Technical Memorandum

TO:	Kenneth Thiessen, CEG, Oregon Department of Environmental Quality
FROM:	Jesikah Cavanaugh, EIT, and Evelyn Ives, PE
DATE:	November 3, 2021
cc:	Deborah Taege, The Boeing Company
RE:	**1,4-Dioxane Reconnaissance-Level Investigation** **Boeing Portland, Troutdale Gravel Aquifer** **Gresham, Oregon** **ECSI #13** **Project No. 025116.120.410**

Purpose

Landau Associates, Inc. (LAI) has prepared this summary technical memorandum on behalf of The Boeing Company (Boeing) in support of the ongoing remediation of the Troutdale Gravel Aquifer (TGA) at the Portland facility (Site) located in Gresham, Oregon. Remediation activities for the TGA are conducted under the Order on Consent No. LQSR-NWR-04-12(h) issued to Boeing by the Oregon Department of Environmental Quality (ODEQ; 2008). Groundwater remediation has primarily consisted of corrective actions to address the dissolved volatile organic compounds (VOCs), primarily trichloroethene (TCE) concentrations.

On March 16, 2021, ODEQ requested a reconnaissance-level groundwater sampling event for 1,4-dioxane to evaluate whether it is present at a level above the ODEQ risk-based concentration (RBC) in groundwater at the Site (ODEQ 2021a). LAI prepared a work plan for the reconnaissance-level sampling event (Work Plan; LAI 2021), which was approved by ODEQ including the proposed RBC of 2.0 micrograms per liter (µg/L) for groundwater ingestion and inhalation from tap water in urban settings (ODEQ 2021b). The sampling event was completed between August 9 and 10, 2021 in accordance with the Work Plan. The purpose of this technical memorandum is to report the findings of the 1,4-dioxane sampling results and to propose next steps for 1,4-dioxane evaluation.

Well Selection Approach

As requested by ODEQ, a subset of existing groundwater monitoring wells was selected for 1,4-dioxane testing. Wells were selected to represent groundwater quality in identified former VOC source areas, along with wells located upgradient and downgradient of the current dissolved VOC plume. Current and historical concentrations of TCE and 1,1,1-trichloroethane (1,1,1-TCA) were considered when selecting representative locations for potential 1,4-dioxane impacts.

A total of four TGA wells were selected for 1,4-dioxane testing, as shown on Figure 1: BOP-57(ia), BOP-73(i), D-8(i), and BOP-59(i). The rationale for sampling location selections is reproduced from the ODEQ-approved Work Plan below:

- **BOP-57(ia):** Well BOP-57(ia) was selected because of its location as a historical source area well and historical 1,1,1-TCA maximum detections. BOP-57(ia) is located in the direct vicinity of the primary source of TGA contamination, former irrigation well A-2, which was screened through the majority of the TGA and the underlying Troutdale Sandstone Aquifer (TSA). Historical results from samples collected at BOP-57(ia) indicate a maximum 1,1,1-TCA concentration of 5,500 µg/L detected in 1994. With the development and implementation of remedial actions, 1,1,1-TCA concentrations declined to below the laboratory reporting limit by 2008. Similarly, TCE concentrations at BOP-57(ia) have decreased from a maximum concentration of 1,400 µg/L in 1994 to non-detect at the laboratory reporting limit in February 2021.
- **BOP-73(i):** Well BOP-73(i) was selected as a representative location in the Former Vapor Degreaser Source Area (FVDSA), an area of the Site where TCE concentrations remain highest. Between 2010 and 2020, eight bioremediation injection events for enhanced reductive dechlorination have been conducted in the FVDSA. Well BOP-73(i) has consistently been utilized for monitoring only (no donor material injected into the well) and has been used to evaluate the remedy progress in this area of the Site. 1,1,1-TCA has never been detected at the well; while TCE concentrations have ranged from 17,000 µg/L (maximum; detected in 2013) to non-detect at the laboratory reporting limit.
- **D-8(i):** Well D-8(i) was selected as a representative downgradient location. D-8(i) is located downgradient of the current dissolved VOC plume footprint and historically contained the highest 1,1,1-TCA concentrations compared to other monitoring wells near the downgradient edge of the plume contained by E-13. Elevated concentrations of 1,1,1-TCA were detected in the early remedy phase (1988 through 1995) at a maximum concentration of 950 µg/L; however, results have been consistently less than or near the laboratory reporting limit since 2008.
- **BOP-59(i):** Well BOP-59(i) was selected as a representative upgradient location. 1,1,1-TCA was only detected twice at 3.0 µg/L since 1994 at BOP-59(i). TCE was historically detected at concentrations up to 1,800 µg/L but has generally been less than the maximum contaminant level (MCL) of since 2015.

The 1,4-dioxane reconnaissance-level sampling event was conducted during the routine groundwater sampling event in August 2021. The timing allowed for 1,4-dioxane results to be compared to VOC (e.g., TCE and 1,1,1-TCA) results during data evaluation.

Sampling and Analytical Procedures

In accordance with the Work Plan, samples were collected using Dual-Membrane Passive Diffusion Bag (DMPDB™) samplers. The DMPDB samplers were field-filled with laboratory-supplied deionized water and deployed July 21, 2021 to allow for the samplers to equilibrate with groundwater conditions for at least 3 weeks prior to sample collection on August 9 and 10, 2021. The DMPDB samplers were deployed at the following depths:

Well ID	DMPDB Top Deployment Depth (feet below top of well casing)
BOP-57(ia)	98.5
BOP-73(i)	78
D-8(i)	87 (parent) and 89 (duplicate)
BOP-59(i)	57

To meet project quality objectives, a field duplicate sample was collected from D-8(i) and one DMPDB equipment blank sample was collected using laboratory-provided distilled water. Samples were submitted to the project-approved accredited laboratory: Eurofins Lancaster Laboratories Environmental in Lancaster, Pennsylvania. Samples were analyzed for VOCs using US Environmental Protection Agency (EPA) Method 8260C and 1,4-dioxane using EPA Method 8270E with selected ion monitoring (SIM).

Analytical Results

Groundwater samples from the selected wells were collected on August 9 and 10, 2021. The analytical results were reviewed through a Stage 2A data verification and validation process, as outlined in the ODEQ-approved workplan. The data was found to be accurate and acceptable for monitoring purposes. A DMPDB equipment blank was collected to evaluate potential contamination introduced to the samples through the bag or laboratory-supplied deionized water. Target analytes were not detected at concentrations greater than the laboratory reporting limit in the associated DMPDB equipment blank. The laboratory reports are provided in Attachment 1, and data validation results are summarized in Attachment 2. TCE and 1,1,1-TCA analytical results from the DMPDB samplers were within the recent historical ranges for the individual wells, as shown in the concentration time series plots presented in Attachment 3. The analytical results for 1,4-dioxane results are summarized in Table 1 and below.

The analytical results for 1,4-dioxane were not detected above the laboratory reporting limit (maximum of 0.370 µg/L) for all wells except for BOP-73(i). At BOP-73(i), 1,4-dioxane was detected at 2.82 µg/L, which is slightly above the applicable RBC of 2.0 µg/L for groundwater ingestion and inhalation from tap water in urban settings.

Summary

A total of four wells were selected for the reconnaissance-level 1,4-dioxane sampling event based on historical elevated concentrations of 1,1,1-TCA and/or TCE and the location of the well relative to the current dissolved VOC plume. Samples were collected with DMPDBs to allow for simultaneous collection of VOC and 1,4-dioxane from sampling intervals historically utilized to monitor the remedy progress of the project. Results of the reconnaissance-level sampling event indicated that 1,4-dioxane

concentrations were non-detect, apart from well BOP-73(i) where concentrations were detected slightly above the RBC.

Further evaluation is proposed to validate the initial 1,4-dioxane results at BOP-73(i) and determine whether the concentrations seasonally fluctuate. Continued monitoring is recommended over the next three quarters for a total of 1 year of monitoring at BOP-73(i). It is also recommended that an additional well, BOP-82(i), immediately downgradient of BOP-73(i) (see Figure 1), be monitored for the next 3 quarters to evaluate whether concentrations extend beyond the FVDSA. BOP-82(i) has historical detections of TCE and is hydraulically downgradient to the FVDSA. After the proposed monitoring of BOP-73(i) and BOP-82(i) is complete, results should be reevaluated, and additional steps determined (if necessary).

The results of the reconnaissance-level sampling event indicate that the utilization of DMPDBs for both VOC and 1,4-dioxane sampling indicated a high level of assurance in the sampling method for VOC testing as reported results were in close comparison to historical concentrations for samples collected with standard passive diffusion bag samplers.

Limitations

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

LANDAU ASSOCIATES, INC.

Jesikah Cavanaugh, EIT
Senior Staff EIT

Evelyn Ives, PE
Associate Engineer

JEC/EHI/ljl
[P:\025\116\FILERM\R\TGA\14_DIOXANE REPORT-2021\LAI BOEING PORTLAND TGA 14-DIOXANE SUMMARY MEMO_FINAL 110321.DOCX]

Attachments

Figure 1: Monitoring Well Locations
Table 1: Groundwater Analytical Results
Attachment 1: Laboratory Reports
Attachment 2: Data Validation Memorandum
Attachment 3. VOC Time Series Plots

