         ug/kg         U           Acetone         67-64-1         1         0.58         8.82         225         ug/kg         U           L1-Dichloroethene         75-35-4         1         0.59         1.76         ND         ug/kg         U           Bromoethane         74-96-4         1         0.78         3.53         ND         ug/kg         U           Methylene Chloride         75-90-2         1         1.12         3.53         ND         ug/kg         U           Acrylontirile         107-13-1         1         1.82         8.82         ND         ug/kg         U           Carben Disulfide         75-15-0         1         0.99         1.76         ND         ug/kg         U           Vinyl Acetate         186-60-5         1         0.47         1.76         ND         ug/kg         U           Vinyl Acetate         189-3-3         1         0.93         8.82         ND         ug/kg         U	Chloroethane	75-00-3	1	0.81	1.76	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Triflurorethane   76-13-1   1   0.51   3.53   ND   ug/kg   U     1,1-Dichloroethene   75-35-4   1   0.59   1.76   ND   ug/kg   U     1,1-Dichloroethene   74-96-4   1   0.78   3.53   ND   ug/kg   U     1,1-Dichloroethane   74-96-4   1   0.78   3.53   ND   ug/kg   U     1,1-Dichloroethane   74-96-4   1   0.78   3.53   ND   ug/kg   U     1,1-Dichloroethane   75-19-2   1   1.12   3.53   1.83   ug/kg   U     1,1-Dichloroethane   75-19-2   1   1.12   3.53   1.83   ug/kg   U     1,1-Dichloroethane   75-19-0   1   0.99   1.76   ND   ug/kg   U     1,1-Dichloroethane   75-15-0   1   0.99   1.76   ND   ug/kg   U     1,1-Dichloroethane   75-19-3   1   0.74   1.76   ND   ug/kg   U     1,1-Dichloroethane   75-34-3   1   0.76   1.76   ND   ug/kg   U     1,1-Dichloroethane   75-34-3   1   0.76   1.76   ND   ug/kg   U     1,1-Dichloroethane   75-34-3   1   0.75   1.76   ND   ug/kg   U     1,1-Dichloroethane   74-97-5   1   0.42   1.76   ND   ug/kg   U     1,1-Dichloroethane   71-55-6   1   0.40   1.76	Trichlorofluoromethane	75-69-4	1	0.47	1.76	ND	ug/kg	U
Acetone 67-64-1 1 0.85 8.82 225 ug/kg   1,1-Dichlorocthene 75-35-4 1 0.59 1.76 ND ug/kg U   Bromoethane 74-96-4 1 0.78 3.53 ND ug/kg U   Bromoethane 74-96-4 1 0.78 3.53 ND ug/kg U   Bromoethane 74-88-4 1 0.38 1.76 ND ug/kg U   Bromoethane 74-88-4 1 0.38 1.76 ND ug/kg U   Bromoethane 75-09-2 1 1.12 3.53 1.83 ug/kg U   Carbon Disulfide 107-13-1 1 1.82 8.82 ND ug/kg U   Carbon Disulfide 75-15-0 1 0.99 1.76 ND ug/kg U   Carbon Disulfide 156-60-5 1 0.47 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthene 156-60-5 1 0.47 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-60-5 1 0.47 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-60-5 1 0.47 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-60-5 1 0.47 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-60-5 1 0.47 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-50-2 1 0.42 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-50-2 1 0.42 1.76 ND ug/kg U   U   Trans-1,1-Trichlorocthane 156-50-2 1 0.42 1.76 ND ug/kg U   U   Trans-1,1-Trichlorocthane 156-50-2 1 0.42 1.76 ND ug/kg U   U   Trans-1,1-Trichlorocthane 156-50-2 1 0.42 1.76 ND ug/kg U   U   Trans-1,2-Dichloropropene 1503-58-6 1 0.55 1.76 ND ug/kg U   U   Trans-1,2-Dichlorocthane 156-60-3 1 0.40 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.40 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.40 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.40 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.55 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.55 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.34 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.34 1.76 ND ug/kg U   U   Trichlorocthane 156-60-3 1 0.34 1.76 ND ug/kg U   U   T   Trichlorocthane 156-60-3 1 0.34 1.76 ND ug/kg U   U   T   Trichlorocthane 156-60-3 1 0.34 1.76 ND ug/kg U   U   T   Trichlorocthane 156-60-3 1 0.34 1.76 ND ug/kg U   U   T   T   Trichlorocthane 156-60-3 1 0.40 1.76 ND ug/kg U   U   T   T   T   Trichlorocthane 156-60-3 1 0.40 1.76 ND ug/kg U   U   T   T   T   T   T   T   T   T	Acrolein	107-02-8	1	6.72	8.82	ND	ug/kg	U
1,1-Dichloroethene	1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.51	3.53	ND	ug/kg	U
December   14-96-4   1   0.78   3.53   ND   ug/kg   U	Acetone	67-64-1	1	0.85	8.82	225	ug/kg	
Methylen Chloride	1,1-Dichloroethene	75-35-4	1	0.59	1.76	ND	ug/kg	U
Methylene Chloride         75-09-2         1         1.12         3.53         1.83         ug/kg         J           Acrylonitrile         107-13-1         1         1.82         8.82         ND         ug/kg         U           Carbon Disulfide         75-15-0         1         0.99         1.76         ND         ug/kg         U           Vimyl Acetate         156-60-5         1         0.47         1.76         ND         ug/kg         U           Vimyl Acetate         168-05-4         1         0.67         8.82         ND         ug/kg         U           2-Butanone         75-34-3         1         0.36         1.76         ND         ug/kg         U           2-Butanone         78-39-3         1         0.90         8.82         ND         ug/kg         U           2-Butanone         594-20-7         1         0.52         1.76         ND         ug/kg         U           2-Butanone         594-20-7         1         0.52         1.76         ND         ug/kg         U           Chlorform         67-66-3         1         0.42         1.76         ND         ug/kg         U           Chloroform	Bromoethane	74-96-4	1	0.78	3.53	ND	ug/kg	U
Acrylonitrile 107-13-1 1 1.82 8.82 ND ug/kg U Carbon Disulfide 75-15-0 1 0.99 1.76 ND ug/kg U U trans-1,2-Dichloroethene 156-60-5 1 0.47 1.76 ND ug/kg U U Trans-1,2-Dichloroethene 156-60-5 1 0.47 1.76 ND ug/kg U U U U U U U U U U U U U U U U U U U	Iodomethane	74-88-4	1	0.38	1.76	ND	ug/kg	U
Carbon Disulfide         75-15-0         1         0.99         1.76         ND         ug/kg         U           trans-1,2-Dichloroethene         156-60-5         1         0.47         1.76         ND         ug/kg         U           Vinyl Acetate         108-05-4         1         0.67         8.82         ND         ug/kg         U           1,1-Dichloroethane         75-34-3         1         0.36         1.76         ND         ug/kg         U           2-Butanone         78-39-33         1         0.90         8.82         ND         ug/kg         U           2,2-Dichloropropane         594-20-7         1         0.52         1.76         ND         ug/kg         U           2,2-Dichloroethene         156-59-2         1         0.42         1.76         ND         ug/kg         U           Chloroform         67-66-3         1         0.41         1.76         ND         ug/kg         U           Bromochloromethane         74-97-5         1         0.57         1.76         ND         ug/kg         U           1,1-Dichloroethane         71-55-6         1         0.40         1.76         ND         ug/kg         U      <	Methylene Chloride	75-09-2	1	1.12	3.53	1.83	ug/kg	J
trans-1,2-Dichloroethene  156-60-5 1 0.47 1.76 ND ug/kg U Vinyl Acetate 1108-05-4 1 0.67 8.82 ND ug/kg U 1,1-Dichloroethane 75-34-3 1 0.36 1.76 ND ug/kg U 2-Butanone 78-93-3 1 0.90 8.82 ND ug/kg U 2-Dichloropropane 594-20-7 1 0.52 1.76 ND ug/kg U 0-Dichloroethane 156-59-2 1 0.42 1.76 ND ug/kg U 0-Dichloroethane 156-60-3 1 0.41 1.76 ND ug/kg U 0-Dichloroethane 156-60-3 1 0.41 1.76 ND ug/kg U 0-Dichloroethane 174-97-5 1 0.57 1.76 ND ug/kg U 0-Dichloroethane 1,1,1-Trichloroethane 1,1-Dichloropropene 156-35-86 1 0.55 1.76 ND ug/kg U 1,1-Dichloropropene 156-35-86 1 0.55 1.76 ND ug/kg U 0-Dichloroethane 107-06-2 1 0.38 1.76 ND ug/kg U 1,2-Dichloroethane 107-06-2 1 0.34 1.76 ND ug/kg U 0-Dichloroethane 108-10-1 0.55 1.76 ND ug/kg U 0-Dichloroethane 109-01-6 1 0.37 1.76 ND ug/kg U 0-Dichloroethane 109-01-6 1 0.39 1.76 ND ug/kg U 0-Dichloroethane 109-01-6 1 0.49 8.82 ND ug/kg U 0-Dichloroethane 109-01-6 1 0.49 8.82 ND ug/kg U 0-Dichloroethane 109-01-01-5 1 0.40 1.76 ND ug/kg U 0-Dichloroethane 109-01-01-5 1 0.40 1.76 ND ug/kg U	Acrylonitrile	107-13-1	1	1.82	8.82	ND	ug/kg	U
Vinyl Acetate         108-05-4         1         0.67         8.82         ND         ug/kg         U           1,1-Dichloroethane         75-34-3         1         0.36         1.76         ND         ug/kg         U           2-Butanone         78-93-3         1         0.90         8.82         ND         ug/kg         U           2,2-Dichloropropane         594-20-7         1         0.52         1.76         ND         ug/kg         U           Chloroform         67-66-3         1         0.41         1.76         ND         ug/kg         U           Bromochloromethane         74-97-5         1         0.57         1.76         ND         ug/kg         U           1,1-Dichloropropene         563-58-6         1         0.40         1.76         ND         ug/kg         U           1,1-Dichloropropene         563-58-6         1         0.55         1.76         ND         ug/kg         U           Carbon tetrachloride         56-23-5         1         0.34         1.76         ND         ug/kg         U           1,2-Dichloropthane         71-43-2         1         0.52         1.76         ND         ug/kg         U <t< td=""><td>Carbon Disulfide</td><td>75-15-0</td><td>1</td><td>0.99</td><td>1.76</td><td>ND</td><td>ug/kg</td><td>U</td></t<>	Carbon Disulfide	75-15-0	1	0.99	1.76	ND	ug/kg	U
1,1-Dichloroethane       75-34-3       1       0.36       1.76       ND       ug/kg       U         2-Butanone       78-93-3       1       0.90       8.82       ND       ug/kg       U         2,2-Dichloropropane       594-20-7       1       0.52       1.76       ND       ug/kg       U         cis-1,2-Dichloroethene       156-59-2       1       0.42       1.76       ND       ug/kg       U         Chloroform       67-66-3       1       0.41       1.76       ND       ug/kg       U         Bromochloromethane       74-97-5       1       0.57       1.76       ND       ug/kg       U         1,1-Dichloropropene       563-58-6       1       0.55       1.76       ND       ug/kg       U         Carbon tetrachloride       56-23-5       1       0.38       1.76       ND       ug/kg       U         1,2-Dichloroethane       107-06-2       1       0.34       1.76       ND       ug/kg       U         Benzene       71-43-2       1       0.52       1.76       ND       ug/kg       U         1,2-Dichloroethane       79-01-6       1       0.37       1.76       ND       ug/kg <td>trans-1,2-Dichloroethene</td> <td>156-60-5</td> <td>1</td> <td>0.47</td> <td>1.76</td> <td>ND</td> <td>ug/kg</td> <td>U</td>	trans-1,2-Dichloroethene	156-60-5	1	0.47	1.76	ND	ug/kg	U
2-Butanone 78-93-3 1 0.90 8.82 ND ug/kg U 2,2-Dichloropropane 594-20-7 1 0.52 1.76 ND ug/kg U cis-1,2-Dichloroethene 156-59-2 1 0.42 1.76 ND ug/kg U Chloroform 67-66-3 1 0.41 1.76 ND ug/kg U Bromochloromethane 74-97-5 1 0.57 1.76 ND ug/kg U 1,1,1-Trichloroethane 71-55-6 1 0.40 1.76 ND ug/kg U 1,1,1-Trichloropropane 563-58-6 1 0.55 1.76 ND ug/kg U 1,2-Dichloroethane 107-06-2 1 0.38 1.76 ND ug/kg U 1,2-Dichloroethane 107-06-2 1 0.34 1.76 ND ug/kg U 1,2-Dichloroethane 107-06-2 1 0.34 1.76 ND ug/kg U 1,2-Dichloropropane 79-01-6 1 0.37 1.76 ND ug/kg U 1,2-Dichloropropane 78-87-5 1 0.52 1.76 ND ug/kg U 1,2-Dichloropropane 78-87-5 1 0.59 1.76 ND ug/kg U 1,2-Dichloromethane 79-01-6 1 0.37 1.76 ND ug/kg U 1,2-Dichloromethane 79-01-6 1 0.37 1.76 ND ug/kg U 1,2-Dichloropropane 78-87-5 1 0.29 1.76 ND ug/kg U 1,2-Dichloromethane 75-27-4 1 0.45 1.76 ND ug/kg U 1,2-Dichloromethane 107-05-2 1 0.49 8.82 ND ug/kg U 1,2-Dichloromethane 108-10-1 1 0.74 8.82 ND ug/kg U 2-Chloroethyl vinyl ether 110-75-8 1 0.49 8.82 ND ug/kg U 2-Chloropropane 108-10-1 1 0.74 8.82 ND ug/kg U	Vinyl Acetate	108-05-4	1	0.67	8.82	ND	ug/kg	U
2,2-Dichloropropane       594-20-7       1       0.52       1.76       ND       ug/kg       U         cis-1,2-Dichloroethene       156-59-2       1       0.42       1.76       ND       ug/kg       U         Chloroform       67-66-3       1       0.41       1.76       ND       ug/kg       U         Bromochloromethane       74-97-5       1       0.57       1.76       ND       ug/kg       U         1,1-1 Trichloroethane       71-55-6       1       0.40       1.76       ND       ug/kg       U         1,1-Dichloropropene       563-58-6       1       0.55       1.76       ND       ug/kg       U         Carbon tetrachloride       56-23-5       1       0.38       1.76       ND       ug/kg       U         1,2-Dichloroethane       107-06-2       1       0.34       1.76       ND       ug/kg       U         Trichloroethane       79-01-6       1       0.37       1.76       ND       ug/kg       U         Trichloropropane       78-87-5       1       0.29       1.76       ND       ug/kg       U         Bromodichloromethane       75-27-4       1       0.45       1.76       ND	1,1-Dichloroethane	75-34-3	1	0.36	1.76	ND	ug/kg	U
156-59-2   1   0.42   1.76   ND   ug/kg   U	2-Butanone	78-93-3	1	0.90	8.82	ND	ug/kg	U
Chloroform       67-66-3       1       0.41       1.76       ND       ug/kg       U         Bromochloromethane       74-97-5       1       0.57       1.76       ND       ug/kg       U         1,1,1-Trichloroethane       71-55-6       1       0.40       1.76       ND       ug/kg       U         1,1-Dichloropropene       563-58-6       1       0.55       1.76       ND       ug/kg       U         Carbon tetrachloride       56-23-5       1       0.38       1.76       ND       ug/kg       U         1,2-Dichloroethane       107-06-2       1       0.34       1.76       ND       ug/kg       U         Benzene       71-43-2       1       0.52       1.76       ND       ug/kg       U         1,2-Dichloroethene       79-01-6       1       0.37       1.76       ND       ug/kg       U         1,2-Dichloropropane       78-87-5       1       0.29       1.76       ND       ug/kg       U         Bromodichloromethane       75-27-4       1       0.45       1.76       ND       ug/kg       U         2-Chloroethyl vinyl ether       110-75-8       1       0.49       8.82       ND	2,2-Dichloropropane	594-20-7	1	0.52	1.76	ND	ug/kg	U
Bromochloromethane   74-97-5   1   0.57   1.76   ND   ug/kg   U	cis-1,2-Dichloroethene	156-59-2	1	0.42	1.76	ND	ug/kg	U
1,1,1-Trichloroethane       71-55-6       1       0.40       1.76       ND       ug/kg       U         1,1-Dichloropropene       563-58-6       1       0.55       1.76       ND       ug/kg       U         Carbon tetrachloride       56-23-5       1       0.38       1.76       ND       ug/kg       U         1,2-Dichloroethane       107-06-2       1       0.34       1.76       ND       ug/kg       U         Benzene       71-43-2       1       0.52       1.76       ND       ug/kg       U         Trichloroethene       79-01-6       1       0.37       1.76       ND       ug/kg       U         1,2-Dichloropropane       78-87-5       1       0.29       1.76       ND       ug/kg       U         Bromodichloromethane       75-27-4       1       0.45       1.76       ND       ug/kg       U         2-Chloroethyl vinyl ether       110-75-8       1       0.49       8.82       ND       ug/kg       U         4-Methyl-2-Pentanone       108-10-1       1       0.74       8.82       ND       ug/kg       U         cis-1,3-Dichloropropene       10061-01-5       1       0.40       1.76	Chloroform	67-66-3	1	0.41	1.76	ND	ug/kg	U
1,1-Dichloropropene       563-58-6       1       0.55       1.76       ND       ug/kg       U         Carbon tetrachloride       56-23-5       1       0.38       1.76       ND       ug/kg       U         1,2-Dichloroethane       107-06-2       1       0.34       1.76       ND       ug/kg       U         Benzene       71-43-2       1       0.52       1.76       0.91       ug/kg       J         Trichloroethene       79-01-6       1       0.37       1.76       ND       ug/kg       U         1,2-Dichloropropane       78-87-5       1       0.29       1.76       ND       ug/kg       U         Bromodichloromethane       75-27-4       1       0.45       1.76       ND       ug/kg       U         Dibromomethane       74-95-3       1       0.26       1.76       ND       ug/kg       U         2-Chloroethyl vinyl ether       110-75-8       1       0.49       8.82       ND       ug/kg       U         4-Methyl-2-Pentanone       108-10-1       1       0.74       8.82       ND       ug/kg       U         cis-1,3-Dichloropropene       10061-01-5       1       0.40       1.76	Bromochloromethane	74-97-5	1	0.57	1.76	ND	ug/kg	U
Carbon tetrachloride 56-23-5 1 0.38 1.76 ND ug/kg U 1,2-Dichloroethane 107-06-2 1 0.34 1.76 ND ug/kg U Benzene 71-43-2 1 0.52 1.76 0.91 ug/kg J Trichloroethene 79-01-6 1 0.37 1.76 ND ug/kg U 1,2-Dichloropropane 78-87-5 1 0.29 1.76 ND ug/kg U Bromodichloromethane 75-27-4 1 0.45 1.76 ND ug/kg U Dibromomethane 74-95-3 1 0.26 1.76 ND ug/kg U 2-Chloroethyl vinyl ether 110-75-8 1 0.49 8.82 ND ug/kg U 4-Methyl-2-Pentanone 108-10-1 1 0.74 8.82 ND ug/kg U cis-1,3-Dichloropropene 10061-01-5 1 0.40 1.76 ND ug/kg U	1,1,1-Trichloroethane	71-55-6	1	0.40	1.76	ND	ug/kg	U
1,2-Dichloroethane       107-06-2       1       0.34       1.76       ND       ug/kg       U         Benzene       71-43-2       1       0.52       1.76       0.91       ug/kg       J         Trichloroethene       79-01-6       1       0.37       1.76       ND       ug/kg       U         1,2-Dichloropropane       78-87-5       1       0.29       1.76       ND       ug/kg       U         Bromodichloromethane       75-27-4       1       0.45       1.76       ND       ug/kg       U         Dibromomethane       74-95-3       1       0.26       1.76       ND       ug/kg       U         2-Chloroethyl vinyl ether       110-75-8       1       0.49       8.82       ND       ug/kg       U         4-Methyl-2-Pentanone       108-10-1       1       0.74       8.82       ND       ug/kg       U         cis-1,3-Dichloropropene       10061-01-5       1       0.40       1.76       ND       ug/kg       U	1,1-Dichloropropene	563-58-6	1	0.55	1.76	ND	ug/kg	U
Benzene   71-43-2   1   0.52   1.76   0.91   ug/kg   J     Trichloroethene   79-01-6   1   0.37   1.76   ND   ug/kg   U     1,2-Dichloropropane   78-87-5   1   0.29   1.76   ND   ug/kg   U     Bromodichloromethane   75-27-4   1   0.45   1.76   ND   ug/kg   U     Dibromomethane   74-95-3   1   0.26   1.76   ND   ug/kg   U     2-Chloroethyl vinyl ether   110-75-8   1   0.49   8.82   ND   ug/kg   U     4-Methyl-2-Pentanone   108-10-1   1   0.74   8.82   ND   ug/kg   U     cis-1,3-Dichloropropene   10061-01-5   1   0.40   1.76   ND   ug/kg   U	Carbon tetrachloride	56-23-5	1	0.38	1.76	ND	ug/kg	U
Trichloroethene         79-01-6         1         0.37         1.76         ND         ug/kg         U           1,2-Dichloropropane         78-87-5         1         0.29         1.76         ND         ug/kg         U           Bromodichloromethane         75-27-4         1         0.45         1.76         ND         ug/kg         U           Dibromomethane         74-95-3         1         0.26         1.76         ND         ug/kg         U           2-Chloroethyl vinyl ether         110-75-8         1         0.49         8.82         ND         ug/kg         U           4-Methyl-2-Pentanone         108-10-1         1         0.74         8.82         ND         ug/kg         U           cis-1,3-Dichloropropene         10061-01-5         1         0.40         1.76         ND         ug/kg         U	1,2-Dichloroethane	107-06-2	1	0.34	1.76	ND	ug/kg	U
1,2-Dichloropropane       78-87-5       1       0.29       1.76       ND       ug/kg       U         Bromodichloromethane       75-27-4       1       0.45       1.76       ND       ug/kg       U         Dibromomethane       74-95-3       1       0.26       1.76       ND       ug/kg       U         2-Chloroethyl vinyl ether       110-75-8       1       0.49       8.82       ND       ug/kg       U         4-Methyl-2-Pentanone       108-10-1       1       0.74       8.82       ND       ug/kg       U         cis-1,3-Dichloropropene       10061-01-5       1       0.40       1.76       ND       ug/kg       U	Benzene	71-43-2	1	0.52	1.76	0.91	ug/kg	J
Bromodichloromethane         75-27-4         1         0.45         1.76         ND         ug/kg         U           Dibromomethane         74-95-3         1         0.26         1.76         ND         ug/kg         U           2-Chloroethyl vinyl ether         110-75-8         1         0.49         8.82         ND         ug/kg         U           4-Methyl-2-Pentanone         108-10-1         1         0.74         8.82         ND         ug/kg         U           cis-1,3-Dichloropropene         10061-01-5         1         0.40         1.76         ND         ug/kg         U	Trichloroethene	79-01-6	1	0.37	1.76	ND	ug/kg	U
Dibromomethane         74-95-3         1         0.26         1.76         ND         ug/kg         U           2-Chloroethyl vinyl ether         110-75-8         1         0.49         8.82         ND         ug/kg         U           4-Methyl-2-Pentanone         108-10-1         1         0.74         8.82         ND         ug/kg         U           cis-1,3-Dichloropropene         10061-01-5         1         0.40         1.76         ND         ug/kg         U	1,2-Dichloropropane	78-87-5	1	0.29	1.76	ND	ug/kg	U
2-Chloroethyl vinyl ether       110-75-8       1       0.49       8.82       ND       ug/kg       U         4-Methyl-2-Pentanone       108-10-1       1       0.74       8.82       ND       ug/kg       U         cis-1,3-Dichloropropene       10061-01-5       1       0.40       1.76       ND       ug/kg       U	Bromodichloromethane	75-27-4	1	0.45	1.76	ND	ug/kg	U
4-Methyl-2-Pentanone 108-10-1 1 0.74 8.82 ND ug/kg U cis-1,3-Dichloropropene 10061-01-5 1 0.40 1.76 ND ug/kg U	Dibromomethane	74-95-3	1	0.26	1.76	ND	ug/kg	U
cis-1,3-Dichloropropene 10061-01-5 1 0.40 1.76 ND ug/kg U	2-Chloroethyl vinyl ether	110-75-8	1	0.49	8.82	ND	ug/kg	U
	4-Methyl-2-Pentanone	108-10-1	1	0.74	8.82	ND	ug/kg	U
Toluene 108-88-3 1 0.27 1.76 ND ug/kg U	cis-1,3-Dichloropropene	10061-01-5	1	0.40	1.76	ND	ug/kg	U
	Toluene	108-88-3	1	0.27	1.76	ND	ug/kg	U