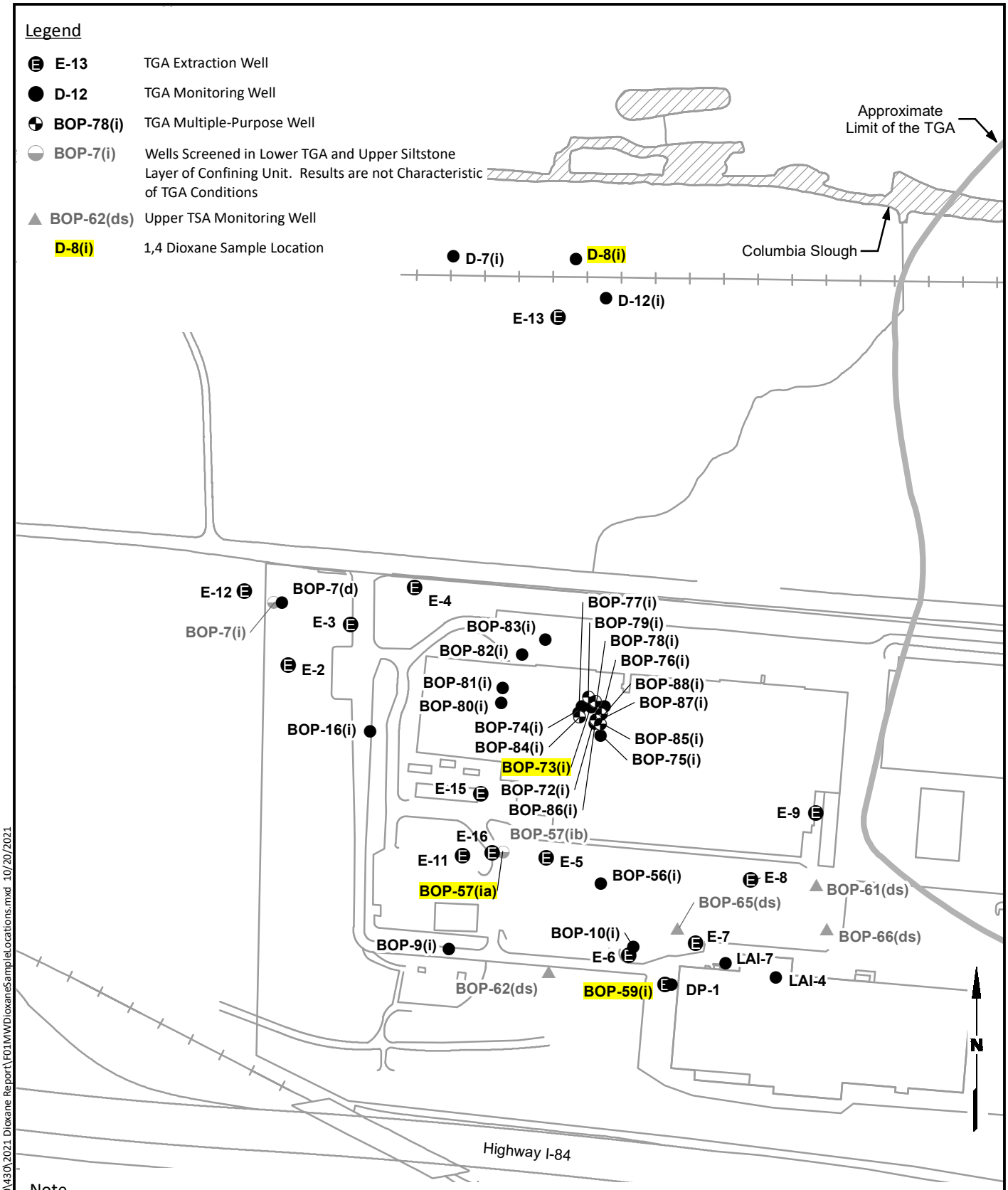
References

LAI. 2021. Technical Memorandum: 1,4-Dioxane Reconnaissance-Level Investigation Work Plan, Boeing Portland, Troutdale Gravel Aquifer, Gresham, Oregon, ECSI #13. Landau Associates, Inc. June 23.

ODEQ. 2008. Order on Consent LQSR-NWR-04-12(h). Oregon Department of Environmental Quality. September 8.

ODEQ. 2021a. Letter: Request for Reconnaissance-Level Groundwater Sampling for 1, 4-Dioxane at Boeing Portland Facility, ECSI #13. From Kenneth Thiessen, Oregon Department of Environmental Quality, to Debbie Taege, The Boeing Company. March 16.

ODEQ. 2021b. Letter: Technical Memorandum, 1, 4-Dioxane Reconnaissance-Level Investigation Work Plan, Boeing Portland Troutdale Gravel Aquifer, Gresham, Oregon, ECSI #13. From Kenneth Thiessen, Oregon Department of Environmental Quality, to Debbie Taege, The Boeing Company. July 9.



Note

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

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LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**Monitoring Well Locations**	Figure 1

Table 1
Groundwater Analytical Results
Troutdale Gravel Aquifer
Boeing Portland
Gresham, Oregon

Field Sample ID	Sample Location Description	Sample Date	SW-846 8270E SIM 1,4-Dioxane (µg/l)
RBC Ingestion and Inhalation from Urban Tap Water:			2.0
BOP-57ia-0821	Source Area	8/9/2021	0.342 U
BOP-59i-0821	Upgradient	8/9/2021	0.337 U
BOP-73i-0821	Source Area	8/10/2021	**2.82**
D-08i-0821	Downgradient	8/9/2021	0.341 U
BOP-DUP1-0821	Field duplicate of D-08i	8/9/2021	0.370 U

Notes:

Bold text indicates detected analyte

Green shading indicates detected analyte exceeds applicable cleanup level

U = The analyte was analyzed, but was not detected above the reported sample quantitation limit.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ = The result is an estimated quantity with a high bias. The associated numerical value is the approximate concentration of the analyte in the sample.

Abbreviations and Acronyms:

µg/L = micrograms per liter

ID = identification

RBC = risk-based concentration

SIM = selected ion monitoring

ATTACHMENT 1

Laboratory Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-47646-1
Client Project/Site: Boeing: Portland/0025116.121.412

For:
Landau & Associates, Inc.
130 Second Ave South
Edmonds, Washington 98020

Attn: Evelyn Ives

Vanessa T. Badman

Authorized for release by:
7/26/2021 9:58:27 AM

Vanessa Badman, Project Manager
(717)556-9762
vanessa.badman@eurofinset.com

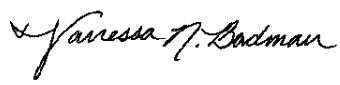
Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



Vanessa Badman
Project Manager
7/26/2021 9:58:27 AM

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Landau & Associates, Inc.
Project/Site: Boeing: Portland/0025116.121.412

Job ID: 410-47646-1

Job ID: 410-47646-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-47646-1

Receipt
The samples were received on 7/17/2021 9:51 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C

GC/MS VOA
Method 8260C_LL: The continuing calibration verification (CCV) associated with batch 410-151977 recovered outside acceptance criteria, low biased, for Acetone. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Non-detections of the affected analytes are reported. Any detections are considered estimated.

Method 8260C_LL: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): Trip Blank (410-47646-1). The sample container was received with headspace.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC/MS Semi VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing: Portland/0025116.121.412

Job ID: 410-47646-1

Client Sample ID: Trip Blank — Lab Sample ID: 410-47646-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	0.585		0.500		ug/L	1		8260C LL	Total/NA

Client Sample ID: TGA Blank-0721 — Lab Sample ID: 410-47646-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Client Sample ID: Trip Blank
Lab Sample ID: 410-47646-1
Date Collected: 07/16/21 00:00
Matrix: WQ
Date Received: 07/17/21 09:51

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			07/23/21 12:00	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			07/23/21 12:00	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 12:00	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			07/23/21 12:00	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			07/23/21 12:00	1
2-Butanone	5.00	U	5.00		ug/L			07/23/21 12:00	1
2-Hexanone	5.00	U	5.00		ug/L			07/23/21 12:00	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			07/23/21 12:00	1
Acetone	5.00	U	5.00		ug/L			07/23/21 12:00	1
Benzene	0.200	U	0.200		ug/L			07/23/21 12:00	1
Bromodichloromethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
Bromoform	1.00	U	1.00		ug/L			07/23/21 12:00	1
Bromomethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
Carbon disulfide	0.500	U	0.500		ug/L			07/23/21 12:00	1
Carbon tetrachloride	0.200	U	0.200		ug/L			07/23/21 12:00	1
Chlorobenzene	0.500	U	0.500		ug/L			07/23/21 12:00	1
Chloroethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
Chloroform	0.200	U	0.200		ug/L			07/23/21 12:00	1
Chloromethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 12:00	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			07/23/21 12:00	1
Dibromochloromethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
Ethylbenzene	0.500	U	0.500		ug/L			07/23/21 12:00	1
Freon 113	0.500	U	0.500		ug/L			07/23/21 12:00	1
m&p-Xylene	0.500	U	0.500		ug/L			07/23/21 12:00	1
Methylene Chloride	**0.585**		0.500		ug/L			07/23/21 12:00	1
o-Xylene	0.500	U	0.500		ug/L			07/23/21 12:00	1
Styrene	0.500	U	0.500		ug/L			07/23/21 12:00	1
Tetrachloroethene	0.200	U	0.200		ug/L			07/23/21 12:00	1
Toluene	0.200	U	0.200		ug/L			07/23/21 12:00	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 12:00	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			07/23/21 12:00	1
Trichloroethene	0.200	U	0.200		ug/L			07/23/21 12:00	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			07/23/21 12:00	1
Vinyl acetate	0.500	U	0.500		ug/L			07/23/21 12:00	1
Vinyl chloride	0.200	U	0.200		ug/L			07/23/21 12:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*07/23/21 12:00*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*07/23/21 12:00*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*07/23/21 12:00*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*07/23/21 12:00*	*1*

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Client Sample ID: TGA Blank-0721
Lab Sample ID: 410-47646-2
Date Collected: 07/16/21 09:00
Matrix: Water
Date Received: 07/17/21 09:51

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			07/23/21 12:42	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			07/23/21 12:42	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			07/23/21 12:42	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			07/23/21 12:42	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 12:42	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			07/23/21 12:42	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			07/23/21 12:42	1
2-Butanone	5.00	U	5.00		ug/L			07/23/21 12:42	1
2-Hexanone	5.00	U	5.00		ug/L			07/23/21 12:42	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			07/23/21 12:42	1
Acetone	5.00	U	5.00		ug/L			07/23/21 12:42	1
Benzene	0.200	U	0.200		ug/L			07/23/21 12:42	1
Bromodichloromethane	0.500	U	0.500		ug/L			07/23/21 12:42	1
Bromoform	1.00	U	1.00		ug/L			07/23/21 12:42	1
Bromomethane	0.500	U	0.500		ug/L			07/23/21 12:42	1
Carbon disulfide	0.500	U	0.500		ug/L			07/23/21 12:42	1
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Chloroform	0.200	U	0.200		ug/L			07/23/21 12:42	1
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cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 12:42	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			07/23/21 12:42	1
Dibromochloromethane	0.500	U	0.500		ug/L			07/23/21 12:42	1
Ethylbenzene	0.500	U	0.500		ug/L			07/23/21 12:42	1
Freon 113	0.500	U	0.500		ug/L			07/23/21 12:42	1
m&p-Xylene	0.500	U	0.500		ug/L			07/23/21 12:42	1
Methylene Chloride	0.500	U	0.500		ug/L			07/23/21 12:42	1
o-Xylene	0.500	U	0.500		ug/L			07/23/21 12:42	1
Styrene	0.500	U	0.500		ug/L			07/23/21 12:42	1
Tetrachloroethene	0.200	U	0.200		ug/L			07/23/21 12:42	1
Toluene	0.200	U	0.200		ug/L			07/23/21 12:42	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 12:42	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			07/23/21 12:42	1
Trichloroethene	0.200	U	0.200		ug/L			07/23/21 12:42	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			07/23/21 12:42	1
Vinyl acetate	0.500	U	0.500		ug/L			07/23/21 12:42	1
Vinyl chloride	0.200	U	0.200		ug/L			07/23/21 12:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*07/23/21 12:42*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*07/23/21 12:42*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*07/23/21 12:42*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*07/23/21 12:42*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.322	U	0.322		ug/L		07/23/21 09:58	07/24/21 05:42	1