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-20-10-100515 17J0089-02RE1 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 11:50

 Instrument: NT5
 Analyzed: 13-Oct-2017 17:20

			Detection	Reporting			
Analyte	CAS Number	Dilution	Limit	Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.38	1.76	ND	ug/kg	U
2-Hexanone	591-78-6	1	0.77	8.82	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.50	1.76	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.37	1.76	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.45	1.76	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.47	1.76	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.31	1.76	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.39	1.76	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.36	1.76	4.69	ug/kg	
1,1,1,2-Tetrachloroethane	630-20-6	1	0.41	1.76	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.69	3.53	43.4	ug/kg	
o-Xylene	95-47-6	1	0.40	1.76	7.94	ug/kg	
Xylenes, total	1330-20-7	1	1.09	3.53	51.3	ug/kg	
Styrene	100-42-5	1	0.24	1.76	ND	ug/kg	U
Bromoform	75-25-2	1	0.52	1.76	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.45	1.76	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	0.91	3.53	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.77	8.82	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.48	1.76	21.0	ug/kg	
Bromobenzene	108-86-1	1	0.27	1.76	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.41	1.76	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.53	1.76	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.49	1.76	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.54	1.76	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.45	1.76	123	ug/kg	
1,2,4-Trimethylbenzene	95-63-6	1	0.41	1.76	218	ug/kg	
s-Butylbenzene	135-98-8	1	0.42	1.76	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.42	1.76	1.60	ug/kg	J
1,3-Dichlorobenzene	541-73-1	1	0.40	1.76	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.41	1.76	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.46	1.76	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.52	1.76	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	1.03	8.82	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	0.59	8.82	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.72	8.82	ND	ug/kg	U
Naphthalene	91-20-3	1	0.76	8.82	59.0	ug/kg	
1,2,3-Trichlorobenzene	87-61-6	1	0.54	8.82	ND	ug/kg	U
Dichlorodifluoromethane	75-71-8	1	0.37	1.76	ND	ug/kg	U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

# B78-20-10-100515 17J0089-02RE1 (Solid)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 10/05/2017 11:50

 Instrument: NT5
 Analyzed: 13-Oct-2017 17:20

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Methyl tert-butyl Ether	1634-04-4	1	0.41	1.76	ND	ug/kg	U
2-Pentanone	107-87-9	1	8.82	8.82	ND	ug/kg	U
Surrogate: 1,2-Dichloroethane-d4				80-149 %	108	%	
Surrogate: Toluene-d8				77-120 %	102	%	
Surrogate: 4-Bromofluorobenzene				80-120 %	98.4	%	
Surrogate: 1,2-Dichlorobenzene-d4				80-120 %	101	%	





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	resuit	Limit	Lillit							Lillit	110103
Blank (BFJ0196-BLK1)					red: 06-Oct	:-2017 Ana	ılyzed: 06-0	Oct-2017 17	<b>'</b> :18		
Chloromethane	ND	0.26	1.00	ug/kg							U
Vinyl Chloride	ND	0.24	1.00	ug/kg							U
Bromomethane	ND	0.19	1.00	ug/kg							U
Chloroethane	ND	0.46	1.00	ug/kg							U
Trichlorofluoromethane	ND	0.27	1.00	ug/kg							U
Acrolein	ND	3.81	5.00	ug/kg							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.29	2.00	ug/kg							U
Acetone	ND	0.48	5.00	ug/kg							U
1,1-Dichloroethene	ND	0.34	1.00	ug/kg							U
Bromoethane	ND	0.44	2.00	ug/kg							U
Iodomethane	ND	0.22	1.00	ug/kg							U
Methylene Chloride	ND	0.64	2.00	ug/kg							U
Acrylonitrile	ND	1.03	5.00	ug/kg							U
Carbon Disulfide	ND	0.56	1.00	ug/kg							U
trans-1,2-Dichloroethene	ND	0.27	1.00	ug/kg							U
Vinyl Acetate	ND	0.38	5.00	ug/kg							U
1,1-Dichloroethane	ND	0.20	1.00	ug/kg							U
2-Butanone	ND	0.51	5.00	ug/kg							U
2,2-Dichloropropane	ND	0.29	1.00	ug/kg							U
cis-1,2-Dichloroethene	ND	0.24	1.00	ug/kg							U
Chloroform	ND	0.23	1.00	ug/kg							U
Bromochloromethane	ND	0.32	1.00	ug/kg							U
1,1,1-Trichloroethane	ND	0.23	1.00	ug/kg							U
1,1-Dichloropropene	ND	0.31	1.00	ug/kg							U
Carbon tetrachloride	ND	0.21	1.00	ug/kg							U
1,2-Dichloroethane	ND	0.19	1.00	ug/kg							U
Benzene	ND	0.30	1.00	ug/kg							U
Trichloroethene	ND	0.21	1.00	ug/kg							U
1,2-Dichloropropane	ND	0.16	1.00	ug/kg							U
Bromodichloromethane	ND	0.25	1.00	ug/kg							U
Dibromomethane	ND	0.15	1.00	ug/kg							U
2-Chloroethyl vinyl ether	ND	0.28	5.00	ug/kg							U
4-Methyl-2-Pentanone	ND	0.42	5.00	ug/kg							U
cis-1,3-Dichloropropene	ND	0.23	1.00	ug/kg							U
Toluene	ND	0.15	1.00	ug/kg							U

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

QC Sample/Analyte Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFJ0196-BLK1)			Prepa	ared: 06-Oct	-2017 Ana	lyzed: 06-0	Oct-2017 17	:18		
trans-1,3-Dichloropropene ND	0.22	1.00	ug/kg							U
2-Hexanone ND	0.44	5.00	ug/kg							U
1,1,2-Trichloroethane ND	0.29	1.00	ug/kg							U
1,3-Dichloropropane ND	0.21	1.00	ug/kg							U
Tetrachloroethene ND	0.26	1.00	ug/kg							U
Dibromochloromethane ND	0.27	1.00	ug/kg							U
1,2-Dibromoethane ND	0.18	1.00	ug/kg							U
Chlorobenzene ND	0.22	1.00	ug/kg							U
Ethylbenzene ND	0.20	1.00	ug/kg							U
1,1,1,2-Tetrachloroethane ND	0.23	1.00	ug/kg							U
m,p-Xylene ND	0.39	2.00	ug/kg							U
o-Xylene ND	0.22	1.00	ug/kg							U
Xylenes, total ND	0.62	2.00	ug/kg							U
Styrene ND	0.14	1.00	ug/kg							U
Bromoform ND	0.30	1.00	ug/kg							U
1,1,2,2-Tetrachloroethane ND	0.25	1.00	ug/kg							U
1,2,3-Trichloropropane ND	0.52	2.00	ug/kg							U
trans-1,4-Dichloro 2-Butene ND	0.44	5.00	ug/kg							U
n-Propylbenzene ND	0.27	1.00	ug/kg							U
Bromobenzene ND	0.15	1.00	ug/kg							U
Isopropyl Benzene ND	0.23	1.00	ug/kg							U
2-Chlorotoluene ND	0.30	1.00	ug/kg							U
4-Chlorotoluene ND	0.28	1.00	ug/kg							U
t-Butylbenzene ND	0.31	1.00	ug/kg							U
1,3,5-Trimethylbenzene ND	0.25	1.00	ug/kg							U
1,2,4-Trimethylbenzene ND	0.23	1.00	ug/kg							U
s-Butylbenzene ND	0.24	1.00	ug/kg							U
4-Isopropyl Toluene ND	0.24	1.00	ug/kg							U
1,3-Dichlorobenzene ND	0.23	1.00	ug/kg							U
1,4-Dichlorobenzene ND	0.23	1.00	ug/kg							U
n-Butylbenzene ND	0.26	1.00	ug/kg							U
1,2-Dichlorobenzene ND	0.29	1.00	ug/kg							U
1,2-Dibromo-3-chloropropane ND	0.59	5.00	ug/kg							U
1,2,4-Trichlorobenzene 0.88	0.33	5.00	ug/kg							J
Hexachloro-1,3-Butadiene 0.57	0.41	5.00	ug/kg							J