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Client Sample ID: TGA Blank-0721
Lab Sample ID: 410-47646-2
Date Collected: 07/16/21 09:00
Matrix: Water
Date Received: 07/17/21 09:51

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12 (Surr)	83		10 - 110	07/23/21 09:58	07/24/21 05:42	1
Fluoranthene-d10 (Surr)	86		47 - 128	07/23/21 09:58	07/24/21 05:42	1
1-Methylnaphthalene-d10 (Surr)	75		36 - 111	07/23/21 09:58	07/24/21 05:42	1

Surrogate Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing: Portland/0025116.121.412

Job ID: 410-47646-1

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	DBFM	BFB	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)	(80-120)
410-47646-2	TGA Blank-0721	101	103	92	93
LCS 410-151977/4	Lab Control Sample	102	102	95	95
LCS 410-151977/7	Lab Control Sample	102	101	95	95
LCSD 410-151977/5	Lab Control Sample Dup	102	101	95	95
LCSD 410-151977/8	Lab Control Sample Dup	102	101	94	94
MB 410-151977/10	Method Blank	104	102	94	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Matrix: WQ

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	DBFM	BFB	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)	(80-120)
410-47646-1	Trip Blank	101	103	94	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		BAPd12	FLN10	MNPd10
Lab Sample ID	Client Sample ID	(10-110)	(47-128)	(36-111)
410-47646-2	TGA Blank-0721	83	86	75
LCS 410-151969/2-A	Lab Control Sample	89	86	78
LCSD 410-151969/3-A	Lab Control Sample Dup	89	83	78
MB 410-151969/1-A	Method Blank	75	77	66

Surrogate Legend

BAPd12 = Benzo(a)pyrene-d12 (Surr)
FLN10 = Fluoranthene-d10 (Surr)
MNPd10 = 1-Methylnaphthalene-d10 (Surr)

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 410-151977/10
Matrix: Water
Analysis Batch: 151977

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			07/23/21 11:18	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			07/23/21 11:18	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 11:18	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			07/23/21 11:18	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			07/23/21 11:18	1
2-Butanone	5.00	U	5.00		ug/L			07/23/21 11:18	1
2-Hexanone	5.00	U	5.00		ug/L			07/23/21 11:18	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			07/23/21 11:18	1
Acetone	5.00	U	5.00		ug/L			07/23/21 11:18	1
Benzene	0.200	U	0.200		ug/L			07/23/21 11:18	1
Bromodichloromethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
Bromoform	1.00	U	1.00		ug/L			07/23/21 11:18	1
Bromomethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
Carbon disulfide	0.500	U	0.500		ug/L			07/23/21 11:18	1
Carbon tetrachloride	0.200	U	0.200		ug/L			07/23/21 11:18	1
Chlorobenzene	0.500	U	0.500		ug/L			07/23/21 11:18	1
Chloroethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
Chloroform	0.200	U	0.200		ug/L			07/23/21 11:18	1
Chloromethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 11:18	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			07/23/21 11:18	1
Dibromochloromethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
Ethylbenzene	0.500	U	0.500		ug/L			07/23/21 11:18	1
Freon 113	0.500	U	0.500		ug/L			07/23/21 11:18	1
m&p-Xylene	0.500	U	0.500		ug/L			07/23/21 11:18	1
Methylene Chloride	0.500	U	0.500		ug/L			07/23/21 11:18	1
o-Xylene	0.500	U	0.500		ug/L			07/23/21 11:18	1
Styrene	0.500	U	0.500		ug/L			07/23/21 11:18	1
Tetrachloroethene	0.200	U	0.200		ug/L			07/23/21 11:18	1
Toluene	0.200	U	0.200		ug/L			07/23/21 11:18	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			07/23/21 11:18	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			07/23/21 11:18	1
Trichloroethene	0.200	U	0.200		ug/L			07/23/21 11:18	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			07/23/21 11:18	1
Vinyl acetate	0.500	U	0.500		ug/L			07/23/21 11:18	1
Vinyl chloride	0.200	U	0.200		ug/L			07/23/21 11:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*07/23/21 11:18*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*07/23/21 11:18*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*07/23/21 11:18*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/23/21 11:18*	*1*

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 410-151977/4
Matrix: Water
Analysis Batch: 151977

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	5.00	5.147		ug/L		103	78 - 126
1,1,2,2-Tetrachloroethane	5.00	5.266		ug/L		105	75 - 123
1,1,2-Trichloroethane	5.00	5.153		ug/L		103	80 - 120
1,1-Dichloroethane	5.00	4.984		ug/L		100	74 - 120
1,1-Dichloroethene	5.00	5.462		ug/L		109	80 - 131
1,2-Dichloroethane	5.00	5.135		ug/L		103	69 - 122
1,2-Dichloropropane	5.00	5.099		ug/L		102	80 - 120
2-Butanone	62.5	54.43		ug/L		87	59 - 141
2-Hexanone	62.5	56.35		ug/L		90	52 - 140
4-Methyl-2-pentanone	62.5	55.18		ug/L		88	55 - 140
Acetone	62.5	46.77		ug/L		75	60 - 146
Benzene	5.00	5.037		ug/L		101	80 - 120
Bromodichloromethane	5.00	5.197		ug/L		104	73 - 124
Bromoform	5.00	4.572		ug/L		91	49 - 144
Bromomethane	5.00	5.381		ug/L		108	60 - 136
Carbon disulfide	5.00	4.939		ug/L		99	67 - 130
Carbon tetrachloride	5.00	5.140		ug/L		103	64 - 141
Chlorobenzene	5.00	4.892		ug/L		98	80 - 120
Chloroethane	5.00	4.967		ug/L		99	63 - 120
Chloroform	5.00	5.122		ug/L		102	80 - 120
Chloromethane	5.00	5.184		ug/L		104	56 - 124
cis-1,2-Dichloroethene	5.00	5.054		ug/L		101	80 - 122
cis-1,3-Dichloropropene	5.00	4.997		ug/L		100	67 - 121
Dibromochloromethane	5.00	4.824		ug/L		96	64 - 138
Ethylbenzene	5.00	4.834		ug/L		97	80 - 120
Freon 113	5.00	5.223		ug/L		104	75 - 133
m&p-Xylene	10.0	9.505		ug/L		95	80 - 120
Methylene Chloride	5.00	5.124		ug/L		102	80 - 120
o-Xylene	5.00	4.763		ug/L		95	80 - 120
Styrene	5.00	4.756		ug/L		95	80 - 120
Tetrachloroethene	5.00	4.529		ug/L		91	80 - 120
Toluene	5.00	4.736		ug/L		95	80 - 120
trans-1,2-Dichloroethene	5.00	5.075		ug/L		101	80 - 122
trans-1,3-Dichloropropene	5.00	5.065		ug/L		101	61 - 129
Trichloroethene	5.00	5.083		ug/L		102	80 - 120
Trichlorofluoromethane	5.00	5.521		ug/L		110	62 - 136
Vinyl chloride	5.00	5.601		ug/L		112	60 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 410-151977/7
Matrix: Water
Analysis Batch: 151977

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl acetate			12.5	12.81		ug/L		103	38 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Lab Sample ID: LCSD 410-151977/5
Matrix: Water
Analysis Batch: 151977

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			5.00	5.020		ug/L		100	78 - 126	3	30
1,1,2,2-Tetrachloroethane			5.00	5.191		ug/L		104	75 - 123	1	30
1,1,2-Trichloroethane			5.00	5.222		ug/L		104	80 - 120	1	30
1,1-Dichloroethane			5.00	4.891		ug/L		98	74 - 120	2	30
1,1-Dichloroethene			5.00	5.335		ug/L		107	80 - 131	2	30
1,2-Dichloroethane			5.00	4.833		ug/L		97	69 - 122	6	30
1,2-Dichloropropane			5.00	4.878		ug/L		98	80 - 120	4	30
2-Butanone			62.5	73.70		ug/L		118	59 - 141	30	30
2-Hexanone			62.5	74.38		ug/L		119	52 - 140	28	30
4-Methyl-2-pentanone			62.5	71.66		ug/L		115	55 - 140	26	30
Acetone			62.5	57.34		ug/L		92	60 - 146	20	30
Benzene			5.00	5.006		ug/L		100	80 - 120	1	30
Bromodichloromethane			5.00	5.120		ug/L		102	73 - 124	1	30
Bromoform			5.00	4.521		ug/L		90	49 - 144	1	30
Bromomethane			5.00	5.268		ug/L		105	60 - 136	2	30
Carbon disulfide			5.00	4.847		ug/L		97	67 - 130	2	30
Carbon tetrachloride			5.00	5.040		ug/L		101	64 - 141	2	30
Chlorobenzene			5.00	4.805		ug/L		96	80 - 120	2	30
Chloroethane			5.00	4.999		ug/L		100	63 - 120	1	30
Chloroform			5.00	5.010		ug/L		100	80 - 120	2	30
Chloromethane			5.00	5.273		ug/L		105	56 - 124	2	30
cis-1,2-Dichloroethene			5.00	5.026		ug/L		101	80 - 122	1	30
cis-1,3-Dichloropropene			5.00	4.994		ug/L		100	67 - 121	0	30
Dibromochloromethane			5.00	4.831		ug/L		97	64 - 138	0	30
Ethylbenzene			5.00	4.726		ug/L		95	80 - 120	2	30
Freon 113			5.00	5.144		ug/L		103	75 - 133	2	30
m&p-Xylene			10.0	9.429		ug/L		94	80 - 120	1	30
Methylene Chloride			5.00	5.115		ug/L		102	80 - 120	0	30
o-Xylene			5.00	4.632		ug/L		93	80 - 120	3	30
Styrene			5.00	4.724		ug/L		94	80 - 120	1	30
Tetrachloroethene			5.00	4.541		ug/L		91	80 - 120	0	30
Toluene			5.00	4.711		ug/L		94	80 - 120	1	30
trans-1,2-Dichloroethene			5.00	4.846		ug/L		97	80 - 122	5	30
trans-1,3-Dichloropropene			5.00	4.959		ug/L		99	61 - 129	2	30
Trichloroethene			5.00	5.012		ug/L		100	80 - 120	1	30