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

Naphthalene 1.09 0.43 5.00 ug/kg	QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1.23-Trichlorochanene	Blank (BFJ0196-BLK1)				Prepa	ared: 06-Oct	-2017 Ana	alyzed: 06-0	Oct-2017 17	:18		
Methyl terheury   Ether   ND   0.21   1.00   ug/kg     Ug/kg   Ug/	Naphthalene	1.09	0.43	5.00	ug/kg	<u>-</u>	<del>.</del>					J
Methyl tert-butyl Ether   ND   0.23   1.00   ug/kg	1,2,3-Trichlorobenzene	1.01	0.31	5.00	ug/kg							J
Surrogate: 1,2-Dichloroethane-d4	Dichlorodifluoromethane	ND	0.21	1.00	ug/kg							U
Surrogate: 1,2-Dichloroethane-d4	Methyl tert-butyl Ether	ND	0.23	1.00	ug/kg							U
Surrogate: Toluene-d8	2-Pentanone	ND	5.00	5.00	ug/kg							U
Surrogate: 4-Bromofluorobenzene	Surrogate: 1,2-Dichloroethane-d4		51.7		ug/kg	50.0		103	80-149			
Surveyante: 1,2-Dichlorobenzene-d4   50.2   ug/kg   50.0   100   80-120	Surrogate: Toluene-d8		50.6		ug/kg	50.0		101	77-120			
Prepared: 06-Oct-2017   Analyzed: 06-Oct-2017   16:20	Surrogate: 4-Bromofluorobenzene		48.4		ug/kg	50.0		96.8	80-120			
Chloromethane         67.8         ug/kg         50.0         136         64-132         *, Q           Vinyl Chloride         70.0         ug/kg         50.0         140         74-135         *, Q           Bromomethane         62.3         ug/kg         50.0         125         53-144         Q           Chloroethane         62.9         ug/kg         50.0         126         55-149         Q           Trichlorofluoromethane         60.6         ug/kg         50.0         121         61-164         Q           Acrolein         258         ug/kg         250         103         59-140         1         1,1,2-Trichloro-1,2,2-Trifluoroethane         56.1         ug/kg         50.0         112         74-143         74-143         74-143         74-143         74-143         74-143         74-143         74-143         74-144	Surrogate: 1,2-Dichlorobenzene-d4		50.2		ug/kg	50.0		100	80-120			
Vinyl Chloride         70.0         ug/kg         50.0         140         74-135         *, Q           Bromomethane         62.3         ug/kg         50.0         125         53-144         Q           Chlorocthane         62.9         ug/kg         50.0         126         55-149         Q           Trichlorofluoromethane         60.6         ug/kg         50.0         121         61-164         Q           Acrolein         258         ug/kg         50.0         112         74-143         P           Acrolein         258         ug/kg         50.0         112         74-143         P           Acetone         249         ug/kg         50.0         107         77-134         P           Bromoethane         53.3         ug/kg         50.0         107         77-134         P           Bromoethane         51.8         ug/kg         50.0         107         77-134         P           Bromoethane         51.8         ug/kg         50.0         104         31-162         P           Methylene Chloride         47.2         ug/kg         50.0         104         69-129         P           Acrylonitrile         48.9	LCS (BFJ0196-BS1)				Prepa	ared: 06-Oct	:-2017 Ana	ılyzed: 06-0	Oct-2017 16	:20		
Bromomethane         62.3         ug/kg         50.0         125         53.144         Q           Chloroethane         62.9         ug/kg         50.0         126         55.149         Q           Trichlorofluoromethane         60.6         ug/kg         50.0         121         61-164         Q           Acrolein         258         ug/kg         250         103         59-140         11.1,2-Trichloro-1,2,2-Trifluoroethane         56.1         ug/kg         50.0         112         74-143         74-144         74-144         74-144         74-144         74-144         74-144	Chloromethane	67.8			ug/kg	50.0		136	64-132			*, Q
Chloroethane       62.9       ug/kg       50.0       126       55-149       Q         Trichlorofluoromethane       60.6       ug/kg       50.0       121       61-164       Q         Acrolein       258       ug/kg       250       103       59-140         1,1,2-Trichloro-1,2,2-Trifluoroethane       56.1       ug/kg       50.0       112       74-143         Acetone       249       ug/kg       250       99.7       48-137         1,1-Dichloroethane       53.3       ug/kg       50.0       107       77-134         Bromoethane       53.3       ug/kg       50.0       107       65-145         Iodomethane       51.8       ug/kg       50.0       104       31-162         Methylene Chloride       47.2       ug/kg       50.0       94.4       69-129         Acrylonitrile       48.9       ug/kg       50.0       108       71-137         trans-1,2-Dichloroethene       50.3       ug/kg       50.0       101       79-130         Vinyl Acetate       53.3       ug/kg       50.0       101       79-130         Vinyl Acetate       51.9       ug/kg       50.0       104       80-126	Vinyl Chloride	70.0			ug/kg	50.0		140	74-135			*, Q
Trichlorofluoromethane 60.6 ug/kg 50.0 121 61-164 Q Acrolein 258 ug/kg 250 103 59-140  1,1,2-Trichloro-1,2,2-Trifluoroethane 56.1 ug/kg 50.0 112 74-143 Acetone 249 ug/kg 250 99.7 48-137  1,1-Dichloroethene 53.3 ug/kg 50.0 107 77-134  Bromoethane 53.8 ug/kg 50.0 107 65-145 Idodomethane 51.8 ug/kg 50.0 107 65-145 Idodomethane 47.2 ug/kg 50.0 104 31-162 Methylene Chloride 48.9 ug/kg 50.0 97.7 69-134  Carbon Disulfide 53.9 ug/kg 50.0 97.7 69-134  Carbon Disulfide 53.9 ug/kg 50.0 101 79-130  Vinyl Acetate 53.3 ug/kg 50.0 101 79-130  Vinyl Acetate 53.3 ug/kg 50.0 101 79-130  Vinyl Acetate 53.3 ug/kg 50.0 107 66-141  1,1-Dichloroethane 51.9 ug/kg 50.0 107 66-141  1,1-Dichloroethane 52.5 ug/kg 50.0 104 80-126  2-Butanone 220 ug/kg 50.0 105 77-138  cis-1,2-Dichloroethene 50.8 ug/kg 50.0 90.0 80-125  Chloroform 50.8 ug/kg 50.0 90.0 80-125  Chloroform 50.8 ug/kg 50.0 99.2 80-129  1,1,1-Trichloroethane 49.6 ug/kg 50.0 99.2 80-129  1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	Bromomethane	62.3			ug/kg	50.0		125	53-144			Q
Acrolein 258 ug/kg 250 103 59-140  1,1,2-Trichloro-1,2,2-Trifluoroethane 56.1 ug/kg 50.0 112 74-143  Acetone 249 ug/kg 250 99.7 48-137  1,1-Dichloroethene 53.3 ug/kg 50.0 107 77-134  Bromoethane 53.3 ug/kg 50.0 107 65-145  Idodomethane 51.8 ug/kg 50.0 104 31-162  Methylene Chloride 47.2 ug/kg 50.0 94.4 69-129  Acrylonitrile 48.9 ug/kg 50.0 97.7 69-134  Carbon Disulfide 53.9 ug/kg 50.0 108 71-137  trans-1,2-Dichloroethene 50.3 ug/kg 50.0 101 79-130  Vinyl Acetate 53.3 ug/kg 50.0 101 79-130  Vinyl Acetate 53.3 ug/kg 50.0 107 66-141  1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126  2-Butanone 220 ug/kg 50.0 104 80-126  2-Joichloropropane 52.5 ug/kg 50.0 105 77-138  cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125  Chloroform 50.8 ug/kg 50.0 102 80-126  Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129  1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	Chloroethane	62.9			ug/kg	50.0		126	55-149			Q
1,1,2-Trichloro-1,2,2-Trifluoroethane       56.1       ug/kg       50.0       112       74-143         Acetone       249       ug/kg       250       99.7       48-137         1,1-Dichloroethene       53.3       ug/kg       50.0       107       77-134         Bromoethane       53.3       ug/kg       50.0       107       65-145         Iodomethane       51.8       ug/kg       50.0       104       31-162         Methylene Chloride       47.2       ug/kg       50.0       94.4       69-129         Acrylonitrile       48.9       ug/kg       50.0       97.7       69-134         Carbon Disulfide       53.9       ug/kg       50.0       108       71-137         trans-1,2-Dichloroethene       50.3       ug/kg       50.0       101       79-130         Vinyl Acetate       53.3       ug/kg       50.0       107       66-141         1,1-Dichloroethane       51.9       ug/kg       50.0       107       66-141         1,1-Dichloroethane       220       ug/kg       50.0       104       80-126         2,2-Dichloropropane       52.5       ug/kg       50.0       105       77-138         cis-1,2-Dic	Trichlorofluoromethane	60.6			ug/kg	50.0		121	61-164			Q
Actone       249       ug/kg       250       99.7       48-137         1,1-Dichloroethene       53.3       ug/kg       50.0       107       77-134         Bromoethane       53.3       ug/kg       50.0       107       65-145         Iodomethane       51.8       ug/kg       50.0       104       31-162         Methylene Chloride       47.2       ug/kg       50.0       94.4       69-129         Acrylonitrile       48.9       ug/kg       50.0       97.7       69-134         Carbon Disulfide       53.9       ug/kg       50.0       108       71-137         trans-1,2-Dichloroethene       50.3       ug/kg       50.0       101       79-130         Vinyl Acetate       53.3       ug/kg       50.0       107       66-141         1,1-Dichloroethane       51.9       ug/kg       50.0       104       80-126         2-Butanone       220       ug/kg       50.0       105       77-138         cis-1,2-Dichloropropane       52.5       ug/kg       50.0       105       77-138         cis-1,2-Dichloroethene       45.0       ug/kg       50.0       102       80-125         Chloroform       50.8<	Acrolein	258			ug/kg	250		103	59-140			
1,1-Dichloroethene 53.3 ug/kg 50.0 107 77-134 Bromoethane 53.3 ug/kg 50.0 107 65-145 Iodomethane 51.8 ug/kg 50.0 104 31-162 Methylene Chloride 47.2 ug/kg 50.0 94.4 69-129 Acrylonitrile 48.9 ug/kg 50.0 97.7 69-134 Carbon Disulfide 53.9 ug/kg 50.0 108 71-137 trans-1,2-Dichloroethene 50.3 ug/kg 50.0 101 79-130 Vinyl Acetate 53.3 ug/kg 50.0 101 79-130 Vinyl Acetate 51.9 ug/kg 50.0 107 66-141 1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126 2-Butanone 220 ug/kg 50.0 104 80-126 2,2-Dichloropropane 52.5 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125 Chloroform 50.8 ug/kg 50.0 90.0 80-125 Chloroform 50.8 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 49.6 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	1,1,2-Trichloro-1,2,2-Trifluoroethane	56.1			ug/kg	50.0		112	74-143			
Bromoethane 53.3 ug/kg 50.0 107 65-145 lodomethane 51.8 ug/kg 50.0 104 31-162 Methylene Chloride 47.2 ug/kg 50.0 94.4 69-129 Acrylonitrile 48.9 ug/kg 50.0 97.7 69-134 Carbon Disulfide 53.9 ug/kg 50.0 108 71-137 trans-1,2-Dichloroethene 50.3 ug/kg 50.0 101 79-130 Vinyl Acetate 53.3 ug/kg 50.0 107 66-141 1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126 2-Butanone 220 ug/kg 250 87.9 70-132 2,2-Dichloropropane 52.5 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125 Chloroform 50.8 ug/kg 50.0 102 80-126 Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 56.0 ug/kg 50.0 ug/kg 50.0 112 78-133	Acetone	249			ug/kg	250		99.7	48-137			
Idodomethane       51.8       ug/kg       50.0       104       31-162         Methylene Chloride       47.2       ug/kg       50.0       94.4       69-129         Acrylonitrile       48.9       ug/kg       50.0       97.7       69-134         Carbon Disulfide       53.9       ug/kg       50.0       108       71-137         trans-1,2-Dichloroethene       50.3       ug/kg       50.0       101       79-130         Vinyl Acetate       53.3       ug/kg       50.0       107       66-141         1,1-Dichloroethane       51.9       ug/kg       50.0       104       80-126         2-Butanone       220       ug/kg       250       87.9       70-132         2,2-Dichloropropane       52.5       ug/kg       50.0       105       77-138         cis-1,2-Dichloroethene       45.0       ug/kg       50.0       90.0       80-125         Chloroform       50.8       ug/kg       50.0       102       80-126         Bromochloromethane       49.6       ug/kg       50.0       99.2       80-129         1,1,1-Trichloroethane       56.0       ug/kg       50.0       112       78-133	1,1-Dichloroethene	53.3			ug/kg	50.0		107	77-134			
Methylene Chloride       47.2       ug/kg       50.0       94.4       69-129         Acrylonitrile       48.9       ug/kg       50.0       97.7       69-134         Carbon Disulfide       53.9       ug/kg       50.0       108       71-137         trans-1,2-Dichloroethene       50.3       ug/kg       50.0       101       79-130         Vinyl Acetate       53.3       ug/kg       50.0       107       66-141         1,1-Dichloroethane       51.9       ug/kg       50.0       104       80-126         2-Butanone       220       ug/kg       50.0       105       77-138         cis-1,2-Dichloropropane       52.5       ug/kg       50.0       90.0       80-125         Chloroform       50.8       ug/kg       50.0       102       80-126         Bromochloromethane       49.6       ug/kg       50.0       99.2       80-129         1,1,1-Trichloroethane       56.0       ug/kg       50.0       112       78-133	Bromoethane	53.3			ug/kg	50.0		107	65-145			
Acrylonitrile 48.9 ug/kg 50.0 97.7 69-134 Carbon Disulfide 53.9 ug/kg 50.0 108 71-137 trans-1,2-Dichloroethene 50.3 ug/kg 50.0 101 79-130 Vinyl Acetate 53.3 ug/kg 50.0 107 66-141 1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126 2-Butanone 220 ug/kg 250 87.9 70-132 2,2-Dichloropropane 52.5 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125 Chloroform 50.8 ug/kg 50.0 102 80-126 Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	Iodomethane	51.8			ug/kg	50.0		104	31-162			
Carbon Disulfide 53.9 ug/kg 50.0 108 71-137 trans-1,2-Dichloroethene 50.3 ug/kg 50.0 101 79-130 Vinyl Acetate 53.3 ug/kg 50.0 107 66-141 1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126 2-Butanone 220 ug/kg 250 87.9 70-132 2,2-Dichloropropane 52.5 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125 Chloroform 50.8 ug/kg 50.0 102 80-126 Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	Methylene Chloride	47.2			ug/kg	50.0		94.4	69-129			
trans-1,2-Dichloroethene 50.3 ug/kg 50.0 101 79-130  Vinyl Acetate 53.3 ug/kg 50.0 107 66-141  1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126  2-Butanone 220 ug/kg 250 87.9 70-132  2,2-Dichloropropane 52.5 ug/kg 50.0 105 77-138  cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125  Chloroform 50.8 ug/kg 50.0 102 80-126  Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129  1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	Acrylonitrile	48.9			ug/kg	50.0		97.7	69-134			
Vinyl Acetate       53.3       ug/kg       50.0       107       66-141         1,1-Dichloroethane       51.9       ug/kg       50.0       104       80-126         2-Butanone       220       ug/kg       250       87.9       70-132         2,2-Dichloropropane       52.5       ug/kg       50.0       105       77-138         cis-1,2-Dichloroethene       45.0       ug/kg       50.0       90.0       80-125         Chloroform       50.8       ug/kg       50.0       102       80-126         Bromochloromethane       49.6       ug/kg       50.0       99.2       80-129         1,1,1-Trichloroethane       56.0       ug/kg       50.0       112       78-133	Carbon Disulfide	53.9			ug/kg	50.0		108	71-137			
1,1-Dichloroethane 51.9 ug/kg 50.0 104 80-126 2-Butanone 220 ug/kg 250 87.9 70-132 2,2-Dichloropropane 52.5 ug/kg 50.0 105 77-138 cis-1,2-Dichloroethene 45.0 ug/kg 50.0 90.0 80-125 Chloroform 50.8 ug/kg 50.0 102 80-126 Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	trans-1,2-Dichloroethene	50.3			ug/kg	50.0		101	79-130			
2-Butanone       220       ug/kg       250       87.9       70-132         2,2-Dichloropropane       52.5       ug/kg       50.0       105       77-138         cis-1,2-Dichloroethene       45.0       ug/kg       50.0       90.0       80-125         Chloroform       50.8       ug/kg       50.0       102       80-126         Bromochloromethane       49.6       ug/kg       50.0       99.2       80-129         1,1,1-Trichloroethane       56.0       ug/kg       50.0       112       78-133	Vinyl Acetate	53.3			ug/kg	50.0		107	66-141			
2,2-Dichloropropane       52.5       ug/kg       50.0       105       77-138         cis-1,2-Dichloroethene       45.0       ug/kg       50.0       90.0       80-125         Chloroform       50.8       ug/kg       50.0       102       80-126         Bromochloromethane       49.6       ug/kg       50.0       99.2       80-129         1,1,1-Trichloroethane       56.0       ug/kg       50.0       112       78-133	1,1-Dichloroethane	51.9			ug/kg	50.0		104	80-126			
cis-1,2-Dichloroethene     45.0     ug/kg     50.0     90.0     80-125       Chloroform     50.8     ug/kg     50.0     102     80-126       Bromochloromethane     49.6     ug/kg     50.0     99.2     80-129       1,1,1-Trichloroethane     56.0     ug/kg     50.0     112     78-133	2-Butanone	220			ug/kg	250		87.9	70-132			
Chloroform       50.8       ug/kg       50.0       102       80-126         Bromochloromethane       49.6       ug/kg       50.0       99.2       80-129         1,1,1-Trichloroethane       56.0       ug/kg       50.0       112       78-133	2,2-Dichloropropane	52.5			ug/kg	50.0		105	77-138			
Bromochloromethane 49.6 ug/kg 50.0 99.2 80-129 1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	cis-1,2-Dichloroethene	45.0			ug/kg	50.0		90.0	80-125			
1,1,1-Trichloroethane 56.0 ug/kg 50.0 112 78-133	Chloroform	50.8			ug/kg	50.0		102	80-126			
	Bromochloromethane	49.6			ug/kg	50.0		99.2	80-129			
1,1-Dichloropropene 53.8 ug/kg 50.0 108 79-120	1,1,1-Trichloroethane	56.0			ug/kg	50.0		112	78-133			
	1,1-Dichloropropene	53.8			ug/kg	50.0		108	79-120			