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 410-151977/5
Matrix: Water
Analysis Batch: 151977

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichlorofluoromethane			5.00	5.372		ug/L		107	62 - 136	3	30
Vinyl chloride			5.00	5.574		ug/L		111	60 - 125	0	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Lab Sample ID: LCSD 410-151977/8
Matrix: Water
Analysis Batch: 151977

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl acetate			12.5	12.80		ug/L		102	38 - 145	0	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*
Toluene-d8 (Surr)	*94*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 410-151969/1-A
Matrix: Water
Analysis Batch: 152261

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 151969

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.300	U	0.300		ug/L		07/23/21 09:58	07/23/21 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*75*		*10 - 110*	*07/23/21 09:58*	*07/23/21 19:42*	*1*
Fluoranthene-d10 (Surr)	*77*		*47 - 128*	*07/23/21 09:58*	*07/23/21 19:42*	*1*
1-Methylnaphthalene-d10 (Surr)	*66*		*36 - 111*	*07/23/21 09:58*	*07/23/21 19:42*	*1*

Lab Sample ID: LCS 410-151969/2-A
Matrix: Water
Analysis Batch: 152261

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 151969

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	0.5444		ug/L		54	23 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*89*		*10 - 110*
Fluoranthene-d10 (Surr)	*86*		*47 - 128*
1-Methylnaphthalene-d10 (Surr)	*78*		*36 - 111*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 410-151969/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 152261
Prep Batch: 151969

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane			1.00	0.5691		ug/L		57	23 - 120	4	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Benzo(a)pyrene-d12 (Surr)	*89*		*10 - 110*
Fluoranthene-d10 (Surr)	*83*		*47 - 128*
1-Methylnaphthalene-d10 (Surr)	*78*		*36 - 111*

QC Association Summary

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

GC/MS VOA

Analysis Batch: 151977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-47646-1	Trip Blank	Total/NA	WQ	8260C LL	
410-47646-2	TGA Blank-0721	Total/NA	Water	8260C LL	
MB 410-151977/10	Method Blank	Total/NA	Water	8260C LL	
LCS 410-151977/4	Lab Control Sample	Total/NA	Water	8260C LL	
LCS 410-151977/7	Lab Control Sample	Total/NA	Water	8260C LL	
LCSD 410-151977/5	Lab Control Sample Dup	Total/NA	Water	8260C LL	
LCSD 410-151977/8	Lab Control Sample Dup	Total/NA	Water	8260C LL	

GC/MS Semi VOA

Prep Batch: 151969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-47646-2	TGA Blank-0721	Total/NA	Water	3510C	
MB 410-151969/1-A	Method Blank	Total/NA	Water	3510C	
LCS 410-151969/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 410-151969/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 152261

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-47646-2	TGA Blank-0721	Total/NA	Water	8270E SIM	151969
MB 410-151969/1-A	Method Blank	Total/NA	Water	8270E SIM	151969
LCS 410-151969/2-A	Lab Control Sample	Total/NA	Water	8270E SIM	151969
LCSD 410-151969/3-A	Lab Control Sample Dup	Total/NA	Water	8270E SIM	151969

Lab Chronicle

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Client Sample ID: Trip Blank
Lab Sample ID: 410-47646-1
Date Collected: 07/16/21 00:00
Matrix: WQ
Date Received: 07/17/21 09:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		1	151977	07/23/21 12:00	UCB5	ELLE

Client Sample ID: TGA Blank-0721
Lab Sample ID: 410-47646-2
Date Collected: 07/16/21 09:00
Matrix: Water
Date Received: 07/17/21 09:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		1	151977	07/23/21 12:42	UCB5	ELLE
Total/NA	Prep	3510C			151969	07/23/21 09:58	QTH7	ELLE
Total/NA	Analysis	8270E SIM		1	152261	07/24/21 05:42	X3ZL	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	PA200001-018	09-12-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E SIM	3510C	Water	1,4-Dioxane

Method Summary

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Method	Method Description	Protocol	Laboratory
8260C LL	Volatile Organic Compounds by GC/MS	SW846	ELLE
8270E SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	ELLE
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	ELLE
5030C	Purge and Trap	SW846	ELLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Landau & Associates, Inc.
Job ID: 410-47646-1
Project/Site: Boeing: Portland/0025116.121.412

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-47646-1	Trip Blank	WQ	07/16/21 00:00	07/17/21 09:51
410-47646-2	TGA Blank-0721	Water	07/16/21 09:00	07/17/21 09:51

Boeing Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. #

410-47646 Chain of Custody

Environmental use only
ple # _____
e side correspond.

1 Client Information

Site Location: Gresham, OR / Boeing of Portland
Site Project: TGA 2021 Annual sampling
Site Program/#: 00251116.121.412
Boeing PM: Debbie Taege
Consultant Contact: Evelyn Ives
Report To: D. Taege, E. Ives, Dani Jorgensen Land Ethos
Invoice To: ☒ Boeing EHS ☐ Other (specify): see LIMS list)
Sampler: JEC # of Coolers: 1

2 Sample Identification	Collected Date	Collected Time	3 Matrix	No. of Containers	4 VOCs 8260D (38 list)	4 8270E SIM DOE 1,4-Dioxane	5 Remarks/Comments
TripBlank-0721	—	—	AQ	2	X		
TGA Blank-0721	7/16/21	900	AQ	5	X	X	

6 Turnaround Time Requested (please circle)

Standard | 5 day | 4 day
72 hour | 48 hour | 24 hour
Date needed: _____

Relinquished by:	Date/Time	Received by:	Date/Time
	7/16/21 1601		
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time 7-17-21 954

Relinquished by commercial carrier (circle): UPS FedEx Other: _____
Temperature upon Receipt: 1.0 °C
Custody Seals Intact?: Yes No

7

Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA 17601 717-656-2300 7063 0913

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be given to the SeaTac Courier. The pink copy should be retained by the client.

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 410-47646-1

Login Number: 47646

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Sanchez, Melvin E

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	True	

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ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-50825-1
Client Project/Site: Boeing Portland, Annual GW Event
Revision: 1

For:
Landau & Associates, Inc.
130 Second Ave South
Edmonds, Washington 98020

Attn: Evelyn Ives

Vanessa M. Badman

Authorized for release by:
9/15/2021 10:34:02 AM

Vanessa Badman, Project Manager
(717)556-9762
vanessa.badman@eurofinset.com

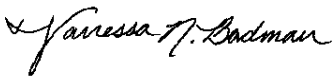
Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



Vanessa Badman
Project Manager
9/15/2021 10:34:02 AM

Table of Contents

Definitions/Glossary

Client: Landau & Associates, Inc. Job ID: 410-50825-1
Project/Site: Boeing Portland, Annual GW Event

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*3	ISTD response or retention time outside acceptable limits.
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Job ID: 410-50825-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-50825-1

REVISION

The report being provided is a revision of the original report sent on 8/24/2021. The report (revision 1) is being revised due to update the case narrative in order to add additional details regarding the QC for the volatiles analysis.

Receipt
The samples were received on 8/11/2021 10:29 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.5°C

GC/MS VOA
Method 8260C_LL: The continuing calibration verification (CCV) associated with batch 410-161003 recovered outside acceptance criteria, low biased, for 2-Butanone, 2-Hexanone, 4-Methyl-2-pentanone, Acetone and 1,2-Dichloroethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Non-detections of the affected analytes are reported. Any detections are considered estimated.

Method 8260C_LL: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): Trip Blank1-0821 (410-50825-1). The sample container was received with headspace.

Method 8260C_LL: The GC/MS volatile internal standard peak areas listed below are outside the acceptance criteria of -50% to +100% for both the initial analysis and the re-analysis for BOP-59i-0821 (410-50825-4). The reported results are from both analyses. Internal Standard - Initial Analysis % Recoverytert-Butyl Alcohol-d10 37%Internal Standard - Re-analysis % Recoverytert-Buty Alcohol-d10 28%

Method 8260C_LL: The method requirement for no headspace was not met. The container (s) used for reanalysis of the following sample contained headspace: BOP-59i-0821 (410-50825-4). The sample container was received without headspace.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC/MS Semi VOA
Method 8270E_SIM: Surrogate recovery for the following sample was outside control limits: BOP-59i-0821 (410-50825-4). Re-extraction and/or re-analysis was performed outside of holding time with acceptable results.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Client Sample ID: Trip Blank1-0821 — Lab Sample ID: 410-50825-1

No Detections.

Client Sample ID: D-08i-0821 — Lab Sample ID: 410-50825-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.268		0.200		ug/L	1		8260C LL	Total/NA
Trichloroethene	1.98		0.200		ug/L	1		8260C LL	Total/NA

Client Sample ID: BOP-Dup1-0821 — Lab Sample ID: 410-50825-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.386		0.200		ug/L	1		8260C LL	Total/NA
Trichloroethene	1.35		0.200		ug/L	1		8260C LL	Total/NA

Client Sample ID: BOP-59i-0821 — Lab Sample ID: 410-50825-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Acetone	8.00	*3	5.00		ug/L	1		8260C LL	Total/NA
cis-1,2-Dichloroethene	0.739		0.200		ug/L	1		8260C LL	Total/NA
Trichloroethene	0.828		0.200		ug/L	1		8260C LL	Total/NA
Vinyl chloride	6.63		0.200		ug/L	1		8260C LL	Total/NA
Acetone - RA	8.74	*3	5.00		ug/L	1		8260C LL	Total/NA
cis-1,2-Dichloroethene - RA	0.758		0.200		ug/L	1		8260C LL	Total/NA
Trichloroethene - RA	0.665		0.200		ug/L	1		8260C LL	Total/NA
Vinyl chloride - RA	5.10		0.200		ug/L	1		8260C LL	Total/NA

Client Sample ID: BOP-57ia-0821 — Lab Sample ID: 410-50825-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.27		0.200		ug/L	1		8260C LL	Total/NA
Trichloroethene	0.327		0.200		ug/L	1		8260C LL	Total/NA
Vinyl chloride	3.00		0.200		ug/L	1		8260C LL	Total/NA

Client Sample ID: BOP-73i-0821 — Lab Sample ID: 410-50825-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	93.0		4.00		ug/L	20		8260C LL	Total/NA
trans-1,2-Dichloroethene	25.8		4.00		ug/L	20		8260C LL	Total/NA
Vinyl chloride	749	E	4.00		ug/L	20		8260C LL	Total/NA
cis-1,2-Dichloroethene - DL	101		40.0		ug/L	200		8260C LL	Total/NA
Vinyl chloride - DL	785		40.0		ug/L	200		8260C LL	Total/NA
1,4-Dioxane	2.82		0.382		ug/L	1		8270E SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Client Sample ID: Trip Blank1-0821

Date Collected: 08/09/21 00:00
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-1

Matrix: Water

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/16/21 21:59	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/16/21 21:59	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 21:59	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/16/21 21:59	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/16/21 21:59	1
2-Butanone	5.00	U	5.00		ug/L			08/16/21 21:59	1
2-Hexanone	5.00	U	5.00		ug/L			08/16/21 21:59	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			08/16/21 21:59	1
Acetone	5.00	U	5.00		ug/L			08/16/21 21:59	1
Benzene	0.200	U	0.200		ug/L			08/16/21 21:59	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
Bromoform	1.00	U	1.00		ug/L			08/16/21 21:59	1
Bromomethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
Carbon disulfide	0.500	U	0.500		ug/L			08/16/21 21:59	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/16/21 21:59	1
Chlorobenzene	0.500	U	0.500		ug/L			08/16/21 21:59	1
Chloroethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
Chloroform	0.200	U	0.200		ug/L			08/16/21 21:59	1
Chloromethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 21:59	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/16/21 21:59	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
Ethylbenzene	0.500	U	0.500		ug/L			08/16/21 21:59	1
Freon 113	0.500	U	0.500		ug/L			08/16/21 21:59	1
m&p-Xylene	0.500	U	0.500		ug/L			08/16/21 21:59	1
Methylene Chloride	0.500	U	0.500		ug/L			08/16/21 21:59	1
o-Xylene	0.500	U	0.500		ug/L			08/16/21 21:59	1
Styrene	0.500	U	0.500		ug/L			08/16/21 21:59	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/16/21 21:59	1
Toluene	0.200	U	0.200		ug/L			08/16/21 21:59	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 21:59	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/16/21 21:59	1
Trichloroethene	0.200	U	0.200		ug/L			08/16/21 21:59	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/16/21 21:59	1
Vinyl acetate	0.500	U	0.500		ug/L			08/16/21 21:59	1
Vinyl chloride	0.200	U	0.200		ug/L			08/16/21 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*08/16/21 21:59*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*08/16/21 21:59*	*1*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*08/16/21 21:59*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/16/21 21:59*	*1*

Client Sample ID: D-08i-0821

Date Collected: 08/09/21 10:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-2

Matrix: Water

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/17/21 03:19	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/17/21 03:19	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/17/21 03:19	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/17/21 03:19	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/17/21 03:19	1
2-Butanone	5.00	U	5.00		ug/L			08/17/21 03:19	1
2-Hexanone	5.00	U	5.00		ug/L			08/17/21 03:19	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			08/17/21 03:19	1
Acetone	5.00	U	5.00		ug/L			08/17/21 03:19	1
Benzene	0.200	U	0.200		ug/L			08/17/21 03:19	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
Bromoform	1.00	U	1.00		ug/L			08/17/21 03:19	1
Bromomethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
Carbon disulfide	0.500	U	0.500		ug/L			08/17/21 03:19	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/17/21 03:19	1
Chlorobenzene	0.500	U	0.500		ug/L			08/17/21 03:19	1
Chloroethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
Chloroform	**0.268**		0.200		ug/L			08/17/21 03:19	1
Chloromethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/17/21 03:19	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/17/21 03:19	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
Ethylbenzene	0.500	U	0.500		ug/L			08/17/21 03:19	1
Freon 113	0.500	U	0.500		ug/L			08/17/21 03:19	1
m&p-Xylene	0.500	U	0.500		ug/L			08/17/21 03:19	1
Methylene Chloride	0.500	U	0.500		ug/L			08/17/21 03:19	1
o-Xylene	0.500	U	0.500		ug/L			08/17/21 03:19	1
Styrene	0.500	U	0.500		ug/L			08/17/21 03:19	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/17/21 03:19	1
Toluene	0.200	U	0.200		ug/L			08/17/21 03:19	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/17/21 03:19	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/17/21 03:19	1
Trichloroethene	**1.98**		0.200		ug/L			08/17/21 03:19	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/17/21 03:19	1
Vinyl acetate	0.500	U	0.500		ug/L			08/17/21 03:19	1
Vinyl chloride	0.200	U	0.200		ug/L			08/17/21 03:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*08/17/21 03:19*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*08/17/21 03:19*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*08/17/21 03:19*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/17/21 03:19*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.341	U	0.341		ug/L		08/13/21 09:45	08/20/21 11:36	1

Client Sample ID: D-08i-0821

Date Collected: 08/09/21 10:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-2
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12 (Surr)	87		10 - 110	08/13/21 09:45	08/20/21 11:36	1
Fluoranthene-d10 (Surr)	89		47 - 128	08/13/21 09:45	08/20/21 11:36	1
1-Methylnaphthalene-d10 (Surr)	82		36 - 111	08/13/21 09:45	08/20/21 11:36	1

Client Sample ID: BOP-Dup1-0821

Date Collected: 08/09/21 10:38
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-3
Matrix: Water

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/18/21 16:57	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/18/21 16:57	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 16:57	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/18/21 16:57	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/18/21 16:57	1
2-Butanone	5.00	U	5.00		ug/L			08/18/21 16:57	1
2-Hexanone	5.00	U	5.00		ug/L			08/18/21 16:57	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			08/18/21 16:57	1
Acetone	5.00	U	5.00		ug/L			08/18/21 16:57	1
Benzene	0.200	U	0.200		ug/L			08/18/21 16:57	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
Bromoform	1.00	U	1.00		ug/L			08/18/21 16:57	1
Bromomethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
Carbon disulfide	0.500	U	0.500		ug/L			08/18/21 16:57	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/18/21 16:57	1
Chlorobenzene	0.500	U	0.500		ug/L			08/18/21 16:57	1
Chloroethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
Chloroform	**0.386**		0.200		ug/L			08/18/21 16:57	1
Chloromethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 16:57	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/18/21 16:57	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
Ethylbenzene	0.500	U	0.500		ug/L			08/18/21 16:57	1
Freon 113	0.500	U	0.500		ug/L			08/18/21 16:57	1
m&p-Xylene	0.500	U	0.500		ug/L			08/18/21 16:57	1
Methylene Chloride	0.500	U	0.500		ug/L			08/18/21 16:57	1
o-Xylene	0.500	U	0.500		ug/L			08/18/21 16:57	1
Styrene	0.500	U	0.500		ug/L			08/18/21 16:57	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/18/21 16:57	1
Toluene	0.200	U	0.200		ug/L			08/18/21 16:57	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 16:57	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/18/21 16:57	1
Trichloroethene	**1.35**		0.200		ug/L			08/18/21 16:57	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/18/21 16:57	1
Vinyl acetate	0.500	U	0.500		ug/L			08/18/21 16:57	1
Vinyl chloride	0.200	U	0.200		ug/L			08/18/21 16:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		80 - 120		08/18/21 16:57	1

Client Sample ID: BOP-Dup1-0821

Lab Sample ID: 410-50825-3

Date Collected: 08/09/21 10:38
Matrix: Water
Date Received: 08/11/21 10:29

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*08/18/21 16:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*08/18/21 16:57*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/18/21 16:57*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.370	U	0.370		ug/L		08/13/21 09:45	08/20/21 12:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*87*		*10 - 110*	*08/13/21 09:45*	*08/20/21 12:07*	*1*
Fluoranthene-d10 (Surr)	*90*		*47 - 128*	*08/13/21 09:45*	*08/20/21 12:07*	*1*
1-Methylnaphthalene-d10 (Surr)	*86*		*36 - 111*	*08/13/21 09:45*	*08/20/21 12:07*	*1*

Client Sample ID: BOP-59i-0821

Lab Sample ID: 410-50825-4

Date Collected: 08/09/21 12:35
Matrix: Water
Date Received: 08/11/21 10:29

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/17/21 04:44	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/17/21 04:44	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/17/21 04:44	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/17/21 04:44	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/17/21 04:44	1
2-Butanone	5.00	U *3	5.00		ug/L			08/17/21 04:44	1
2-Hexanone	5.00	U *3	5.00		ug/L			08/17/21 04:44	1
4-Methyl-2-pentanone	5.00	U *3	5.00		ug/L			08/17/21 04:44	1
Acetone	**8.00**	***3**	5.00		ug/L			08/17/21 04:44	1
Benzene	0.200	U	0.200		ug/L			08/17/21 04:44	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
Bromoform	1.00	U	1.00		ug/L			08/17/21 04:44	1
Bromomethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
Carbon disulfide	0.500	U	0.500		ug/L			08/17/21 04:44	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/17/21 04:44	1
Chlorobenzene	0.500	U	0.500		ug/L			08/17/21 04:44	1
Chloroethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
Chloroform	0.200	U	0.200		ug/L			08/17/21 04:44	1
Chloromethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
cis-1,2-Dichloroethene	**0.739**		0.200		ug/L			08/17/21 04:44	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/17/21 04:44	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
Ethylbenzene	0.500	U	0.500		ug/L			08/17/21 04:44	1
Freon 113	0.500	U	0.500		ug/L			08/17/21 04:44	1
m&p-Xylene	0.500	U	0.500		ug/L			08/17/21 04:44	1
Methylene Chloride	0.500	U	0.500		ug/L			08/17/21 04:44	1
o-Xylene	0.500	U	0.500		ug/L			08/17/21 04:44	1
Styrene	0.500	U	0.500		ug/L			08/17/21 04:44	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/17/21 04:44	1

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Client Sample ID: BOP-59i-0821

Date Collected: 08/09/21 12:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-4