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	Result	PIIIII	PHUIT								notes
LCS (BFJ0196-BS1)					ared: 06-Oct-	2017 Ana			:20		
Carbon tetrachloride	60.7			ug/kg	50.0		121	71-129			Q
1,2-Dichloroethane	54.7			ug/kg	50.0		109	76-120			
Benzene	49.1			ug/kg	50.0		98.2	80-120			
Trichloroethene	53.4			ug/kg	50.0		107	80-120			
1,2-Dichloropropane	49.0			ug/kg	50.0		97.9	79-120			
Bromodichloromethane	53.7			ug/kg	50.0		107	80-122			
Dibromomethane	48.6			ug/kg	50.0		97.3	80-120			
2-Chloroethyl vinyl ether	57.0			ug/kg	50.0		114	51-129			
4-Methyl-2-Pentanone	273			ug/kg	250		109	73-121			
cis-1,3-Dichloropropene	52.3			ug/kg	50.0		105	80-120			
Toluene	52.8			ug/kg	50.0		106	75-120			
trans-1,3-Dichloropropene	57.9			ug/kg	50.0		116	80-124			
2-Hexanone	258			ug/kg	250		103	68-122			
1,1,2-Trichloroethane	54.3			ug/kg	50.0		109	79-120			
1,3-Dichloropropane	46.1			ug/kg	50.0		92.2	78-120			
Tetrachloroethene	53.8			ug/kg	50.0		108	74-124			
Dibromochloromethane	50.7			ug/kg	50.0		101	74-125			
1,2-Dibromoethane	57.1			ug/kg	50.0		114	80-120			
Chlorobenzene	51.0			ug/kg	50.0		102	78-120			
Ethylbenzene	52.0			ug/kg	50.0		104	80-125			
1,1,1,2-Tetrachloroethane	50.3			ug/kg	50.0		101	80-120			
m,p-Xylene	110			ug/kg	100		110	76-121			
o-Xylene	59.5			ug/kg	50.0		119	67-132			
Xylenes, total	169			ug/kg	150		113	67-132			
Styrene	61.6			ug/kg	50.0		123	80-120			*, Q
Bromoform	47.9			ug/kg	50.0		95.8	64-128			
1,1,2,2-Tetrachloroethane	47.8			ug/kg	50.0		95.5	74-120			
1,2,3-Trichloropropane	49.5			ug/kg	50.0		98.9	73-120			
trans-1,4-Dichloro 2-Butene	51.0			ug/kg	50.0		102	65-125			
n-Propylbenzene	54.2			ug/kg	50.0		108	72-124			
Bromobenzene	50.4			ug/kg	50.0		101	76-120			
Isopropyl Benzene	54.2			ug/kg	50.0		108	74-121			
2-Chlorotoluene	53.3			ug/kg	50.0		107	75-120			
4-Chlorotoluene	53.9			ug/kg	50.0		108	69-124			
t-Butylbenzene	54.1			ug/kg	50.0		108	72-122			
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Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	Acount	Liiiit	Ziiiii							Liiiit	110103
LCS (BFJ0196-BS1)					red: 06-Oct	-2017 Ana	•		5:20		
1,3,5-Trimethylbenzene	52.9			ug/kg	50.0		106	74-122			
1,2,4-Trimethylbenzene	53.0			ug/kg	50.0		106	75-121			
s-Butylbenzene	54.3			ug/kg	50.0		109	70-128			
4-Isopropyl Toluene	55.5			ug/kg	50.0		111	75-125			
1,3-Dichlorobenzene	51.0			ug/kg	50.0		102	75-120			
1,4-Dichlorobenzene	50.7			ug/kg	50.0		101	73-120			
n-Butylbenzene	56.9			ug/kg	50.0		114	73-130			
1,2-Dichlorobenzene	48.4			ug/kg	50.0		96.7	76-120			
1,2-Dibromo-3-chloropropane	44.7			ug/kg	50.0		89.5	65-126			
1,2,4-Trichlorobenzene	55.9			ug/kg	50.0		112	66-140			
Hexachloro-1,3-Butadiene	56.1			ug/kg	50.0		112	67-133			
Naphthalene	51.2			ug/kg	50.0		102	69-125			
1,2,3-Trichlorobenzene	53.4			ug/kg	50.0		107	68-132			
Dichlorodifluoromethane	67.6			ug/kg	50.0		135	67-142			
Methyl tert-butyl Ether	53.3			ug/kg	50.0		107	79-127			
2-Pentanone	282			ug/kg	250		113	77-120			
Surrogate: 1,2-Dichloroethane-d4		56.3		ug/kg	50.0		113	80-149			
Surrogate: Toluene-d8		52.0		ug/kg	50.0		104	77-120			
Surrogate: 4-Bromofluorobenzene		59.4		ug/kg	50.0		119	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		50.3		ug/kg	50.0		101	80-120			
LCS Dup (BFJ0196-BSD1)				Prena	ared: 06-Oct	-2017 An:	alvzed: 06-	Oct-2017 16	5:56		
Chloromethane	51.4			ug/kg	50.0		103	64-132	27.40	30	Q
Vinyl Chloride	52.0			ug/kg	50.0		104	74-135	29.60	30	Q
Bromomethane	43.6			ug/kg	50.0		87.3	53-144	35.20	30	*, Q
Chloroethane	50.9			ug/kg	50.0		102	55-149	21.10	30	Q
Trichlorofluoromethane	47.5			ug/kg	50.0		95.0	61-164	24.30	30	Q
Acrolein	245			ug/kg	250		98.0	59-140	5.11	30	`
1,1,2-Trichloro-1,2,2-Trifluoroethane	49.8			ug/kg	50.0		99.7	74-143	11.90	30	
Acetone	217			ug/kg	250		86.8	48-137	13.80	30	
1,1-Dichloroethene	49.0			ug/kg	50.0		97.9	77-134	8.43	30	
Bromoethane	53.4			ug/kg	50.0		107	65-145	0.26	30	
Iodomethane	49.5			ug/kg	50.0		98.9	31-162	4.53	30	
Methylene Chloride	48.9			ug/kg	50.0		97.8	69-129	3.55	30	
Acrylonitrile	35.8			ug/kg ug/kg	50.0		71.6	69-134	30.90	30	*

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

		Detection	Reporting		Spike	Source		%REC		RPD	
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS Dup (BFJ0196-BSD1)	_			Prepa	ared: 06-Oct-	2017 Ana	alyzed: 06-0	Oct-2017 16	:56		
Carbon Disulfide	50.6			ug/kg	50.0		101	71-137	6.35	30	
trans-1,2-Dichloroethene	49.6			ug/kg	50.0		99.3	79-130	1.26	30	
Vinyl Acetate	38.8			ug/kg	50.0		77.6	66-141	31.40	30	*
1,1-Dichloroethane	40.3			ug/kg	50.0		80.6	80-126	25.10	30	
2-Butanone	206			ug/kg	250		82.3	70-132	6.56	30	
2,2-Dichloropropane	40.8			ug/kg	50.0		81.7	77-138	24.90	30	
cis-1,2-Dichloroethene	35.7			ug/kg	50.0		71.3	80-125	23.10	30	*
Chloroform	40.0			ug/kg	50.0		80.0	80-126	23.70	30	
Bromochloromethane	37.6			ug/kg	50.0		75.2	80-129	27.60	30	*
1,1,1-Trichloroethane	44.7			ug/kg	50.0		89.4	78-133	22.40	30	
1,1-Dichloropropene	45.3			ug/kg	50.0		90.6	79-120	17.20	30	
Carbon tetrachloride	44.2			ug/kg	50.0		88.3	71-129	31.60	30	*, Q
1,2-Dichloroethane	47.1			ug/kg	50.0		94.3	76-120	14.90	30	
Benzene	51.8			ug/kg	50.0		104	80-120	5.46	30	
Trichloroethene	54.5			ug/kg	50.0		109	80-120	1.95	30	
1,2-Dichloropropane	54.7			ug/kg	50.0		109	79-120	11.10	30	
Bromodichloromethane	50.5			ug/kg	50.0		101	80-122	6.09	30	
Dibromomethane	48.2			ug/kg	50.0		96.4	80-120	0.94	30	
2-Chloroethyl vinyl ether	54.5			ug/kg	50.0		109	51-129	4.35	30	
4-Methyl-2-Pentanone	254			ug/kg	250		102	73-121	7.48	30	
cis-1,3-Dichloropropene	52.6			ug/kg	50.0		105	80-120	0.69	30	
Toluene	52.8			ug/kg	50.0		106	75-120	0.03	30	
trans-1,3-Dichloropropene	52.4			ug/kg	50.0		105	80-124	9.84	30	
2-Hexanone	259			ug/kg	250		104	68-122	0.49	30	
1,1,2-Trichloroethane	49.5			ug/kg	50.0		99.0	79-120	9.23	30	
1,3-Dichloropropane	49.2			ug/kg	50.0		98.4	78-120	6.46	30	
Tetrachloroethene	56.2			ug/kg	50.0		112	74-124	4.24	30	
Dibromochloromethane	51.0			ug/kg	50.0		102	74-125	0.64	30	
1,2-Dibromoethane	49.1			ug/kg	50.0		98.3	80-120	15.00	30	
Chlorobenzene	52.2			ug/kg	50.0		104	78-120	2.41	30	
Ethylbenzene	54.4			ug/kg	50.0		109	80-125	4.46	30	
1,1,1,2-Tetrachloroethane	50.1			ug/kg	50.0		100	80-120	0.43	30	
m,p-Xylene	111			ug/kg	100		111	76-121	0.94	30	
o-Xylene	52.9			ug/kg	50.0		106	67-132	11.90	30	
Xylenes, total	164			ug/kg	150		109	67-132	3.38	30	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0196 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

000 1/4 1/4	D. J.	Detection	Reporting	II.'.	Spike	Source	N/DEC	%REC	DDD	RPD	N. (
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS Dup (BFJ0196-BSD1)				Prepa	red: 06-Oct	-2017 Ana	lyzed: 06-0	Oct-2017 16	:56		
Styrene	54.6			ug/kg	50.0		109	80-120	12.00	30	Q
Bromoform	47.5			ug/kg	50.0		95.0	64-128	0.75	30	
1,1,2,2-Tetrachloroethane	47.1			ug/kg	50.0		94.2	74-120	1.44	30	
1,2,3-Trichloropropane	46.4			ug/kg	50.0		92.8	73-120	6.45	30	
trans-1,4-Dichloro 2-Butene	48.3			ug/kg	50.0		96.6	65-125	5.55	30	
n-Propylbenzene	55.4			ug/kg	50.0		111	72-124	2.19	30	
Bromobenzene	50.1			ug/kg	50.0		100	76-120	0.61	30	
Isopropyl Benzene	55.3			ug/kg	50.0		111	74-121	2.09	30	
2-Chlorotoluene	55.1			ug/kg	50.0		110	75-120	3.36	30	
4-Chlorotoluene	55.3			ug/kg	50.0		111	69-124	2.57	30	
t-Butylbenzene	55.5			ug/kg	50.0		111	72-122	2.52	30	
1,3,5-Trimethylbenzene	54.8			ug/kg	50.0		110	74-122	3.54	30	
1,2,4-Trimethylbenzene	54.7			ug/kg	50.0		109	75-121	3.03	30	
s-Butylbenzene	56.1			ug/kg	50.0		112	70-128	3.24	30	
4-Isopropyl Toluene	57.4			ug/kg	50.0		115	75-125	3.48	30	
1,3-Dichlorobenzene	53.0			ug/kg	50.0		106	75-120	3.67	30	
1,4-Dichlorobenzene	51.7			ug/kg	50.0		103	73-120	2.02	30	
n-Butylbenzene	59.6			ug/kg	50.0		119	73-130	4.64	30	
1,2-Dichlorobenzene	50.4			ug/kg	50.0		101	76-120	4.19	30	
1,2-Dibromo-3-chloropropane	43.6			ug/kg	50.0		87.1	65-126	2.61	30	
1,2,4-Trichlorobenzene	57.4			ug/kg	50.0		115	66-140	2.62	30	
Hexachloro-1,3-Butadiene	58.8			ug/kg	50.0		118	67-133	4.69	30	
Naphthalene	50.6			ug/kg	50.0		101	69-125	1.13	30	
1,2,3-Trichlorobenzene	54.3			ug/kg	50.0		109	68-132	1.78	30	
Dichlorodifluoromethane	52.1			ug/kg	50.0		104	67-142	25.80	30	
Methyl tert-butyl Ether	45.7			ug/kg	50.0		91.4	79-127	15.30	30	
2-Pentanone	269			ug/kg	250		108	77-120	4.77	30	
Surrogate: 1,2-Dichloroethane-d4		49.9	)	ug/kg	50.0		99.9	80-149			
Surrogate: Toluene-d8		51.1		ug/kg	50.0		102	77-120			
Surrogate: 4-Bromofluorobenzene		50.9	)	ug/kg	50.0		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		49.9	)	ug/kg	50.0		99.9	80-120			

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	Result	Ziiiit	Ziiiit							2	1.5003
Blank (BFJ0269-BLK1)					ared: 13-Oct-	2017 Ana	ilyzed: 13-0	Oct-2017 12	::38		**
Chloromethane	ND	0.26	1.00	ug/kg							U
Vinyl Chloride	ND	0.24	1.00	ug/kg							U
Bromomethane	ND	0.19	1.00	ug/kg							U
Chloroethane	ND	0.46	1.00	ug/kg							U
Trichlorofluoromethane	ND	0.27	1.00	ug/kg							U
Acrolein	ND	3.81	5.00	ug/kg							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.29	2.00	ug/kg							U
Acetone	ND	0.48	5.00	ug/kg							U
1,1-Dichloroethene	ND	0.34	1.00	ug/kg							U
Bromoethane	ND	0.44	2.00	ug/kg							U
Iodomethane	ND	0.22	1.00	ug/kg							U
Methylene Chloride	1.08	0.64	2.00	ug/kg							J
Acrylonitrile	ND	1.03	5.00	ug/kg							U
Carbon Disulfide	ND	0.56	1.00	ug/kg							U
trans-1,2-Dichloroethene	ND	0.27	1.00	ug/kg							U
Vinyl Acetate	ND	0.38	5.00	ug/kg							U
1,1-Dichloroethane	ND	0.20	1.00	ug/kg							U
2-Butanone	ND	0.51	5.00	ug/kg							U
2,2-Dichloropropane	ND	0.29	1.00	ug/kg							U
cis-1,2-Dichloroethene	ND	0.24	1.00	ug/kg							U
Chloroform	ND	0.23	1.00	ug/kg							U
Bromochloromethane	ND	0.32	1.00	ug/kg							U
1,1,1-Trichloroethane	ND	0.23	1.00	ug/kg							U
1,1-Dichloropropene	ND	0.31	1.00	ug/kg							U
Carbon tetrachloride	ND	0.21	1.00	ug/kg							U
1,2-Dichloroethane	ND	0.19	1.00	ug/kg							U
Benzene	ND	0.30	1.00	ug/kg							U
Trichloroethene	ND	0.21	1.00	ug/kg							U
1,2-Dichloropropane	ND	0.16	1.00	ug/kg							U
Bromodichloromethane	ND	0.25	1.00	ug/kg							U
Dibromomethane	ND	0.15	1.00	ug/kg							U
2-Chloroethyl vinyl ether	ND	0.28	5.00	ug/kg							U
4-Methyl-2-Pentanone	ND	0.42	5.00	ug/kg							U
cis-1,3-Dichloropropene	ND	0.23	1.00	ug/kg							U
Toluene	ND	0.15	1.00	ug/kg							U

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	Kesuit	LIIIII	Lillit							Fillift	110108
Blank (BFJ0269-BLK1)					red: 13-Oct	-2017 Ana	ılyzed: 13-0	Oct-2017 12	2:38		
trans-1,3-Dichloropropene	ND	0.22	1.00	ug/kg							U
2-Hexanone	2.15	0.44	5.00	ug/kg							J
1,1,2-Trichloroethane	ND	0.29	1.00	ug/kg							U
1,3-Dichloropropane	ND	0.21	1.00	ug/kg							U
Tetrachloroethene	ND	0.26	1.00	ug/kg							U
Dibromochloromethane	ND	0.27	1.00	ug/kg							U
1,2-Dibromoethane	ND	0.18	1.00	ug/kg							U
Chlorobenzene	ND	0.22	1.00	ug/kg							U
Ethylbenzene	ND	0.20	1.00	ug/kg							U
1,1,1,2-Tetrachloroethane	ND	0.23	1.00	ug/kg							U
m,p-Xylene	ND	0.39	2.00	ug/kg							U
o-Xylene	ND	0.22	1.00	ug/kg							U
Xylenes, total	ND	0.62	2.00	ug/kg							U
Styrene	ND	0.14	1.00	ug/kg							U
Bromoform	ND	0.30	1.00	ug/kg							U
1,1,2,2-Tetrachloroethane	ND	0.25	1.00	ug/kg							U
1,2,3-Trichloropropane	ND	0.52	2.00	ug/kg							U
trans-1,4-Dichloro 2-Butene	ND	0.44	5.00	ug/kg							U
n-Propylbenzene	ND	0.27	1.00	ug/kg							U
Bromobenzene	ND	0.15	1.00	ug/kg							U
Isopropyl Benzene	ND	0.23	1.00	ug/kg							U
2-Chlorotoluene	ND	0.30	1.00	ug/kg							U
4-Chlorotoluene	ND	0.28	1.00	ug/kg							U
t-Butylbenzene	ND	0.31	1.00	ug/kg							U
1,3,5-Trimethylbenzene	ND	0.25	1.00	ug/kg							U
1,2,4-Trimethylbenzene	ND	0.23	1.00	ug/kg							U
s-Butylbenzene	ND	0.24	1.00	ug/kg							U
4-Isopropyl Toluene	ND	0.24	1.00	ug/kg							U
1,3-Dichlorobenzene	ND	0.23	1.00	ug/kg							U
1,4-Dichlorobenzene	ND	0.23	1.00	ug/kg							U
n-Butylbenzene	ND	0.26	1.00	ug/kg							U
1,2-Dichlorobenzene	ND	0.29	1.00	ug/kg							U
1,2-Dibromo-3-chloropropane	ND	0.59	5.00	ug/kg							U
1,2,4-Trichlorobenzene	0.79	0.33	5.00	ug/kg							J
Hexachloro-1,3-Butadiene	ND	0.41	5.00	ug/kg							U

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

		Detection	Reporting		Spike	Source		%REC		RPD	
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Blank (BFJ0269-BLK1)				Prepa	ared: 13-Oct-	-2017 Ana	ılyzed: 13-0	Oct-2017 12	:38		
Naphthalene	1.15	0.43	5.00	ug/kg		-			-		J
1,2,3-Trichlorobenzene	0.89	0.31	5.00	ug/kg							J
Dichlorodifluoromethane	ND	0.21	1.00	ug/kg							U
Methyl tert-butyl Ether	ND	0.23	1.00	ug/kg							U
2-Pentanone	ND	5.00	5.00	ug/kg							U
Surrogate: 1,2-Dichloroethane-d4		50.8		ug/kg	50.0		102	80-149			
Surrogate: Toluene-d8		48.9		ug/kg	50.0		97.9	77-120			
Surrogate: 4-Bromofluorobenzene		49.1		ug/kg	50.0		98.2	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		50.0		ug/kg	50.0		100	80-120			
LCS (BFJ0269-BS1)				Prepa	ared: 13-Oct-	-2017 Ana	ılyzed: 13-0	Oct-2017 11	:39		
Chloromethane	51.8			ug/kg	50.0		104	64-132			
Vinyl Chloride	58.1			ug/kg	50.0		116	74-135			
Bromomethane	49.4			ug/kg	50.0		98.9	53-144			
Chloroethane	56.8			ug/kg	50.0		114	55-149			
Trichlorofluoromethane	65.2			ug/kg	50.0		130	61-164			Q
Acrolein	256			ug/kg	250		103	59-140			
1,1,2-Trichloro-1,2,2-Trifluoroethane	56.7			ug/kg	50.0		113	74-143			
Acetone	229			ug/kg	250		91.5	48-137			
1,1-Dichloroethene	55.9			ug/kg	50.0		112	77-134			
Bromoethane	55.1			ug/kg	50.0		110	65-145			
Iodomethane	70.2			ug/kg	50.0		140	31-162			Q
Methylene Chloride	54.8			ug/kg	50.0		110	69-129			
Acrylonitrile	47.9			ug/kg	50.0		95.8	69-134			
Carbon Disulfide	57.3			ug/kg	50.0		115	71-137			
trans-1,2-Dichloroethene	53.3			ug/kg	50.0		107	79-130			
Vinyl Acetate	51.7			ug/kg	50.0		103	66-141			
1,1-Dichloroethane	53.0			ug/kg	50.0		106	80-126			
2-Butanone	255			ug/kg	250		102	70-132			
2,2-Dichloropropane	53.6			ug/kg	50.0		107	77-138			
cis-1,2-Dichloroethene	53.2			ug/kg	50.0		106	80-125			
Chloroform	54.5			ug/kg	50.0		109	80-126			
Bromochloromethane	52.5			ug/kg	50.0		105	80-129			
1,1,1-Trichloroethane	56.2			ug/kg	50.0		112	78-133			
1,1-Dichloropropene	52.6			ug/kg	50.0		105	79-120			

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

	ъ.	Detection	Reporting	TT 1.	Spike	Source	0/DEC	%REC	DDD	RPD	NT :
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS (BFJ0269-BS1)				Prepa	ared: 13-Oct	-2017 Ana	alyzed: 13-0	Oct-2017 11	:39		
Carbon tetrachloride	53.9			ug/kg	50.0		108	71-129			
1,2-Dichloroethane	46.8			ug/kg	50.0		93.7	76-120			
Benzene	52.7			ug/kg	50.0		105	80-120			
Trichloroethene	52.5			ug/kg	50.0		105	80-120			
1,2-Dichloropropane	49.0			ug/kg	50.0		98.0	79-120			
Bromodichloromethane	51.7			ug/kg	50.0		103	80-122			
Dibromomethane	50.7			ug/kg	50.0		101	80-120			
2-Chloroethyl vinyl ether	51.3			ug/kg	50.0		103	51-129			
4-Methyl-2-Pentanone	230			ug/kg	250		92.0	73-121			
cis-1,3-Dichloropropene	52.6			ug/kg	50.0		105	80-120			
Toluene	51.6			ug/kg	50.0		103	75-120			
trans-1,3-Dichloropropene	51.9			ug/kg	50.0		104	80-124			
2-Hexanone	252			ug/kg	250		101	68-122			
1,1,2-Trichloroethane	47.9			ug/kg	50.0		95.9	79-120			
1,3-Dichloropropane	52.3			ug/kg	50.0		105	78-120			
Tetrachloroethene	56.9			ug/kg	50.0		114	74-124			
Dibromochloromethane	51.2			ug/kg	50.0		102	74-125			
1,2-Dibromoethane	48.9			ug/kg	50.0		97.8	80-120			
Chlorobenzene	53.8			ug/kg	50.0		108	78-120			
Ethylbenzene	54.4			ug/kg	50.0		109	80-125			
1,1,1,2-Tetrachloroethane	54.1			ug/kg	50.0		108	80-120			
m,p-Xylene	107			ug/kg	100		107	76-121			
o-Xylene	53.6			ug/kg	50.0		107	67-132			
Xylenes, total	160			ug/kg	150		107	67-132			
Styrene	54.6			ug/kg	50.0		109	80-120			
Bromoform	48.2			ug/kg	50.0		96.4	64-128			
1,1,2,2-Tetrachloroethane	51.6			ug/kg	50.0		103	74-120			
1,2,3-Trichloropropane	51.7			ug/kg	50.0		103	73-120			
trans-1,4-Dichloro 2-Butene	52.8			ug/kg	50.0		106	65-125			
n-Propylbenzene	56.2			ug/kg	50.0		112	72-124			
Bromobenzene	52.9			ug/kg	50.0		106	76-120			
Isopropyl Benzene	56.6			ug/kg	50.0		113	74-121			
2-Chlorotoluene	53.8			ug/kg	50.0		108	75-120			
4-Chlorotoluene	56.4			ug/kg	50.0		113	69-124			
t-Butylbenzene	56.8			ug/kg	50.0		114	72-122			

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

OC Commission		Detection	Reporting	11	Spike	Source	0/PEC	%REC	DDD	RPD	NI .
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS (BFJ0269-BS1)				Prepa	ared: 13-Oct	-2017 Ana	alyzed: 13-0	Oct-2017 11	:39		
1,3,5-Trimethylbenzene	56.6			ug/kg	50.0		113	74-122			
1,2,4-Trimethylbenzene	56.3			ug/kg	50.0		113	75-121			
s-Butylbenzene	56.8			ug/kg	50.0		114	70-128			
4-Isopropyl Toluene	58.8			ug/kg	50.0		118	75-125			
1,3-Dichlorobenzene	54.7			ug/kg	50.0		109	75-120			
1,4-Dichlorobenzene	51.9			ug/kg	50.0		104	73-120			
n-Butylbenzene	58.3			ug/kg	50.0		117	73-130			
1,2-Dichlorobenzene	51.6			ug/kg	50.0		103	76-120			
1,2-Dibromo-3-chloropropane	49.3			ug/kg	50.0		98.6	65-126			
1,2,4-Trichlorobenzene	56.2			ug/kg	50.0		112	66-140			
Hexachloro-1,3-Butadiene	58.1			ug/kg	50.0		116	67-133			
Naphthalene	52.7			ug/kg	50.0		105	69-125			
1,2,3-Trichlorobenzene	56.8			ug/kg	50.0		114	68-132			
Dichlorodifluoromethane	51.7			ug/kg	50.0		103	67-142			
Methyl tert-butyl Ether	53.2			ug/kg	50.0		106	79-127			
2-Pentanone	225			ug/kg	250		89.8	77-120			
Surrogate: 1,2-Dichloroethane-d4		49.3		ug/kg	50.0		98.7	80-149			
Surrogate: Toluene-d8		48.1		ug/kg	50.0		96.2	77-120			
Surrogate: 4-Bromofluorobenzene		51.3		ug/kg	50.0		103	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		51.1		ug/kg	50.0		102	80-120			
LCS Dup (BFJ0269-BSD1)				Prepa	ared: 13-Oct	-2017 Ana	alyzed: 13-0	Oct-2017 12	:15		
Chloromethane	52.8			ug/kg	50.0		106	64-132	1.95	30	
Vinyl Chloride	60.3			ug/kg	50.0		121	74-135	3.61	30	
Bromomethane	51.4			ug/kg	50.0		103	53-144	3.82	30	
Chloroethane	56.6			ug/kg	50.0		113	55-149	0.35	30	
Trichlorofluoromethane	65.5			ug/kg	50.0		131	61-164	0.46	30	Q
Acrolein	247			ug/kg	250		98.7	59-140	3.88	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	59.2			ug/kg	50.0		118	74-143	4.36	30	
Acetone	222			ug/kg	250		88.8	48-137	3.01	30	
1,1-Dichloroethene	54.9			ug/kg	50.0		110	77-134	1.77	30	
Bromoethane	56.8			ug/kg	50.0		114	65-145	3.08	30	
Iodomethane	66.0			ug/kg	50.0		132	31-162	6.18	30	Q
Methylene Chloride	53.6			ug/kg	50.0		107	69-129	2.29	30	
Acrylonitrile	46.8			ug/kg	50.0		93.6	69-134	2.30	30	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

		Detection	Reporting		Spike	Source		%REC		RPD	
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
LCS Dup (BFJ0269-BSD1)				Prep	ared: 13-Oct	-2017 Ana	lyzed: 13-C	Oct-2017 12	:15		
Carbon Disulfide	56.8			ug/kg	50.0		114	71-137	0.79	30	
trans-1,2-Dichloroethene	54.1			ug/kg	50.0		108	79-130	1.34	30	
Vinyl Acetate	50.7			ug/kg	50.0		101	66-141	2.02	30	
1,1-Dichloroethane	52.7			ug/kg	50.0		105	80-126	0.41	30	
2-Butanone	242			ug/kg	250		96.8	70-132	5.24	30	
2,2-Dichloropropane	54.5			ug/kg	50.0		109	77-138	1.62	30	
cis-1,2-Dichloroethene	53.5			ug/kg	50.0		107	80-125	0.45	30	
Chloroform	53.5			ug/kg	50.0		107	80-126	1.92	30	
Bromochloromethane	50.2			ug/kg	50.0		100	80-129	4.35	30	
1,1,1-Trichloroethane	54.3			ug/kg	50.0		109	78-133	3.44	30	
1,1-Dichloropropene	53.6			ug/kg	50.0		107	79-120	1.89	30	
Carbon tetrachloride	55.1			ug/kg	50.0		110	71-129	2.23	30	
1,2-Dichloroethane	47.1			ug/kg	50.0		94.1	76-120	0.48	30	
Benzene	52.5			ug/kg	50.0		105	80-120	0.33	30	
Trichloroethene	53.4			ug/kg	50.0		107	80-120	1.71	30	
1,2-Dichloropropane	49.0			ug/kg	50.0		98.0	79-120	0.05	30	
Bromodichloromethane	50.5			ug/kg	50.0		101	80-122	2.33	30	
Dibromomethane	49.9			ug/kg	50.0		99.8	80-120	1.55	30	
2-Chloroethyl vinyl ether	49.1			ug/kg	50.0		98.3	51-129	4.28	30	
4-Methyl-2-Pentanone	234			ug/kg	250		93.4	73-121	1.58	30	
cis-1,3-Dichloropropene	51.0			ug/kg	50.0		102	80-120	2.95	30	
Toluene	52.1			ug/kg	50.0		104	75-120	0.93	30	
trans-1,3-Dichloropropene	50.6			ug/kg	50.0		101	80-124	2.53	30	
2-Hexanone	249			ug/kg	250		99.6	68-122	1.29	30	
1,1,2-Trichloroethane	47.2			ug/kg	50.0		94.3	79-120	1.63	30	
1,3-Dichloropropane	48.9			ug/kg	50.0		97.9	78-120	6.70	30	
Tetrachloroethene	57.2			ug/kg	50.0		114	74-124	0.63	30	
Dibromochloromethane	50.0			ug/kg	50.0		100	74-125	2.40	30	
1,2-Dibromoethane	46.2			ug/kg	50.0		92.4	80-120	5.65	30	
Chlorobenzene	53.4			ug/kg	50.0		107	78-120	0.87	30	
Ethylbenzene	55.9			ug/kg	50.0		112	80-125	2.61	30	
1,1,1,2-Tetrachloroethane	52.7			ug/kg	50.0		105	80-120	2.65	30	
m,p-Xylene	109			ug/kg	100		109	76-121	2.22	30	
o-Xylene	53.5			ug/kg	50.0		107	67-132	0.12	30	
Xylenes, total	162			ug/kg	150		108	67-132	1.44	30	

Analytical Resources, Inc.





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0269 - No Prep - Volatiles

Instrument: NT5 Analyst: PB

OC Samula/Analyta		Detection Limit	Reporting	Liuita	Spike	Source	%REC	%REC	DDD	RPD Limit	Notes
QC Sample/Analyte	Result	Limit	Limit	Units	Level	Result	%KEC	Limits	RPD	Limit	Notes
LCS Dup (BFJ0269-BSD1)				Prepa	red: 13-Oct	-2017 Ana	lyzed: 13-C	Oct-2017 12	:15		
Styrene	53.3			ug/kg	50.0		107	80-120	2.35	30	
Bromoform	45.7			ug/kg	50.0		91.3	64-128	5.44	30	
1,1,2,2-Tetrachloroethane	49.5			ug/kg	50.0		99.1	74-120	4.03	30	
1,2,3-Trichloropropane	49.5			ug/kg	50.0		99.0	73-120	4.24	30	
trans-1,4-Dichloro 2-Butene	51.0			ug/kg	50.0		102	65-125	3.38	30	
n-Propylbenzene	58.0			ug/kg	50.0		116	72-124	3.07	30	
Bromobenzene	52.3			ug/kg	50.0		105	76-120	1.27	30	
Isopropyl Benzene	56.7			ug/kg	50.0		113	74-121	0.16	30	
2-Chlorotoluene	54.1			ug/kg	50.0		108	75-120	0.57	30	
4-Chlorotoluene	58.1			ug/kg	50.0		116	69-124	2.92	30	
t-Butylbenzene	56.3			ug/kg	50.0		113	72-122	0.89	30	
1,3,5-Trimethylbenzene	57.5			ug/kg	50.0		115	74-122	1.58	30	
1,2,4-Trimethylbenzene	56.6			ug/kg	50.0		113	75-121	0.49	30	
s-Butylbenzene	58.6			ug/kg	50.0		117	70-128	3.09	30	
4-Isopropyl Toluene	60.6			ug/kg	50.0		121	75-125	2.96	30	
1,3-Dichlorobenzene	55.8			ug/kg	50.0		112	75-120	1.92	30	
1,4-Dichlorobenzene	52.7			ug/kg	50.0		105	73-120	1.54	30	
n-Butylbenzene	62.9			ug/kg	50.0		126	73-130	7.61	30	
1,2-Dichlorobenzene	52.4			ug/kg	50.0		105	76-120	1.54	30	
1,2-Dibromo-3-chloropropane	46.8			ug/kg	50.0		93.6	65-126	5.14	30	
1,2,4-Trichlorobenzene	62.1			ug/kg	50.0		124	66-140	10.00	30	
Hexachloro-1,3-Butadiene	62.1			ug/kg	50.0		124	67-133	6.61	30	
Naphthalene	51.2			ug/kg	50.0		102	69-125	2.87	30	
1,2,3-Trichlorobenzene	56.3			ug/kg	50.0		113	68-132	0.85	30	
Dichlorodifluoromethane	60.8			ug/kg	50.0		122	67-142	16.10	30	
Methyl tert-butyl Ether	51.3			ug/kg	50.0		103	79-127	3.57	30	
2-Pentanone	239			ug/kg	250		95.7	77-120	6.28	30	
Surrogate: 1,2-Dichloroethane-d4		50.1		ug/kg	50.0		100	80-149			
Surrogate: Toluene-d8		49.2		ug/kg	50.0		98.5	77-120			
Surrogate: 4-Bromofluorobenzene		49.9		ug/kg	50.0		99.8	80-120			
Surrogate: 1,2-Dichlorobenzene-d4		49.9		ug/kg	50.0		99.8	80-120			

Analytical Resources, Inc.





The Boeing Company

Project: Boeing Renton 4-79

P.O. Box 3707 MC 9U4-26 Seattle WA, 98124 Project Number: [none]
Project Manager: Carl Bach

**Reported:** 06-Nov-2017 10:09

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFJ0290 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

000 1/4 1	D. Iv	Reporting	TT '	Spike	Source	0/DEC	%REC	DDD	RPD	N
QC Sample/Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Blank (BFJ0290-BLK1)			Prep	ared: 11-Oct	-2017 Ana	lyzed: 11-0	Oct-2017 09	:19		
Gasoline Range Organics (Tol-Nap)	ND	5000	ug/kg							U
Surrogate: Toluene-d8		4.78	ug/kg	5.00		95.6	80-120			
Surrogate: 4-Bromofluorobenzene		4.90	ug/kg	5.00		98.0	78-123			
LCS (BFJ0290-BS1)			Prep	ared: 11-Oct	-2017 Ana	lyzed: 11-0	Oct-2017 07	:33		
Gasoline Range Organics (Tol-Nap)	51600		ug/kg	50000		103	70-121			
Surrogate: Toluene-d8		4.75	ug/kg	5.00		95.0	80-120			
Surrogate: 4-Bromofluorobenzene		4.96	ug/kg	5.00		99.2	78-123			
LCS Dup (BFJ0290-BSD1)			Prep	ared: 11-Oct	-2017 Ana	lyzed: 11-0	Oct-2017 08	:14		
Gasoline Range Organics (Tol-Nap)	53400		ug/kg	50000		107	70-121	3.51	30	
Surrogate: Toluene-d8		4.77	ug/kg	5.00		95.3	80-120			
Surrogate: 4-Bromofluorobenzene		5.08	ug/kg	5.00		102	78-123			



P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Petroleum Hydrocarbons - Quality Control**

#### Batch BFJ0213 - EPA 3546 (Microwave)

Instrument: FID4 Analyst: ML

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFJ0213-BLK1)			Prepa	ared: 09-Oct	-2017 Ana	lyzed: 16-0	Oct-2017 11:	:58		
Diesel Range Organics (C12-C24)	ND	5.00	mg/kg							U
Motor Oil Range Organics (C24-C38)	ND	10.0	mg/kg							U
Surrogate: o-Terphenyl		19.8	mg/kg	22.5		87.8	50-150			
LCS (BFJ0213-BS1)			Prepa	ared: 09-Oct	-2017 Ana	lyzed: 16-0	Oct-2017 12	:21		
Diesel Range Organics (C12-C24)	115	5.00	mg/kg	150	·	76.5	63-120		·	
Surrogate: o-Terphenyl		21.5	mg/kg	22.5		95.5	50-150			





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Certified Analyses included in this Report**

Analyte Certifications

EPA	8260	C in	Sol	id
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EPA 0200C III SOIIU	
Chloromethane	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Vinyl Chloride	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Bromomethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Chloroethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Trichlorofluoromethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Acrolein	WADOE,DoD-ELAP,NELAP,CALAP
1,1,2-Trichloro-1,2,2-Trifluoroethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Acetone	WADOE,DoD-ELAP,NELAP,CALAP
1,1-Dichloroethene	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Bromoethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
lodomethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Methylene Chloride	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Acrylonitrile	WADOE,DoD-ELAP,NELAP,CALAP
Carbon Disulfide	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
trans-1,2-Dichloroethene	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Vinyl Acetate	WADOE, DoD-ELAP, NELAP, CALAP
1,1-Dichloroethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
2-Butanone	WADOE, DoD-ELAP, NELAP, CALAP
2,2-Dichloropropane	WADOE, DoD-ELAP, NELAP, CALAP
cis-1,2-Dichloroethene	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Chloroform	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Bromochloromethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
1,1,1-Trichloroethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
1,1-Dichloropropene	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Carbon tetrachloride	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
1,2-Dichloroethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Benzene	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Trichloroethene	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
1,2-Dichloropropane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Bromodichloromethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Dibromomethane	WADOE, DoD-ELAP, NELAP, CALAP, ADEC
2-Chloroethyl vinyl ether	WADOE, DoD-ELAP, NELAP
4-Methyl-2-Pentanone	WADOE,DoD-ELAP,NELAP,CALAP
cis-1,3-Dichloropropene	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Toluene	WADOE,DoD-ELAP,NELAP,CALAP,ADEC