Matrix: Water

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.200	U	0.200		ug/L			08/17/21 04:44	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/17/21 04:44	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/17/21 04:44	1
Trichloroethene	**0.828**		0.200		ug/L			08/17/21 04:44	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/17/21 04:44	1
Vinyl acetate	0.500	U	0.500		ug/L			08/17/21 04:44	1
Vinyl chloride	**6.63**		0.200		ug/L			08/17/21 04:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*08/17/21 04:44*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*08/17/21 04:44*	*1*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*08/17/21 04:44*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*08/17/21 04:44*	*1*

Method: 8260C LL - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/18/21 17:19	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/18/21 17:19	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 17:19	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/18/21 17:19	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/18/21 17:19	1
2-Butanone	5.00	U *3	5.00		ug/L			08/18/21 17:19	1
2-Hexanone	5.00	U *3	5.00		ug/L			08/18/21 17:19	1
4-Methyl-2-pentanone	5.00	U *3	5.00		ug/L			08/18/21 17:19	1
Acetone	**8.74**	***3**	5.00		ug/L			08/18/21 17:19	1
Benzene	0.200	U	0.200		ug/L			08/18/21 17:19	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
Bromoform	1.00	U	1.00		ug/L			08/18/21 17:19	1
Bromomethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
Carbon disulfide	0.500	U	0.500		ug/L			08/18/21 17:19	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/18/21 17:19	1
Chlorobenzene	0.500	U	0.500		ug/L			08/18/21 17:19	1
Chloroethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
Chloroform	0.200	U	0.200		ug/L			08/18/21 17:19	1
Chloromethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
cis-1,2-Dichloroethene	**0.758**		0.200		ug/L			08/18/21 17:19	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/18/21 17:19	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
Ethylbenzene	0.500	U	0.500		ug/L			08/18/21 17:19	1
Freon 113	0.500	U	0.500		ug/L			08/18/21 17:19	1
m&p-Xylene	0.500	U	0.500		ug/L			08/18/21 17:19	1
Methylene Chloride	0.500	U	0.500		ug/L			08/18/21 17:19	1
o-Xylene	0.500	U	0.500		ug/L			08/18/21 17:19	1
Styrene	0.500	U	0.500		ug/L			08/18/21 17:19	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/18/21 17:19	1
Toluene	0.200	U	0.200		ug/L			08/18/21 17:19	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 17:19	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/18/21 17:19	1

Client Sample ID: BOP-59i-0821

Lab Sample ID: 410-50825-4

Date Collected: 08/09/21 12:35

Matrix: Water

Date Received: 08/11/21 10:29

Method: 8260C LL - Volatile Organic Compounds by GC/MS - RA (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**0.665**		0.200		ug/L			08/18/21 17:19	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/18/21 17:19	1
Vinyl acetate	0.500	U	0.500		ug/L			08/18/21 17:19	1
Vinyl chloride	**5.10**		0.200		ug/L			08/18/21 17:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*08/18/21 17:19*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*		*08/18/21 17:19*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*08/18/21 17:19*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/18/21 17:19*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.337	U	0.337		ug/L		08/13/21 09:45	08/20/21 12:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*106*		*10 - 110*	*08/13/21 09:45*	*08/20/21 12:37*	*1*
Fluoranthene-d10 (Surr)	*44*	*S1-*	*47 - 128*	*08/13/21 09:45*	*08/20/21 12:37*	*1*
1-Methylnaphthalene-d10 (Surr)	*97*		*36 - 111*	*08/13/21 09:45*	*08/20/21 12:37*	*1*

Client Sample ID: BOP-57ia-0821

Lab Sample ID: 410-50825-5

Date Collected: 08/09/21 14:00

Matrix: Water

Date Received: 08/11/21 10:29

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/16/21 23:24	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/16/21 23:24	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 23:24	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/16/21 23:24	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/16/21 23:24	1
2-Butanone	5.00	U	5.00		ug/L			08/16/21 23:24	1
2-Hexanone	5.00	U	5.00		ug/L			08/16/21 23:24	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			08/16/21 23:24	1
Acetone	5.00	U	5.00		ug/L			08/16/21 23:24	1
Benzene	0.200	U	0.200		ug/L			08/16/21 23:24	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
Bromoform	1.00	U	1.00		ug/L			08/16/21 23:24	1
Bromomethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
Carbon disulfide	0.500	U	0.500		ug/L			08/16/21 23:24	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/16/21 23:24	1
Chlorobenzene	0.500	U	0.500		ug/L			08/16/21 23:24	1
Chloroethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
Chloroform	0.200	U	0.200		ug/L			08/16/21 23:24	1
Chloromethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
cis-1,2-Dichloroethene	**1.27**		0.200		ug/L			08/16/21 23:24	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/16/21 23:24	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
Ethylbenzene	0.500	U	0.500		ug/L			08/16/21 23:24	1

Client Sample ID: BOP-57ia-0821

Lab Sample ID: 410-50825-5

Date Collected: 08/09/21 14:00

Matrix: Water

Date Received: 08/11/21 10:29

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Freon 113	0.500	U	0.500		ug/L			08/16/21 23:24	1
m&p-Xylene	0.500	U	0.500		ug/L			08/16/21 23:24	1
Methylene Chloride	0.500	U	0.500		ug/L			08/16/21 23:24	1
o-Xylene	0.500	U	0.500		ug/L			08/16/21 23:24	1
Styrene	0.500	U	0.500		ug/L			08/16/21 23:24	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/16/21 23:24	1
Toluene	0.200	U	0.200		ug/L			08/16/21 23:24	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 23:24	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/16/21 23:24	1
Trichloroethene	**0.327**		0.200		ug/L			08/16/21 23:24	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/16/21 23:24	1
Vinyl acetate	0.500	U	0.500		ug/L			08/16/21 23:24	1
Vinyl chloride	**3.00**		0.200		ug/L			08/16/21 23:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*08/16/21 23:24*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*08/16/21 23:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*08/16/21 23:24*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/16/21 23:24*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.342	U	0.342		ug/L		08/13/21 09:45	08/20/21 13:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*74*		*10 - 110*	*08/13/21 09:45*	*08/20/21 13:07*	*1*
Fluoranthene-d10 (Surr)	*95*		*47 - 128*	*08/13/21 09:45*	*08/20/21 13:07*	*1*
1-Methylnaphthalene-d10 (Surr)	*91*		*36 - 111*	*08/13/21 09:45*	*08/20/21 13:07*	*1*

Client Sample ID: BOP-73i-0821

Lab Sample ID: 410-50825-6

Date Collected: 08/10/21 12:35

Matrix: Water

Date Received: 08/11/21 10:29

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
1,1,2,2-Tetrachloroethane	4.00	U	4.00		ug/L			08/17/21 05:26	20
1,1,2-Trichloroethane	4.00	U	4.00		ug/L			08/17/21 05:26	20
1,1-Dichloroethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
1,1-Dichloroethene	4.00	U	4.00		ug/L			08/17/21 05:26	20
1,2-Dichloroethane	4.00	U	4.00		ug/L			08/17/21 05:26	20
1,2-Dichloropropane	10.0	U	10.0		ug/L			08/17/21 05:26	20
2-Butanone	100	U	100		ug/L			08/17/21 05:26	20
2-Hexanone	100	U	100		ug/L			08/17/21 05:26	20
4-Methyl-2-pentanone	100	U	100		ug/L			08/17/21 05:26	20
Acetone	100	U	100		ug/L			08/17/21 05:26	20
Benzene	4.00	U	4.00		ug/L			08/17/21 05:26	20
Bromodichloromethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
Bromoform	20.0	U	20.0		ug/L			08/17/21 05:26	20
Bromomethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
Carbon disulfide	10.0	U	10.0		ug/L			08/17/21 05:26	20

Client Sample ID: BOP-73i-0821

Date Collected: 08/10/21 12:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-6

Matrix: Water

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	4.00	U	4.00		ug/L			08/17/21 05:26	20
Chlorobenzene	10.0	U	10.0		ug/L			08/17/21 05:26	20
Chloroethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
Chloroform	4.00	U	4.00		ug/L			08/17/21 05:26	20
Chloromethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
cis-1,2-Dichloroethene	**93.0**		4.00		ug/L			08/17/21 05:26	20
cis-1,3-Dichloropropene	4.00	U	4.00		ug/L			08/17/21 05:26	20
Dibromochloromethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
Ethylbenzene	10.0	U	10.0		ug/L			08/17/21 05:26	20
Freon 113	10.0	U	10.0		ug/L			08/17/21 05:26	20
m&p-Xylene	10.0	U	10.0		ug/L			08/17/21 05:26	20
Methylene Chloride	10.0	U	10.0		ug/L			08/17/21 05:26	20
o-Xylene	10.0	U	10.0		ug/L			08/17/21 05:26	20
Styrene	10.0	U	10.0		ug/L			08/17/21 05:26	20
Tetrachloroethene	4.00	U	4.00		ug/L			08/17/21 05:26	20
Toluene	4.00	U	4.00		ug/L			08/17/21 05:26	20
trans-1,2-Dichloroethene	**25.8**		4.00		ug/L			08/17/21 05:26	20
trans-1,3-Dichloropropene	4.00	U	4.00		ug/L			08/17/21 05:26	20
Trichloroethene	4.00	U	4.00		ug/L			08/17/21 05:26	20
Trichlorofluoromethane	10.0	U	10.0		ug/L			08/17/21 05:26	20
Vinyl acetate	10.0	U	10.0		ug/L			08/17/21 05:26	20
Vinyl chloride	**749**	**E**	4.00		ug/L			08/17/21 05:26	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*08/17/21 05:26*	*20*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*08/17/21 05:26*	*20*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*08/17/21 05:26*	*20*
Toluene-d8 (Surr)	*97*		*80 - 120*		*08/17/21 05:26*	*20*