P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

trans-1,3-Dichloropropene WADOE,DoD-ELAP,NELAP,CALAP,ADEC

2-Hexanone WADOE, DoD-ELAP, NELAP, CALAP

1,1,2-TrichloroethaneWADOE,DoD-ELAP,NELAP,CALAP,ADEC1,3-DichloropropaneWADOE,DoD-ELAP,NELAP,CALAP,ADECTetrachloroetheneWADOE,DoD-ELAP,NELAP,CALAP,ADECDibromochloromethaneWADOE,DoD-ELAP,NELAP,CALAP,ADEC1,2-DibromoethaneWADOE,DoD-ELAP,NELAP,CALAP,ADECChlorobenzeneWADOE,DoD-ELAP,NELAP,CALAP,ADECEthylbenzeneWADOE,DoD-ELAP,NELAP,CALAP,ADEC

1,1,1,2-Tetrachloroethane WADOE,DoD-ELAP,NELAP,CALAP,ADEC m,p-Xylene WADOE,DoD-ELAP,NELAP,CALAP,ADEC o-Xylene WADOE,DoD-ELAP,NELAP,CALAP,ADEC

Xylenes, total WADOE

Styrene WADOE, DoD-ELAP, NELAP, CALAP, ADEC
Bromoform WADOE, DoD-ELAP, NELAP, CALAP, ADEC
1,1,2,2-Tetrachloroethane WADOE, DoD-ELAP, NELAP, CALAP, ADEC
1,2,3-Trichloropropane WADOE, DoD-ELAP, NELAP, CALAP, ADEC

trans-1,4-Dichloro 2-Butene WADOE,DoD-ELAP,NELAP

n-Propylbenzene WADOE, DoD-ELAP, NELAP, CALAP

Bromobenzene WADOE, DoD-ELAP, NELAP, CALAP, ADEC Isopropyl Benzene WADOE, DoD-ELAP, NELAP, CALAP, ADEC

2-Chlorotoluene WADOE, DoD-ELAP, NELAP, CALAP 4-Chlorotoluene WADOE, DoD-ELAP, NELAP, CALAP t-Butylbenzene WADOE, DoD-ELAP, NELAP, CALAP 1,3,5-Trimethylbenzene WADOE, DoD-ELAP, NELAP, CALAP 1,2,4-Trimethylbenzene WADOE, DoD-ELAP, NELAP, CALAP WADOE, DoD-ELAP, NELAP, CALAP s-Butylbenzene WADOE, DoD-ELAP, NELAP, CALAP 4-Isopropyl Toluene WADOE, DoD-ELAP, NELAP, CALAP 1,3-Dichlorobenzene 1,4-Dichlorobenzene WADOE, DoD-ELAP, NELAP, CALAP WADOE, DoD-ELAP, NELAP, CALAP n-Butylbenzene WADOE, DoD-ELAP, NELAP, CALAP 1,2-Dichlorobenzene

1,2-Dibromo-3-chloropropaneWADOE,DoD-ELAP,NELAP,CALAP,ADEC1,2,4-TrichlorobenzeneWADOE,DoD-ELAP,NELAP,CALAP,ADECHexachloro-1,3-ButadieneWADOE,DoD-ELAP,NELAP,CALAP,ADECNaphthaleneWADOE,DoD-ELAP,NELAP,CALAP

Naphilialerie WADOE,DOD-ELAF,NELAF,CALAF

1,2,3-TrichlorobenzeneWADOE,DoD-ELAP,NELAP,CALAP,ADECDichlorodifluoromethaneWADOE,DoD-ELAP,NELAP,CALAP,ADECMethyl tert-butyl EtherWADOE,DoD-ELAP,NELAP,CALAP

n-Hexane WADOE

Analytical Resources, Inc.





The Boeing Company	Project: Boeing Renton 4-79	
P.O. Box 3707 MC 9U4-26	Project Number: [none]	Reported:
Seattle WA, 98124	Project Manager: Carl Bach	06-Nov-2017 10:09

2-Pentanone	WADOE
Dibromofluoromethane	WADOE
4-Bromofluorobenzene	WADOE

#### **NWTPH-Dx** in Solid

Discal Dange Organics (C12 C24)	DaD ELADNELADWADOE
Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

	Number	Expires
of Environmental Conservation	UST-033	09/01/2017
partment of Public Health CAELAP	2748	02/28/2018
mental Laboratory Accreditation Program	66169	02/07/2019
regon Laboratory Accreditation Program	WA100006	05/11/2018
Ecology	C558	06/30/2018
nking Water	C558	06/30/2018
)	of Environmental Conservation epartment of Public Health CAELAP emental Laboratory Accreditation Program eregon Laboratory Accreditation Program ecology inking Water	of Environmental Conservation UST-033 epartment of Public Health CAELAP emental Laboratory Accreditation Program eregon Laboratory Accreditation Program Ecology UST-033 2748 66169 WA100006 C558



Sample results reported on a dry weight basis

Relative Percent Difference

dry RPD

[2C]

# **Analytical Report**

The Boeing Company Project: Boeing Renton 4-79

Indicates this result was quantified on the second column on a dual column analysis.

P.O. Box 3707 MC 9U4-26 Project Number: [none] Reported:
Seattle WA, 98124 Project Manager: Carl Bach 06-Nov-2017 10:09

#### **Notes and Definitions**

U	This analyte is not detected above the applicable reporting or detection limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
J	Estimated concentration value detected below the reporting limit.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
D	The reported value is from a dilution
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported



14 December 2017

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

RE: Boeing Renton Regional GW Building 4-78/79

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

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

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

Associated Work Order(s)

Associated SDG ID(s)

N/A

----

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

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

Analytical Resources, Inc.

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

Accreditation # 66169

Request
Analysis
Chain of Custody Record & Laboratory Analysis Request
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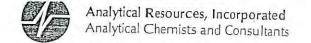
			1	•	,				Analy	Analytical Resources, Incorporated
17KOOLIS	lurn-around nequested:	100	Standerch	٠,٠	rage:	,	5	7	Analy	Analytical Chemists and Consultants
ARI Client Company: Sociary		Phone: (2	(200) 298	-0438	Date:	Date: 1/29/17	Ice Present?	11?	Tukwi 206-6	Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)
Client Contact: Carl Bach					No. of Coolers:		Cooler Temps:		www.	www.arilabs.com
Client Project Name:	4-79				)			Analysis Requested	-	Notes/Comments
Client Project #:	Samplers:	Si JiNest ~ M	m Pagel		)928-	14	112	34,		
Sample ID	Date	Time	Matrix	No. Containers	2000 2000	whiN	74:N	<b>サ</b> ~5		
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Comments/Special Instructions	Relinquished by: (Signature)	3		Received by: (Signature)	20 S	K	ſ	Relinquished by: (Signature)	Received by (Signature)	by: ()
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meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program signed agreement between ARI and the Client. Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

ARI Assigned Number:	Turn-around Requested:	ed: Somelar	Jos	Page:	to 2	2	Analytic Analytic	Analytical Resources, Incorporated Analytical Chemists and Consultants
ARI Client Company: Biling	Phone:	Phone: 200 898-0-138	-0138	Date: 1/30	30/17   Present?	nt?	Tukwila,	4011 South 134th Frace, Suite 100 Tukwila, WA 98168 206-695-6200 206-695-6201 (fax)
Client Contact: Coul Bach				No. of Coolers:	Cooler Temps:	.:	www.ari	www.arilabs.com
Slient Project Name: R2n fc-1	196-4 1			_		Analysis Requested		Notes/Comments
Dient Project #:	Samplers: JULYE	H ILPHY	igel	the				
Sample ID	Date Time	e Matrix	No. Containers	7				
Trip Blank	ilzhi	An	/	X				
	. , ,	2	ays.					
		4						
comments/Special Instructions	Relinquished by:	7	Received by:	Arry A		Relinquished by: (Signature)	Received by: (Signature)	
	Printed Name:	Pagel	Printed Name:	J. M. T.	CAN	Printed Name:	Printed Name:	
	Company		Company:	FIZE		Company:	Company:	
	Date & Time:	€001	Date & Time:	Date & Times 7001	700	Date & Time:	Date & Time:	

Chain of Custody Record & Laboratory Analysis Request

meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program signed agreement between ARI and the Client. Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



# **Cooler Receipt Form**

ARI Client: BODE IO	01	Drainet News		
COC No(s):	NA NA	Project Name:		
. 5	0648	Delivered by: Fed-Ex UPS Co		
Preliminary Examination Phase	O P I U	Tracking No:		(NA)
				0
Were custody pages included w			YES	(10)
Were custody papers included w			(ES)	NO
Were custody papers properly fill Temperature of Cooler(s) (°C) (re Time:	led out (ink, signed, etc.) scommended 2.0-6.0 °C for cher	mistry) 3 L.J	ES	NO
If cooler temperature is out of co	mpliance fill out form 00070F	911	NON	7=1
Cooler Accepted by:	5	Date: 11/36/17 Tim	Temp Gun ID#: DOD	00 (e)
occioi riccopica by.			e:	
Log-In Phase:	Complete Basicaly forms	and attach all shipping documents	11	
Was a temperature blank include	d in the cooler?		1000	
What kind of packing material v	vas used? Bubble Wrea	Wet Ice Gel Packs Baggies Foam	YES	NO
Was sufficient ice used (if approp	riate)?	Corr acks Daggles Foall		
Were all bottles sealed in individu	al plastic bags?	***************************************	NA (YES)	NO
Did all bottles arrive in good cond	ition (unbroken)?		YES	(NO)
Were all hottle labels complete ar	nd logible?	••••••••••	(ES)	NO
Did the number of costs and it	id legible?		(YES)	NO
Did the number of containers lists	d on COC match with the number	er of containers received?	E	NO
DID all bottle labels and tags agre	a with custody papers?	•	YES	NO
Were all bottles used correct for ti	ne requested analyses?		(ES)	NO
Do any of the analyses (bottles) re	equire preservation? (attach pres	servation sheet, excluding VOCs)	NA YES	
Were all VOC vials free of air bub	oles?			NO
Was sufficient amount of sample s	sent in each bottle?		NA YES	NO
Date VOC Trip Blank was made a	ŁARI		YES)	NO
Was Sample Split by ARI: NA		Equipment:	NA 17/2	9/17
CT			Split by:	
amples Logged by:	Date:	11 30 / 17 Time: _	1214	
	** Notify Project Manager	of discrepancies or concerns **		
Sample ID on Bottle	Sample ID on COC	Compl. ID Day		
		Sample ID on Bottle	Sample ID on CO	C
	*			
		A company of the comp		
A-1.001 M ( 5)				
Additional Notes, Discrepancies	, & Resolutions:			
				A 7-
By: Date	<u> </u>			
Small Air Bubbles Peabubble	LARGE AT Butiles   S	Small → "sm" (<2 mm)		
-2mm 24 mm		Peabubbles $\rightarrow$ "pb" (2 to < 4 mm)		
0 6		Large → "lg" (4 to < 6 mm)		
	I	Headspace → "bs" (>6 mm)		

0016F 3/2/10

Cooler Receipt Form

Revision 014



The Boeing Company
Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96
Project Number: Boeing Renton Regional GW Building 4-78/79
Reported:

Seattle WA, 98124
Project Manager: Jennifer Parsons
14-Dec-2017 09:10

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B78-21-15-112917	17K0648-01	Water	29-Nov-2017 13:07	30-Nov-2017 10:02
B78-13-15-112917	17K0648-02	Water	29-Nov-2017 13:45	30-Nov-2017 10:02
GW-2445-13-112917	17K0648-03	Water	29-Nov-2017 14:13	30-Nov-2017 10:02
B78-17-15-112917	17K0648-04	Water	29-Nov-2017 14:42	30-Nov-2017 10:02
B78-18-15-112917	17K0648-05	Water	29-Nov-2017 15:15	30-Nov-2017 10:02
B78-19-15-112917	17K0648-06	Water	29-Nov-2017 15:54	30-Nov-2017 10:02
B78-20-15-113017	17K0648-07	Water	30-Nov-2017 07:28	30-Nov-2017 10:02
GW-0315-23-113017	17K0648-08	Water	30-Nov-2017 08:05	30-Nov-2017 10:02
B78-11-8-113017	17K0648-09	Water	30-Nov-2017 08:47	30-Nov-2017 10:02
DUP-01-112917	17K0648-10	Water	29-Nov-2017 08:00	30-Nov-2017 10:02
Trip Blank	17K0648-11	Water	29-Nov-2017 00:00	30-Nov-2017 10:02

Analytical Resources, Inc.





The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### **Case Narrative**

#### Volatiles - EPA Method SW8260C

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

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

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

#### **Wet Chemistry**

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

Initial and continuing calibrations were within method requirements.

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

The LCS percent recoveries were within control limits.

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-21-15-112917 17K0648-01 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 13:07

 Instrument: NT2
 Analyzed: 30-Nov-2017 13:13

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	0.26	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.31	ug/L	M
Benzene	71-43-2	1	0.20	2.27	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	118	%	
Surrogate: Toluene-d8			80-120 %	101	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	92.2	%	
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	97.1	%	



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported: Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

> B78-21-15-112917 17K0648-01 (Water)

**Wet Chemistry** 

Sampled: 11/29/2017 13:07 Method: EPA 300.0 Instrument: DX500 Analyzed: 30-Nov-2017 17:47

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

Reporting Limit Analyte CAS Number Dilution Result Units Notes 14808-79-8 10 1.00 Sulfate D 4.43 mg/L

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## B78-21-15-112917 17K0648-01RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/29/2017 13:07

 Instrument: DX500
 Analyzed: 01-Dec-2017 10:36

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

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

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-13-15-112917 17K0648-02 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 13:45

 Instrument: NT2
 Analyzed: 30-Nov-2017 13:33

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	2.02	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	1.29	ug/L	
Benzene	71-43-2	1	0.20	9.92	ug/L	
Trichloroethene	79-01-6	1	0.20	0.24	ug/L	
Surrogate: 1,2-Dichloroethane-d4			80-129 %	109	%	
Surrogate: Toluene-d8			80-120 %	97.0	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	92.8	%	
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	101	%	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## B78-13-15-112917 17K0648-02RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/29/2017 13:45

 Instrument: DX500
 Analyzed: 01-Dec-2017 10:53

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

Analyte CAS Number Dilution Result Units Notes

Nitrate-N 14797-55-8 1 0.100 0.135 mg-N/L

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.652	mg/L	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

### GW-2445-13-112917 17K0648-03 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 14:13

 Instrument: NT2
 Analyzed: 30-Nov-2017 13:53

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	5.68	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.20	8.06	ug/L	
Benzene	71-43-2	1	0.20	7.97	ug/L	
Trichloroethene	79-01-6	1	0.20	3.48	ug/L	
Surrogate: 1,2-Dichloroethane-d4			80-129 %	107	%	
Surrogate: Toluene-d8			80-120 %	97.2	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	92.6	%	
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	103	%	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## GW-2445-13-112917 17K0648-03RE1 (Water)

**Wet Chemistry** 

Method: EPA 300.0 Sampled: 11/29/2017 14:13
Instrument: DX500 Analyzed: 01-Dec-2017 11:10

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

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

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

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.753	mg/L	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-17-15-112917 17K0648-04 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 14:42

 Instrument: NT2
 Analyzed: 30-Nov-2017 14:13

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

Analyte	Reporting								
	CAS Number	Dilution	Limit	Result	Units	Notes			
Vinyl Chloride	75-01-4	1	0.20	1.31	ug/L				
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.81	ug/L				
Benzene	71-43-2	1	0.20	6.52	ug/L				
Trichloroethene	79-01-6	1	0.20	1.25	ug/L				
Surrogate: 1,2-Dichloroethane-d4			80-129 %	115	%				
Surrogate: Toluene-d8			80-120 %	100	%				
Surrogate: 4-Bromofluorobenzene			80-120 %	90.1	%				
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	102	%				

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-17-15-112917 17K0648-04 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/29/2017 14:42

 Instrument: DX500
 Analyzed: 30-Nov-2017 18:37

·

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

 Analyte
 CAS Number
 Dilution
 Reporting
 Limit
 Result
 Units
 Notes

 Sulfate
 14808-79-8
 10
 1.00
 17.1
 mg/L
 D

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## B78-17-15-112917 17K0648-04RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/29/2017 14:42

 Instrument: DX500
 Analyzed: 01-Dec-2017 11:27

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

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

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-18-15-112917 17K0648-05 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 15:15

 Instrument: NT2
 Analyzed: 30-Nov-2017 14:34

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

Analyte		CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride		75-01-4	1	0.20	0.35	ug/L	M
cis-1,2-Dichloroethene		156-59-2	1	0.20	ND	ug/L	U
Benzene		71-43-2	1	0.20	3.10	ug/L	
Trichloroethene		79-01-6	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethan	ne-d4			80-129 %	111	%	
Surrogate: Toluene-d8				80-120 %	101	%	
Surrogate: 4-Bromofluorober	nzene			80-120 %	93.4	%	
Surrogate: 1,2-Dichlorobenz	ene-d4			80-120 %	100	%	



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### B78-18-15-112917 17K0648-05RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/29/2017 15:15

 Instrument: DX500
 Analyzed: 01-Dec-2017 11:43

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

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

 Reporting

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Nitrite-N
 14797-65-0
 1
 0.100
 ND
 mg-N/L
 U

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.343	mg/L	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-19-15-112917 17K0648-06 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 15:54

 Instrument: NT2
 Analyzed: 30-Nov-2017 14:54

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	0.27	ug/L	M
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	0.36	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	113	%	
Surrogate: Toluene-d8			80-120 %	96.3	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	92.7	%	
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	100	%	



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## B78-19-15-112917 17K0648-06RE1 (Water)

**Wet Chemistry** 

Method: EPA 300.0 Sampled: 11/29/2017 15:54
Instrument: DX500 Analyzed: 01-Dec-2017 12:00

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

Analyte CAS Number Dilution Limit Result Units Notes

Nitrate-N 14797-55-8 1 0.100 ND mg-N/L U

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

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.255	mg/L	

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The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-20-15-113017 17K0648-07 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/30/2017 07:28

 Instrument: NT2
 Analyzed: 30-Nov-2017 15:14

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

	Reporting							
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes		
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U		
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U		
Benzene	71-43-2	1	0.20	25.9	ug/L			
Trichloroethene	79-01-6	1	0.20	0.41	ug/L			
Surrogate: 1,2-Dichloroethane-d4			80-129 %	98.8	%			
Surrogate: Toluene-d8			80-120 %	97.7	%			
Surrogate: 4-Bromofluorobenzene			80-120 %	96.5	%			
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	101	%			

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The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

B78-20-15-113017 17K0648-07 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/30/2017 07:28

 Instrument: DX500
 Analyzed: 30-Nov-2017 19:28

1 may 200 00 10 1 2017 17 2

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Nitrate-N
 14797-55-8
 10
 1.00
 2.93
 mg-N/L
 D

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## B78-20-15-113017 17K0648-07RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/30/2017 07:28

 Instrument: DX500
 Analyzed: 01-Dec-2017 12:17

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

Analyte CAS Number Dilution Limit Result Units Notes

Nitrite-N 14797-65-0 1 0.100 ND mg-N/L U

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### B78-20-15-113017 17K0648-07RE2 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/30/2017 07:28

 Instrument: DX500
 Analyzed: 01-Dec-2017 13:58

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Sulfate
 14808-79-8
 50
 5.00
 53.9
 mg/L
 D

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### GW-0315-23-113017 17K0648-08 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/30/2017 08:05

 Instrument: NT2
 Analyzed: 30-Nov-2017 15:35

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	17.6	ug/L	
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	102	%	
Surrogate: Toluene-d8			80-120 %	98.6	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	96.5	%	
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	101	%	

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The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

GW-0315-23-113017 17K0648-08 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/30/2017 08:05

 Instrument: DX500
 Analyzed: 30-Nov-2017 20:18

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Sulfate
 14808-79-8
 10
 1.00
 2.54
 mg/L
 D

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## GW-0315-23-113017 17K0648-08RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/30/2017 08:05

 Instrument: DX500
 Analyzed: 01-Dec-2017 12:34

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Nitrate-N
 14797-55-8
 1
 0.100
 ND
 mg-N/L
 U

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

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The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### B78-11-8-113017 17K0648-09 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/30/2017 08:47

 Instrument: NT2
 Analyzed: 30-Nov-2017 15:55

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

	Reporting							
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes		
Vinyl Chloride	75-01-4	1	0.20	1.11	ug/L			
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.98	ug/L			
Benzene	71-43-2	1	0.20	9.66	ug/L			
Trichloroethene	79-01-6	1	0.20	0.42	ug/L			
Surrogate: 1,2-Dichloroethane-d4			80-129 %	111	%			
Surrogate: Toluene-d8			80-120 %	98.4	%			
Surrogate: 4-Bromofluorobenzene			80-120 %	93.2	%			
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	104	%			



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### B78-11-8-113017 17K0648-09RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/30/2017 08:47

 Instrument: DX500
 Analyzed: 01-Dec-2017 12:51

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

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

 Reporting

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Nitrite-N
 14797-65-0
 1
 0.100
 ND
 mg-N/L
 U

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	1.94	mg/L	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## **DUP-01-112917** 17K0648-10 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 08:00

 Instrument: NT2
 Analyzed: 30-Nov-2017 16:15

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

Analyte		CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl Chloride		75-01-4	1	0.20	0.36	ug/L	
cis-1,2-Dichloroethene		156-59-2	1	0.20	ND	ug/L	U
Benzene		71-43-2	1	0.20	2.96	ug/L	
Trichloroethene		79-01-6	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane	?-d4			80-129 %	112	%	
Surrogate: Toluene-d8				80-120 %	96.5	%	
Surrogate: 4-Bromofluorobenz	zene			80-120 %	95.4	%	
Surrogate: 1,2-Dichlorobenzer	ne-d4			80-120 %	101	%	



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

## DUP-01-112917 17K0648-10RE1 (Water)

**Wet Chemistry** 

 Method: EPA 300.0
 Sampled: 11/29/2017 08:00

 Instrument: DX500
 Analyzed: 01-Dec-2017 13:07

Sample Preparation: Preparation Method: No Prep Wet Chem

Preparation Batch: BFK0784 Sample Size: 5 mL Prepared: 30-Nov-2017 Final Volume: 5 mL

 Reporting

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Nitrate-N
 14797-55-8
 1
 0.100
 ND
 mg-N/L
 H, U

 Reporting

 Analyte
 CAS Number
 Dilution
 Limit
 Result
 Units
 Notes

 Nitrite-N
 14797-65-0
 1
 0.100
 ND
 mg-N/L
 H, U

	Reporting			
Analyte	CAS Number Dilution Limit	Result	Units	Notes
Sulfate	14808-79-8 1 0.100	1.68	mg/L	

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### Trip Blank 17K0648-11 (Water)

**Volatile Organic Compounds** 

 Method: EPA 8260C
 Sampled: 11/29/2017 00:00

 Instrument: NT2
 Analyzed: 30-Nov-2017 16:56

Sample Preparation: Preparation Method: EPA 5030 (Purge and Trap)

Preparation Batch: BFK0766 Sample Size: 10 mL Prepared: 30-Nov-2017 Final Volume: 10 mL

			Reporting			
Analyte	CAS Number	Dilution	Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			80-129 %	117	%	
Surrogate: Toluene-d8			80-120 %	97.0	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	89.6	%	
Surrogate: 1,2-Dichlorobenzene-d4			80-120 %	101	%	



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### **Volatile Organic Compounds - Quality Control**

#### Batch BFK0766 - EPA 5030 (Purge and Trap)

Instrument: NT2 Analyst: LH

		Reporting		Spike	Source		%REC		RPD	
QC Sample/Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Blank (BFK0766-BLK1)			Prepa	ared: 30-Nov	v-2017 An	alyzed: 30-1	Nov-2017 0	9:25		
Vinyl Chloride	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.69		ug/L	5.00		114	80-129			
Surrogate: Toluene-d8	4.86		ug/L	5.00		97.3	80-120			
Surrogate: 4-Bromofluorobenzene	4.44		ug/L	5.00		88.7	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.06		ug/L	5.00		101	80-120			
LCS (BFK0766-BS1)			Prepa	ared: 30-Nov	v-2017 An	alyzed: 30-1	Nov-2017 0	8:03		
Vinyl Chloride	11.1	0.20	ug/L	10.0		111	66-133			
cis-1,2-Dichloroethene	10.6	0.20	ug/L	10.0		106	80-121			
Benzene	10.9	0.20	ug/L	10.0		109	80-120			
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.22		ug/L	5.00		104	80-129			
Surrogate: Toluene-d8	5.11		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.81		ug/L	5.00		96.2	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.96		ug/L	5.00		99.3	80-120			
LCS Dup (BFK0766-BSD1)			Prepa	ared: 30-Nov	v-2017 An	alyzed: 30-1	Nov-2017 0	8:44		
Vinyl Chloride	11.3	0.20	ug/L	10.0		113	66-133	1.29	30	
cis-1,2-Dichloroethene	10.9	0.20	ug/L	10.0		109	80-121	2.38	30	
Benzene	10.9	0.20	ug/L	10.0		109	80-120	0.17	30	
Trichloroethene	10.4	0.20	ug/L	10.0		104	80-120	0.31	30	
Surrogate: 1,2-Dichloroethane-d4	5.34		ug/L	5.00		107	80-129			
Surrogate: Toluene-d8	5.11		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.98		ug/L	5.00		99.6	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.98		ug/L	5.00		99.5	80-120			

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The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### Wet Chemistry - Quality Control

#### Batch BFK0784 - No Prep Wet Chem

Instrument: DX500 Analyst: KK

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFK0784-BLK1)			Prepa	ared: 30-Nov-	-2017 An	alyzed: 30-	Nov-2017 1	7:13		
Nitrate-N	ND	0.100	mg-N/L							U
Nitrite-N	ND	0.100	mg-N/L							U
Sulfate	ND	0.100	mg/L							U
LCS (BFK0784-BS1)			Prepa	ared: 30-Nov-	-2017 An	alyzed: 30-	Nov-2017 1	7:30		
Nitrate-N	1.51	0.100	mg-N/L	1.50		101	90-110			
Nitrite-N	1.48	0.100	mg-N/L	1.50		98.5	90-110			
Sulfate	1.53	0.100	mg/L	1.50		102	90-110			

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The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### **Certified Analyses included in this Report**

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

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The Boeing Company	Project: Boeing Renton Regional GW Building 4-78/79	
PO Box 3703 MS 2R-96	Project Number: Boeing Renton Regional GW Building 4-78/79	Reported:
Seattle WA, 98124	Project Manager: Jennifer Parsons	14-Dec-2017 09:10

2-Chloroethyl vinyl ether DoD-ELAP, ADEC, NELAP, CALAP, WADOE 4-Methyl-2-Pentanone DoD-ELAP, NELAP, CALAP, WADOE cis-1,3-Dichloropropene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Toluene DoD-ELAP, ADEC, NELAP, CALAP, WADOE trans-1,3-Dichloropropene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 2-Hexanone DoD-ELAP, NELAP, CALAP, WADOE 1,1,2-Trichloroethane DoD-ELAP,ADEC,NELAP,CALAP,WADOE DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,3-Dichloropropane Tetrachloroethene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Dibromochloromethane DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,2-Dibromoethane DoD-ELAP, NELAP, CALAP, WADOE Chlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Ethylbenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,1,1,2-Tetrachloroethane DoD-ELAP, ADEC, NELAP, CALAP, WADOE m,p-Xylene DoD-ELAP, ADEC, NELAP, CALAP, WADOE o-Xylene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Styrene DoD-ELAP, NELAP, CALAP, WADOE Bromoform DoD-ELAP, NELAP, CALAP, WADOE 1,1,2,2-Tetrachloroethane DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,2,3-Trichloropropane DoD-ELAP, ADEC, NELAP, CALAP, WADOE trans-1.4-Dichloro 2-Butene DoD-ELAP, ADEC, NELAP, CALAP, WADOE n-Propylbenzene DoD-ELAP, NELAP, CALAP, WADOE Bromobenzene DoD-ELAP, NELAP, CALAP, WADOE Isopropyl Benzene DoD-ELAP, NELAP, CALAP, WADOE 2-Chlorotoluene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 4-Chlorotoluene DoD-ELAP, ADEC, NELAP, CALAP, WADOE DoD-ELAP, NELAP, CALAP, WADOE t-Butylbenzene 1,3,5-Trimethylbenzene DoD-ELAP, NELAP, CALAP, WADOE 1,2,4-Trimethylbenzene DoD-ELAP, NELAP, CALAP, WADOE s-Butylbenzene DoD-ELAP, NELAP, CALAP, WADOE 4-Isopropyl Toluene DoD-ELAP, NELAP, CALAP, WADOE 1,3-Dichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,4-Dichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE n-Butylbenzene DoD-ELAP, NELAP, CALAP, WADOE 1.2-Dichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,2-Dibromo-3-chloropropane DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1.2.4-Trichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE Hexachloro-1,3-Butadiene DoD-ELAP,ADEC,NELAP,CALAP,WADOE Naphthalene DoD-ELAP, ADEC, NELAP, CALAP, WADOE 1,2,3-Trichlorobenzene DoD-ELAP, ADEC, NELAP, CALAP, WADOE

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

Dichlorodifluoromethane DoD-ELAP,ADEC,NELAP,CALAP,WADOE Methyl tert-butyl Ether DoD-ELAP,ADEC,NELAP,CALAP,WADOE

n-Hexane WADOE 2-Pentanone WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	UST-033	05/11/2018
CALAP	California Department of Public Health CAELAP	2748	02/28/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006	05/11/2018
WADOE	WA Dept of Ecology	C558	06/30/2018
WA-DW	Ecology - Drinking Water	C558	06/30/2018

Analytical Resources, Inc.



The Boeing Company Project: Boeing Renton Regional GW Building 4-78/79

PO Box 3703 MS 2R-96 Project Number: Boeing Renton Regional GW Building 4-78/79 Reported:

Seattle WA, 98124 Project Manager: Jennifer Parsons 14-Dec-2017 09:10

#### **Notes and Definitions**

U This analyte is not detected above the applicable reporting or detection limit.

M Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.

H Hold time violation - Hold time was exceeded.

D The reported value is from a dilution

\* Flagged value is not within established control limits.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

[2C] Indicates this result was quantified on the second column on a dual column analysis.



12/21/2017 Mr. Justin Neste CALIBRE, Environmental Technology Solutions 20926 Pugh Rd NE

Poulsbo WA 98370

Project Name: Boeing Renton

Project #:

Workorder #: 1712213

Dear Mr. Justin Neste

The following report includes the data for the above referenced project for sample(s) received on 12/11/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager



#### **WORK ORDER #:** 1712213

Work Order Summary

**CLIENT:** Mr. Justin Neste **BILL TO:** Accounts Payable

> **Eurofins Lancaster Laboratories** CALIBRE, Environmental Technology

Solutions

Environmental, LLC 20926 Pugh Rd NE 2425 New Holland Pike Poulsbo, WA 98370 Lancaster, PA 17605-2425

PHONE: 360-981-5606 P.O. #

FAX: PROJECT # **Boeing Renton** 

DATE RECEIVED: 12/11/2017 **CONTACT:** Kelly Buettner **DATE COMPLETED:** 12/21/2017

			RECEIPT	FINAL
FRACTION #	<u>NAME</u>	<u>TEST</u>	VAC./PRES.	<b>PRESSURE</b>
01A	5-09-SVE-IN-120817	TO-15	2.2 "Hg	15.4 psi
02A	5-09-SVE-3-120817	TO-15	4.1 "Hg	15 psi
03A	4-78-SVE-IN-120817	TO-15	5.5 "Hg	14.8 psi
04A	4-78-SVE-1-120817	TO-15	3.1 "Hg	14.6 psi
05A	4-78-SVE-6-120817	TO-15	3.1 "Hg	14.7 psi
06A	4-78-SVE-10-120817	TO-15	3.7 "Hg	15.5 psi
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

	Mude Mayer	
CERTIFIED BY:		DATE: <u>12/21/17</u>

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017. Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards



# LABORATORY NARRATIVE EPA Method TO-15 CALIBRE, Environmental Technology Solutions Workorder# 1712213

Six 1 Liter Summa Canister samples were received on December 11, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

#### **Receiving Notes**

There were no receiving discrepancies.

#### **Analytical Notes**

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

#### **Definition of Data Qualifying Flags**

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

- B Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
  - J Estimated value.
  - E Exceeds instrument calibration range.
  - S Saturated peak.
  - Q Exceeds quality control limits.
- U Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
  - UJ- Non-detected compound associated with low bias in the CCV
  - N The identification is based on presumptive evidence.
  - M Reported value may be biased due to apparent matrix interferences.
  - CN See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



## **Summary of Detected Compounds EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: 5-09-SVE-IN-120817

Lab ID#: 1712213-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	1.1	3.4	4.4	13
Trichloroethene	1.1	7.6	5.9	41
Tetrachloroethene	1.1	99	7.5	670

**Client Sample ID: 5-09-SVE-3-120817** 

Lab ID#: 1712213-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
cis-1,2-Dichloroethene	1.2	5.8	4.6	23	
1,1,1-Trichloroethane	1.2	1.7	6.4	9.3	
Trichloroethene	1.2	13	6.3	68	
Tetrachloroethene	1.2	170	7.9	1100	

Client Sample ID: 4-78-SVE-IN-120817

Lab ID#: 1712213-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	1.2	1.7	9.4	13
Hexane	1.2	1.7	4.3	6.1
cis-1,2-Dichloroethene	1.2	2.5	4.9	10
1,1,1-Trichloroethane	1.2	1.3	6.7	7.2
Trichloroethene	1.2	42	6.6	230
Toluene	1.2	1.9	4.6	7.1
Pentane	4.9	5.2	14	15

**Client Sample ID: 4-78-SVE-1-120817** 

Lab ID#: 1712213-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	1.1	11	3.9	38
Toluene	1.1	2.0	4.2	7.6
TPH ref. to Gasoline (MW=100)	110	250	450	1000



## **Summary of Detected Compounds EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: 4-78-SVE-1-120817

Lab ID#: 1712213-04A

Pentane 4.4 27 13 79

Client Sample ID: 4-78-SVE-6-120817

Lab ID#: 1712213-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	1.1	7.2	8.5	55
Chloroform	1.1	1.2	5.4	5.7
1,1,1-Trichloroethane	1.1	2.7	6.1	15
Trichloroethene	1.1	37	6.0	200
Toluene	1.1	6.4	4.2	24
Tetrachloroethene	1.1	5.4	7.6	36

**Client Sample ID: 4-78-SVE-10-120817** 

Lab ID#: 1712213-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	1.2	8.9	9.0	68
cis-1,2-Dichloroethene	1.2	11	4.6	45
1,1,1-Trichloroethane	1.2	6.3	6.4	34
Trichloroethene	1.2	180	6.3	960
Toluene	1.2	1.2	4.4	4.7



## Client Sample ID: 5-09-SVE-IN-120817 Lab ID#: 1712213-01A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121410 Date of Collection: 12/8/17 9:20:00 AM
Dil. Factor: 2.21 Date of Analysis: 12/14/17 03:56 PM