Method: 8260C LL - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	100	U	100		ug/L			08/17/21 05:48	200
1,1,2,2-Tetrachloroethane	40.0	U	40.0		ug/L			08/17/21 05:48	200
1,1,2-Trichloroethane	40.0	U	40.0		ug/L			08/17/21 05:48	200
1,1-Dichloroethane	100	U	100		ug/L			08/17/21 05:48	200
1,1-Dichloroethene	40.0	U	40.0		ug/L			08/17/21 05:48	200
1,2-Dichloroethane	40.0	U	40.0		ug/L			08/17/21 05:48	200
1,2-Dichloropropane	100	U	100		ug/L			08/17/21 05:48	200
2-Butanone	1000	U	1000		ug/L			08/17/21 05:48	200
2-Hexanone	1000	U	1000		ug/L			08/17/21 05:48	200
4-Methyl-2-pentanone	1000	U	1000		ug/L			08/17/21 05:48	200
Acetone	1000	U	1000		ug/L			08/17/21 05:48	200
Benzene	40.0	U	40.0		ug/L			08/17/21 05:48	200
Bromodichloromethane	100	U	100		ug/L			08/17/21 05:48	200
Bromoform	200	U	200		ug/L			08/17/21 05:48	200
Bromomethane	100	U	100		ug/L			08/17/21 05:48	200
Carbon disulfide	100	U	100		ug/L			08/17/21 05:48	200
Carbon tetrachloride	40.0	U	40.0		ug/L			08/17/21 05:48	200
Chlorobenzene	100	U	100		ug/L			08/17/21 05:48	200
Chloroethane	100	U	100		ug/L			08/17/21 05:48	200

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Client Sample ID: BOP-73i-0821

Date Collected: 08/10/21 12:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-6

Matrix: Water

Method: 8260C LL - Volatile Organic Compounds by GC/MS - DL (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	40.0	U	40.0		ug/L			08/17/21 05:48	200
Chloromethane	100	U	100		ug/L			08/17/21 05:48	200
cis-1,2-Dichloroethene	**101**		40.0		ug/L			08/17/21 05:48	200
cis-1,3-Dichloropropene	40.0	U	40.0		ug/L			08/17/21 05:48	200
Dibromochloromethane	100	U	100		ug/L			08/17/21 05:48	200
Ethylbenzene	100	U	100		ug/L			08/17/21 05:48	200
Freon 113	100	U	100		ug/L			08/17/21 05:48	200
m&p-Xylene	100	U	100		ug/L			08/17/21 05:48	200
Methylene Chloride	100	U	100		ug/L			08/17/21 05:48	200
o-Xylene	100	U	100		ug/L			08/17/21 05:48	200
Styrene	100	U	100		ug/L			08/17/21 05:48	200
Tetrachloroethene	40.0	U	40.0		ug/L			08/17/21 05:48	200
Toluene	40.0	U	40.0		ug/L			08/17/21 05:48	200
trans-1,2-Dichloroethene	40.0	U	40.0		ug/L			08/17/21 05:48	200
trans-1,3-Dichloropropene	40.0	U	40.0		ug/L			08/17/21 05:48	200
Trichloroethene	40.0	U	40.0		ug/L			08/17/21 05:48	200
Trichlorofluoromethane	100	U	100		ug/L			08/17/21 05:48	200
Vinyl acetate	100	U	100		ug/L			08/17/21 05:48	200
Vinyl chloride	**785**		40.0		ug/L			08/17/21 05:48	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 120*		*08/17/21 05:48*	*200*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*08/17/21 05:48*	*200*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*08/17/21 05:48*	*200*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/17/21 05:48*	*200*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.82**		0.382		ug/L		08/13/21 09:45	08/20/21 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Benzo(a)pyrene-d12 (Surr)	*66*		*10 - 110*	*08/13/21 09:45*	*08/20/21 13:37*	*1*
Fluoranthene-d10 (Surr)	*87*		*47 - 128*	*08/13/21 09:45*	*08/20/21 13:37*	*1*
1-Methylnaphthalene-d10 (Surr)	*85*		*36 - 111*	*08/13/21 09:45*	*08/20/21 13:37*	*1*

Surrogate Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	DBFM	BFB	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)	(80-120)
410-50825-1	Trip Blank1-0821	101	100	95	98
410-50825-2	D-08i-0821	101	100	96	98
410-50825-3	BOP-Dup1-0821	102	98	95	99
410-50825-4	BOP-59i-0821	95	99	95	97
410-50825-4 - RA	BOP-59i-0821	95	95	94	99
410-50825-5	BOP-57ia-0821	101	101	95	98
410-50825-6	BOP-73i-0821	100	100	95	97
410-50825-6 - DL	BOP-73i-0821	99	98	96	98
LCS 410-161003/5	Lab Control Sample	101	99	98	98
LCS 410-161003/7	Lab Control Sample	100	99	98	99
LCS 410-161671/4	Lab Control Sample	103	96	99	100
LCS 410-161671/7	Lab Control Sample	102	98	100	99
LCSD 410-161003/6	Lab Control Sample Dup	98	98	98	100
LCSD 410-161003/8	Lab Control Sample Dup	97	99	98	99
LCSD 410-161671/5	Lab Control Sample Dup	99	97	98	99
LCSD 410-161671/8	Lab Control Sample Dup	102	98	99	99
MB 410-161003/10	Method Blank	100	99	96	98
MB 410-161671/10	Method Blank	107	98	97	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		BAPd12	FLN10	MNPd10
Lab Sample ID	Client Sample ID	(10-110)	(47-128)	(36-111)
410-50825-2	D-08i-0821	87	89	82
410-50825-3	BOP-Dup1-0821	87	90	86
410-50825-4	BOP-59i-0821	106	44 S1-	97
410-50825-5	BOP-57ia-0821	74	95	91
410-50825-6	BOP-73i-0821	66	87	85
LCS 410-160043/2-A	Lab Control Sample	92	92	81
MB 410-160043/1-A	Method Blank	90	94	85

Surrogate Legend

BAPd12 = Benzo(a)pyrene-d12 (Surr)
FLN10 = Fluoranthene-d10 (Surr)
MNPd10 = 1-Methylnaphthalene-d10 (Surr)

Method: 8260C LL - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 410-161003/10
Matrix: Water
Analysis Batch: 161003

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/16/21 21:17	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/16/21 21:17	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 21:17	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/16/21 21:17	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/16/21 21:17	1
2-Butanone	5.00	U	5.00		ug/L			08/16/21 21:17	1
2-Hexanone	5.00	U	5.00		ug/L			08/16/21 21:17	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			08/16/21 21:17	1
Acetone	5.00	U	5.00		ug/L			08/16/21 21:17	1
Benzene	0.200	U	0.200		ug/L			08/16/21 21:17	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
Bromoform	1.00	U	1.00		ug/L			08/16/21 21:17	1
Bromomethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
Carbon disulfide	0.500	U	0.500		ug/L			08/16/21 21:17	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/16/21 21:17	1
Chlorobenzene	0.500	U	0.500		ug/L			08/16/21 21:17	1
Chloroethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
Chloroform	0.200	U	0.200		ug/L			08/16/21 21:17	1
Chloromethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 21:17	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/16/21 21:17	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
Ethylbenzene	0.500	U	0.500		ug/L			08/16/21 21:17	1
Freon 113	0.500	U	0.500		ug/L			08/16/21 21:17	1
m&p-Xylene	0.500	U	0.500		ug/L			08/16/21 21:17	1
Methylene Chloride	0.500	U	0.500		ug/L			08/16/21 21:17	1
o-Xylene	0.500	U	0.500		ug/L			08/16/21 21:17	1
Styrene	0.500	U	0.500		ug/L			08/16/21 21:17	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/16/21 21:17	1
Toluene	0.200	U	0.200		ug/L			08/16/21 21:17	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/16/21 21:17	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/16/21 21:17	1
Trichloroethene	0.200	U	0.200		ug/L			08/16/21 21:17	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/16/21 21:17	1
Vinyl acetate	0.500	U	0.500		ug/L			08/16/21 21:17	1
Vinyl chloride	0.200	U	0.200		ug/L			08/16/21 21:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*08/16/21 21:17*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*08/16/21 21:17*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*08/16/21 21:17*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/16/21 21:17*	*1*

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 410-161003/5
Matrix: Water
Analysis Batch: 161003

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	5.00	4.472		ug/L		89	78 - 126
1,1,2,2-Tetrachloroethane	5.00	4.864		ug/L		97	75 - 123
1,1,2-Trichloroethane	5.00	4.712		ug/L		94	80 - 120
1,1-Dichloroethane	5.00	4.405		ug/L		88	74 - 120
1,1-Dichloroethene	5.00	4.958		ug/L		99	80 - 131
1,2-Dichloroethane	5.00	4.190		ug/L		84	69 - 122
1,2-Dichloropropane	5.00	4.444		ug/L		89	80 - 120
2-Butanone	62.5	54.43		ug/L		87	59 - 141
2-Hexanone	62.5	55.74		ug/L		89	52 - 140
4-Methyl-2-pentanone	62.5	53.36		ug/L		85	55 - 140
Acetone	62.5	48.83		ug/L		78	60 - 146
Benzene	5.00	4.577		ug/L		92	80 - 120
Bromodichloromethane	5.00	4.620		ug/L		92	73 - 124
Bromoform	5.00	4.518		ug/L		90	49 - 144
Bromomethane	5.00	5.374		ug/L		107	60 - 136
Carbon disulfide	5.00	4.701		ug/L		94	67 - 130
Carbon tetrachloride	5.00	4.551		ug/L		91	64 - 141
Chlorobenzene	5.00	4.648		ug/L		93	80 - 120
Chloroethane	5.00	4.915		ug/L		98	63 - 120
Chloroform	5.00	4.596		ug/L		92	80 - 120
Chloromethane	5.00	4.846		ug/L		97	56 - 124
cis-1,2-Dichloroethene	5.00	4.643		ug/L		93	80 - 122
cis-1,3-Dichloropropene	5.00	4.514		ug/L		90	67 - 121
Dibromochloromethane	5.00	4.631		ug/L		93	64 - 138
Ethylbenzene	5.00	4.499		ug/L		90	80 - 120
Freon 113	5.00	4.638		ug/L		93	75 - 133
m&p-Xylene	10.0	9.159		ug/L		92	80 - 120
Methylene Chloride	5.00	4.695		ug/L		94	80 - 120
o-Xylene	5.00	4.524		ug/L		90	80 - 120
Styrene	5.00	4.575		ug/L		92	80 - 120
Tetrachloroethene	5.00	4.350		ug/L		87	80 - 120
Toluene	5.00	4.512		ug/L		90	80 - 120
trans-1,2-Dichloroethene	5.00	4.640		ug/L		93	80 - 122
trans-1,3-Dichloropropene	5.00	4.653		ug/L		93	61 - 129
Trichloroethene	5.00	4.530		ug/L		91	80 - 120
Trichlorofluoromethane	5.00	4.954		ug/L		99	62 - 136
Vinyl chloride	5.00	5.438		ug/L		109	60 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Toluene-d8 (Surr)	*98*		*80 - 120*

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 410-161003/7
Matrix: Water
Analysis Batch: 161003