Dii. I dotor.	2.21	Date		4/17 03.30 F W
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
Freon 113	1.1	Not Detected	8.5	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	Not Detected	26	Not Detected
Carbon Disulfide	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	Not Detected	3.9	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	3.4	4.4	13
Chloroform	1.1	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Benzene	1.1	Not Detected	3.5	Not Detected
Trichloroethene	1.1	7.6	5.9	41
Toluene	1.1	Not Detected	4.2	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	99	7.5	670
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
TPH ref. to Gasoline (MW=100)	110	Not Detected	450	Not Detected
Acetonitrile	11	Not Detected	18	Not Detected
Vinyl Acetate	4.4	Not Detected	16	Not Detected
Octane	4.4	Not Detected	21	Not Detected
Pentane	4.4	Not Detected	13	Not Detected
Butylbenzene	4.4	Not Detected	24	Not Detected
Decane	4.4	Not Detected	26	Not Detected
Dodecane	11	Not Detected	77	Not Detected
sec-Butylbenzene	4.4	Not Detected	24	Not Detected
p-Cymene	4.4	Not Detected	24	Not Detected
F = 7				

Container Type: 1 Liter Summa Canister

Surrogates Method Limits



## Client Sample ID: 5-09-SVE-IN-120817

Lab ID#: 1712213-01A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121410 Date of Collection: 12/8/17 9:20:00 AM
Dil. Factor: 2.21 Date of Analysis: 12/14/17 03:56 PM

		Wethou	
Surrogates	%Recovery	Limits	
Toluene-d8	101	70-130	
1,2-Dichloroethane-d4	100	70-130	
4-Bromofluorobenzene	93	70-130	



## Client Sample ID: 5-09-SVE-3-120817 Lab ID#: 1712213-02A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121411 Date of Collection: 12/8/17 9:30:00 AM
Dil. Factor: 2.34 Date of Analysis: 12/14/17 04:26 PM

DII. Factor:	2.34	Date of Analysis: 12/14/17 04:26 PM		
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
Freon 113	1.2	Not Detected	9.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	Not Detected	28	Not Detected
Carbon Disulfide	4.7	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	5.8	4.6	23
Chloroform	1.2	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.2	1.7	6.4	9.3
Benzene	1.2	Not Detected	3.7	Not Detected
Trichloroethene	1.2	13	6.3	68
Toluene	1.2	Not Detected	4.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	170	7.9	1100
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.1	Not Detected
m,p-Xylene	1.2	Not Detected	5.1	Not Detected
o-Xylene	1.2	Not Detected	5.1	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Cumene	1.2	Not Detected	5.8	Not Detected
Propylbenzene	1.2	Not Detected	5.8	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
TPH ref. to Gasoline (MW=100)	120	Not Detected	480	Not Detected
Acetonitrile	12	Not Detected	20	Not Detected
Vinyl Acetate	4.7	Not Detected	16	Not Detected
Octane	4.7	Not Detected	22	Not Detected
Pentane	4.7	Not Detected	14	Not Detected
Butylbenzene	4.7	Not Detected	26	Not Detected
Decane	4.7	Not Detected	27	Not Detected
Dodecane	12	Not Detected	82	Not Detected
sec-Butylbenzene	4.7	Not Detected	26	Not Detected
p-Cymene	4.7	Not Detected	26	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates Method Limits



## **Client Sample ID: 5-09-SVE-3-120817**

Lab ID#: 1712213-02A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121411 Date of Collection: 12/8/17 9:30:00 AM Dil. Factor: 2.34 Date of Analysis: 12/14/17 04:26 PM

		Method	
Surrogates	%Recovery	Limits	
Toluene-d8	100	70-130	
1,2-Dichloroethane-d4	102	70-130	
4-Bromofluorobenzene	94	70-130	



## Client Sample ID: 4-78-SVE-IN-120817 Lab ID#: 1712213-03A

## EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121412 Date of Collection: 12/8/17 10:05:00 AM Dil. Factor: 2.46 Date of Analysis: 12/14/17 04:58 PM

Dii. I detoi:	2.40	Date	Ol Allalysis. 12/1	-, . , O O I III
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
Freon 113	1.2	1.7	9.4	13
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	Not Detected	29	Not Detected
Carbon Disulfide	4.9	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	43	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Hexane	1.2	1.7	4.3	6.1
1,1-Dichloroethane	1.2	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.9	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	2.5	4.9	10
Chloroform	1.2	Not Detected	6.0	Not Detected
1,1,1-Trichloroethane	1.2	1.3	6.7	7.2
Benzene	1.2	Not Detected	3.9	Not Detected
Trichloroethene	1.2	42	6.6	230
Toluene	1.2	1.9	4.6	7.1
1,1,2-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Tetrachloroethene	1.2	Not Detected	8.3	Not Detected
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.3	Not Detected
m,p-Xylene	1.2	Not Detected	5.3	Not Detected
o-Xylene	1.2	Not Detected	5.3	Not Detected
Styrene	1.2	Not Detected	5.2	Not Detected
Cumene	1.2	Not Detected	6.0	Not Detected
Propylbenzene	1.2	Not Detected	6.0	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	6.0	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	6.0	Not Detected
TPH ref. to Gasoline (MW=100)	120	Not Detected	500	Not Detected
Acetonitrile	12	Not Detected	21	Not Detected
Vinyl Acetate	4.9	Not Detected	17	Not Detected
Octane	4.9	Not Detected	23	Not Detected
Pentane	4.9	5.2	14	15
Butylbenzene	4.9	Not Detected	27	Not Detected
Decane	4.9	Not Detected	29	Not Detected
Dodecane	12	Not Detected	86	Not Detected
sec-Butylbenzene	4.9	Not Detected	27	Not Detected
p-Cymene	4.9	Not Detected	27	Not Detected
• •				

Container Type: 1 Liter Summa Canister

Surrogates Method Limits



## Client Sample ID: 4-78-SVE-IN-120817

Lab ID#: 1712213-03A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121412 Date of Collection: 12/8/17 10:05:00 AM Date of Analysis: 12/14/17 04:58 PM

		Method	
Surrogates	%Recovery	Limits	
Toluene-d8	101	70-130	
1,2-Dichloroethane-d4	104	70-130	
4-Bromofluorobenzene	94	70-130	



## Client Sample ID: 4-78-SVE-1-120817 Lab ID#: 1712213-04A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121416 Date of Collection: 12/8/17 10:15:00 AM Dil. Factor: 2.22 Date of Analysis: 12/14/17 08:19 PM

Dii. i actor.	2.22	Date	Ol Allalysis. 12/1	<del>-,, 17 00.13 1 W</del>
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
<del></del>				· · · · ·
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
Freon 113	1.1	Not Detected	8.5	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	Not Detected	26	Not Detected
Carbon Disulfide	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	11	3.9	38
1,1-Dichloroethane	1.1	Not Detected	4.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Chloroform	1.1	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Benzene	1.1	Not Detected	3.5	Not Detected
Trichloroethene	1.1	Not Detected	6.0	Not Detected
Toluene	1.1	2.0	4.2	7.6
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	Not Detected	7.5	Not Detected
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
TPH ref. to Gasoline (MW=100)	110	250	450	1000
Acetonitrile	11	Not Detected	19	Not Detected
Vinyl Acetate	4.4	Not Detected	16	Not Detected
Octane	4.4	Not Detected	21	Not Detected
Pentane	4.4	27	13	79
Pentane Butylbenzene	4.4	Not Detected	24	Not Detected
Decane	4.4	Not Detected	26	Not Detected
	11	Not Detected	77	Not Detected
Dodecane			77 24	
sec-Butylbenzene	4.4	Not Detected		Not Detected
p-Cymene	4.4	Not Detected	24	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates Method Limits



## **Client Sample ID: 4-78-SVE-1-120817**

Lab ID#: 1712213-04A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121416 Date of Collection: 12/8/17 10:15:00 AM Dil. Factor: 2.22 Date of Analysis: 12/14/17 08:19 PM

Surrogates	%Recovery	Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	93	70-130



## Client Sample ID: 4-78-SVE-6-120817 Lab ID#: 1712213-05A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121417 Date of Collection: 12/8/17 10:48:00 AM Date of Analysis: 12/14/17 08:48 PM

Dii. I detoi.	2.23	Date	Ol Allalysis. 12/1	4/17 00.40 F W
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
Freon 113	1.1	7.2	8.5	55
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	Not Detected	26	Not Detected
Carbon Disulfide	4.5	Not Detected	14	Not Detected
Methylene Chloride	4.5	Not Detected	39	Not Detected
	1.1	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene			4.4 3.9	
Hexane	1.1	Not Detected	3.9 4.5	Not Detected
1,1-Dichloroethane	1.1	Not Detected		Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.5	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Chloroform	1.1	1.2	5.4	5.7
1,1,1-Trichloroethane	1.1	2.7	6.1	15
Benzene	1.1	Not Detected	3.6	Not Detected
Trichloroethene	1.1	37	6.0	200
Toluene	1.1	6.4	4.2	24
1,1,2-Trichloroethane	1.1	Not Detected	6.1	Not Detected
Tetrachloroethene	1.1	5.4	7.6	36
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Cumene	1.1	Not Detected	5.5	Not Detected
Propylbenzene	1.1	Not Detected	5.5	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.5	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.5	Not Detected
TPH ref. to Gasoline (MW=100)	110	Not Detected	460	Not Detected
Acetonitrile	11	Not Detected	19	Not Detected
Vinyl Acetate	4.5	Not Detected	16	Not Detected
Octane	4.5	Not Detected	21	Not Detected
Pentane	4.5	Not Detected	13	Not Detected
Butylbenzene	4.5	Not Detected	24	Not Detected
Decane	4.5	Not Detected	26	Not Detected
Dodecane	11	Not Detected	78	Not Detected
sec-Butylbenzene	4.5	Not Detected	24	Not Detected
p-Cymene	4.5	Not Detected	24	Not Detected
p-Cymene	7.0	NOT Defected	47	NOT DETECTED

Container Type: 1 Liter Summa Canister

Surrogates Method Limits



## **Client Sample ID: 4-78-SVE-6-120817**

Lab ID#: 1712213-05A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121417 Date of Collection: 12/8/17 10:48:00 AM Dil. Factor: 2.23 Date of Analysis: 12/14/17 08:48 PM

		Method	
Surrogates	%Recovery	Limits	
Toluene-d8	102	70-130	
1,2-Dichloroethane-d4	104	70-130	
4-Bromofluorobenzene	93	70-130	



## Client Sample ID: 4-78-SVE-10-120817 Lab ID#: 1712213-06A

## EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121422 Date of Collection: 12/8/17 11:05:00 AM Date of Analysis: 12/15/17 09:13 AM

Dii. I dotor.	2.34	Date	Ol Allalysis. 12/1	0,11 00.10 AN
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
Freon 113	1.2	8.9	9.0	68
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	Not Detected	28	Not Detected
Carbon Disulfide	4.7	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	11	4.6	45
Chloroform	1.2	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.2	6.3	6.4	34
Benzene	1.2	Not Detected	3.7	Not Detected
Trichloroethene	1.2	180	6.3	960
Toluene	1.2	1.2	4.4	4.7
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.1	Not Detected
m,p-Xylene	1.2	Not Detected	5.1	Not Detected
o-Xylene	1.2	Not Detected	5.1	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Cumene	1.2	Not Detected	5.8	Not Detected
Propylbenzene	1.2	Not Detected	5.8	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
TPH ref. to Gasoline (MW=100)	120	Not Detected	480	Not Detected
Acetonitrile	12	Not Detected	20	Not Detected
Vinyl Acetate	4.7	Not Detected	16	Not Detected
Octane	4.7	Not Detected	22	Not Detected
Pentane	4.7	Not Detected	14	Not Detected
Butylbenzene	4.7	Not Detected	26	Not Detected
Decane	4.7	Not Detected	27	Not Detected
Dodecane	12	Not Detected	82	Not Detected
sec-Butylbenzene	4.7	Not Detected	26	Not Detected
p-Cymene	4.7	Not Detected	26	Not Detected
• •				

Container Type: 1 Liter Summa Canister



## **Client Sample ID: 4-78-SVE-10-120817**

Lab ID#: 1712213-06A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121422 Date of Collection: 12/8/17 11:05:00 AM Date of Analysis: 12/15/17 09:13 AM

		Method	
Surrogates	%Recovery	Limits	
Toluene-d8	102	70-130	
1,2-Dichloroethane-d4	100	70-130	
4-Bromofluorobenzene	95	70-130	



## Client Sample ID: Lab Blank Lab ID#: 1712213-07A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17121409c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/14/17 02:53 PM
	B 4 11 14	

	1100		7 01 7 11 141 y 0101 127 1	1, 11 GZ1GG 1 III
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
TPH ref. to Gasoline (MW=100)	50	Not Detected	200	Not Detected
Acetonitrile	5.0	Not Detected	8.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Octane	2.0	Not Detected	9.3	Not Detected
Pentane	2.0	Not Detected	5.9	Not Detected
Butylbenzene	2.0	Not Detected	11	Not Detected
Decane	2.0	Not Detected	12	Not Detected
Dodecane	5.0	Not Detected	35	Not Detected
sec-Butylbenzene	2.0	Not Detected	11	Not Detected
p-Cymene	2.0	Not Detected	11	Not Detected
• •				

Container Type: NA - Not Applicable

		Method
Surrogates	%Recovery	Limits



## Client Sample ID: Lab Blank Lab ID#: 1712213-07A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121409c Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 02:53 PM

		Method
Surrogates	%Recovery	Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	95	70-130



## Client Sample ID: CCV Lab ID#: 1712213-08A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121402 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 09:42 AM

Compound	%Recovery
Chloromethane	106
Vinyl Chloride	107
Freon 113	104
1,1-Dichloroethene	105
Acetone	100
Carbon Disulfide	102
Methylene Chloride	96
trans-1,2-Dichloroethene	92
Hexane	96
1,1-Dichloroethane	94
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	93
Chloroform	93
1,1,1-Trichloroethane	92
Benzene	93
Trichloroethene	91
Toluene	94
1,1,2-Trichloroethane	92
Tetrachloroethene	92
Chlorobenzene	94
Ethyl Benzene	98
m,p-Xylene	102
o-Xylene	100
Styrene	107
Cumene	103
Propylbenzene	100
1,3,5-Trimethylbenzene	102
1,2,4-Trimethylbenzene	104
TPH ref. to Gasoline (MW=100)	100
Acetonitrile	120
Vinyl Acetate	91
Octane	87
Pentane	115
Butylbenzene	90
Decane	108
Dodecane	73
sec-Butylbenzene	82
p-Cymene	93

**Container Type: NA - Not Applicable** 

		Method
Surrogates	%Recovery	Limits



## Client Sample ID: CCV Lab ID#: 1712213-08A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121402 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 09:42 AM

Surrogates	%Recovery	Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	102	70-130



## Client Sample ID: LCS Lab ID#: 1712213-09A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121403 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 10:10 AM

Compound	%Recovery	Method Limits
·	•	
Chloromethane	94	70-130
Vinyl Chloride	94	70-130
Freon 113	96	70-130
1,1-Dichloroethene	98	70-130
Acetone	94	70-130
Carbon Disulfide	84	70-130
Methylene Chloride	94	70-130
trans-1,2-Dichloroethene	86	70-130
Hexane	103	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	93	70-130
cis-1,2-Dichloroethene	106	70-130
Chloroform	86	70-130
1,1,1-Trichloroethane	84	70-130
Benzene	87	70-130
Trichloroethene	86	70-130
Toluene	88	70-130
1,1,2-Trichloroethane	86	70-130
Tetrachloroethene	87	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	91	70-130
m,p-Xylene	95	70-130
o-Xylene	96	70-130
Styrene	99	70-130
Cumene	96	70-130
Propylbenzene	95	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	97	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	
Acetonitrile	Not Spiked	
Vinyl Acetate	95	60-140
Octane	Not Spiked	
Pentane	Not Spiked	
Butylbenzene	Not Spiked	
Decane	Not Spiked	
Dodecane	Not Spiked	
sec-Butylbenzene	Not Spiked	
p-Cymene	Not Spiked	

**Container Type: NA - Not Applicable** 

		Method
Surrogates	%Recovery	Limits



## Client Sample ID: LCS Lab ID#: 1712213-09A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121403 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 10:10 AM

		Wethod	
Surrogates	%Recovery	Limits	
Toluene-d8	102	70-130	
1,2-Dichloroethane-d4	99	70-130	
4-Bromofluorobenzene	101	70-130	



## Client Sample ID: LCSD Lab ID#: 1712213-09AA

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121404 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 10:37 AM

		Method
Compound	%Recovery	Limits
Chloromethane	89	70-130
Vinyl Chloride	92	70-130
Freon 113	81	70-130
1,1-Dichloroethene	86	70-130
Acetone	83	70-130
Carbon Disulfide	74	70-130
Methylene Chloride	85	70-130
trans-1,2-Dichloroethene	76	70-130
Hexane	91	70-130
1,1-Dichloroethane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	85	70-130
cis-1,2-Dichloroethene	95	70-130
Chloroform	88	70-130
1,1,1-Trichloroethane	85	70-130
Benzene	89	70-130
Trichloroethene	88	70-130
Toluene	89	70-130
1,1,2-Trichloroethane	88	70-130
Tetrachloroethene	90	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	98	70-130
o-Xylene	100	70-130
Styrene	102	70-130
Cumene	98	70-130
Propylbenzene	98	70-130
1,3,5-Trimethylbenzene	98	70-130
1,2,4-Trimethylbenzene	100	70-130
TPH ref. to Gasoline (MW=100)	Not Spiked	
Acetonitrile	Not Spiked	
Vinyl Acetate	86	60-140
Octane	Not Spiked	
Pentane	Not Spiked	
Butylbenzene	Not Spiked	
Decane	Not Spiked	
Dodecane	Not Spiked	
sec-Butylbenzene	Not Spiked	
p-Cymene	Not Spiked	

**Container Type: NA - Not Applicable** 

		Method
Surrogates	%Recovery	Limits



## Client Sample ID: LCSD Lab ID#: 1712213-09AA

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17121404 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 12/14/17 10:37 AM

Surrogates		Method	
	%Recovery	Limits	
Toluene-d8	102	70-130	
1,2-Dichloroethane-d4	104	70-130	
4-Bromofluorobenzene	102	70-130	