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl acetate			12.5	10.80		ug/L		86	38 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: LCSD 410-161003/6
Matrix: Water
Analysis Batch: 161003

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			5.00	4.413		ug/L		88	78 - 126	1	30
1,1,2,2-Tetrachloroethane			5.00	4.787		ug/L		96	75 - 123	2	30
1,1,2-Trichloroethane			5.00	4.724		ug/L		94	80 - 120	0	30
1,1-Dichloroethane			5.00	4.322		ug/L		86	74 - 120	2	30
1,1-Dichloroethene			5.00	4.900		ug/L		98	80 - 131	1	30
1,2-Dichloroethane			5.00	4.004		ug/L		80	69 - 122	5	30
1,2-Dichloropropane			5.00	4.373		ug/L		87	80 - 120	2	30
2-Butanone			62.5	50.05		ug/L		80	59 - 141	8	30
2-Hexanone			62.5	50.55		ug/L		81	52 - 140	10	30
4-Methyl-2-pentanone			62.5	49.74		ug/L		80	55 - 140	7	30
Acetone			62.5	46.26		ug/L		74	60 - 146	5	30
Benzene			5.00	4.450		ug/L		89	80 - 120	3	30
Bromodichloromethane			5.00	4.438		ug/L		89	73 - 124	4	30
Bromoform			5.00	4.463		ug/L		89	49 - 144	1	30
Bromomethane			5.00	5.397		ug/L		108	60 - 136	0	30
Carbon disulfide			5.00	4.664		ug/L		93	67 - 130	1	30
Carbon tetrachloride			5.00	4.446		ug/L		89	64 - 141	2	30
Chlorobenzene			5.00	4.540		ug/L		91	80 - 120	2	30
Chloroethane			5.00	4.974		ug/L		99	63 - 120	1	30
Chloroform			5.00	4.450		ug/L		89	80 - 120	3	30
Chloromethane			5.00	4.829		ug/L		97	56 - 124	0	30
cis-1,2-Dichloroethene			5.00	4.581		ug/L		92	80 - 122	1	30
cis-1,3-Dichloropropene			5.00	4.402		ug/L		88	67 - 121	3	30
Dibromochloromethane			5.00	4.584		ug/L		92	64 - 138	1	30
Ethylbenzene			5.00	4.485		ug/L		90	80 - 120	0	30
Freon 113			5.00	4.571		ug/L		91	75 - 133	1	30
m&p-Xylene			10.0	9.123		ug/L		91	80 - 120	0	30
Methylene Chloride			5.00	4.645		ug/L		93	80 - 120	1	30
o-Xylene			5.00	4.528		ug/L		91	80 - 120	0	30
Styrene			5.00	4.542		ug/L		91	80 - 120	1	30
Tetrachloroethene			5.00	4.347		ug/L		87	80 - 120	0	30
Toluene			5.00	4.471		ug/L		89	80 - 120	1	30
trans-1,2-Dichloroethene			5.00	4.559		ug/L		91	80 - 122	2	30
trans-1,3-Dichloropropene			5.00	4.620		ug/L		92	61 - 129	1	30
Trichloroethene			5.00	4.432		ug/L		89	80 - 120	2	30

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 410-161003/6
Matrix: Water
Analysis Batch: 161003

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichlorofluoromethane			5.00	4.905		ug/L		98	62 - 136	1	30
Vinyl chloride			5.00	5.396		ug/L		108	60 - 125	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: LCSD 410-161003/8
Matrix: Water
Analysis Batch: 161003

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl acetate			12.5	9.774		ug/L		78	38 - 145	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: MB 410-161671/10
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200		ug/L			08/18/21 12:10	1
1,1,2-Trichloroethane	0.200	U	0.200		ug/L			08/18/21 12:10	1
1,1-Dichloroethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
1,1-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 12:10	1
1,2-Dichloroethane	0.200	U	0.200		ug/L			08/18/21 12:10	1
1,2-Dichloropropane	0.500	U	0.500		ug/L			08/18/21 12:10	1
2-Butanone	5.00	U	5.00		ug/L			08/18/21 12:10	1
2-Hexanone	5.00	U	5.00		ug/L			08/18/21 12:10	1
4-Methyl-2-pentanone	5.00	U	5.00		ug/L			08/18/21 12:10	1
Acetone	5.00	U	5.00		ug/L			08/18/21 12:10	1
Benzene	0.200	U	0.200		ug/L			08/18/21 12:10	1
Bromodichloromethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
Bromoform	1.00	U	1.00		ug/L			08/18/21 12:10	1
Bromomethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
Carbon disulfide	0.500	U	0.500		ug/L			08/18/21 12:10	1
Carbon tetrachloride	0.200	U	0.200		ug/L			08/18/21 12:10	1
Chlorobenzene	0.500	U	0.500		ug/L			08/18/21 12:10	1
Chloroethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
Chloroform	0.200	U	0.200		ug/L			08/18/21 12:10	1
Chloromethane	0.500	U	0.500		ug/L			08/18/21 12:10	1

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 410-161671/10
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 12:10	1
cis-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/18/21 12:10	1
Dibromochloromethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
Ethylbenzene	0.500	U	0.500		ug/L			08/18/21 12:10	1
Freon 113	0.500	U	0.500		ug/L			08/18/21 12:10	1
m&p-Xylene	0.500	U	0.500		ug/L			08/18/21 12:10	1
Methylene Chloride	0.500	U	0.500		ug/L			08/18/21 12:10	1
o-Xylene	0.500	U	0.500		ug/L			08/18/21 12:10	1
Styrene	0.500	U	0.500		ug/L			08/18/21 12:10	1
Tetrachloroethene	0.200	U	0.200		ug/L			08/18/21 12:10	1
Toluene	0.200	U	0.200		ug/L			08/18/21 12:10	1
trans-1,2-Dichloroethene	0.200	U	0.200		ug/L			08/18/21 12:10	1
trans-1,3-Dichloropropene	0.200	U	0.200		ug/L			08/18/21 12:10	1
Trichloroethene	0.200	U	0.200		ug/L			08/18/21 12:10	1
Trichlorofluoromethane	0.500	U	0.500		ug/L			08/18/21 12:10	1
Vinyl acetate	0.500	U	0.500		ug/L			08/18/21 12:10	1
Vinyl chloride	0.200	U	0.200		ug/L			08/18/21 12:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 120*		*08/18/21 12:10*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*08/18/21 12:10*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*08/18/21 12:10*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/18/21 12:10*	*1*

Lab Sample ID: LCS 410-161671/4
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	5.00	5.006		ug/L		100	78 - 126
1,1,2,2-Tetrachloroethane	5.00	5.608		ug/L		112	75 - 123
1,1,2-Trichloroethane	5.00	5.616		ug/L		112	80 - 120
1,1-Dichloroethane	5.00	4.900		ug/L		98	74 - 120
1,1-Dichloroethene	5.00	5.624		ug/L		112	80 - 131
1,2-Dichloroethane	5.00	5.009		ug/L		100	69 - 122
1,2-Dichloropropane	5.00	5.214		ug/L		104	80 - 120
2-Butanone	62.5	61.92		ug/L		99	59 - 141
2-Hexanone	62.5	65.83		ug/L		105	52 - 140
4-Methyl-2-pentanone	62.5	62.39		ug/L		100	55 - 140
Acetone	62.5	59.51		ug/L		95	60 - 146
Benzene	5.00	5.089		ug/L		102	80 - 120
Bromodichloromethane	5.00	5.288		ug/L		106	73 - 124
Bromoform	5.00	5.282		ug/L		106	49 - 144
Bromomethane	5.00	4.512		ug/L		90	60 - 136
Carbon disulfide	5.00	4.836		ug/L		97	67 - 130
Carbon tetrachloride	5.00	5.061		ug/L		101	64 - 141
Chlorobenzene	5.00	5.278		ug/L		106	80 - 120
Chloroethane	5.00	4.690		ug/L		94	63 - 120

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 410-161671/4
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloroform			5.00	5.123		ug/L		102	80 - 120		
Chloromethane			5.00	4.345		ug/L		87	56 - 124		
cis-1,2-Dichloroethene			5.00	5.190		ug/L		104	80 - 122		
cis-1,3-Dichloropropene			5.00	5.399		ug/L		108	67 - 121		
Dibromochloromethane			5.00	5.444		ug/L		109	64 - 138		
Ethylbenzene			5.00	5.115		ug/L		102	80 - 120		
Freon 113			5.00	5.341		ug/L		107	75 - 133		
m&p-Xylene			10.0	10.52		ug/L		105	80 - 120		
Methylene Chloride			5.00	4.991		ug/L		100	80 - 120		
o-Xylene			5.00	5.055		ug/L		101	80 - 120		
Styrene			5.00	5.394		ug/L		108	80 - 120		
Tetrachloroethene			5.00	5.168		ug/L		103	80 - 120		
Toluene			5.00	5.115		ug/L		102	80 - 120		
trans-1,2-Dichloroethene			5.00	5.089		ug/L		102	80 - 122		
trans-1,3-Dichloropropene			5.00	5.831		ug/L		117	61 - 129		
Trichloroethene			5.00	5.047		ug/L		101	80 - 120		
Trichlorofluoromethane			5.00	4.752		ug/L		95	62 - 136		
Vinyl chloride			5.00	4.447		ug/L		89	60 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: LCS 410-161671/7
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl acetate			12.5	13.40		ug/L		107	38 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: LCSD 410-161671/5
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			5.00	5.099		ug/L		102	78 - 126	2	30
1,1,2,2-Tetrachloroethane			5.00	5.368		ug/L		107	75 - 123	4	30
1,1,2-Trichloroethane			5.00	5.401		ug/L		108	80 - 120	4	30
1,1-Dichloroethane			5.00	4.913		ug/L		98	74 - 120	0	30
1,1-Dichloroethene			5.00	5.189		ug/L		104	80 - 131	8	30

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 410-161671/5
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dichloroethane			5.00	5.032		ug/L		101	69 - 122	0	30
1,2-Dichloropropane			5.00	5.167		ug/L		103	80 - 120	1	30
2-Butanone			62.5	66.43		ug/L		106	59 - 141	7	30
2-Hexanone			62.5	71.25		ug/L		114	52 - 140	8	30
4-Methyl-2-pentanone			62.5	67.41		ug/L		108	55 - 140	8	30
Acetone			62.5	55.68		ug/L		89	60 - 146	7	30
Benzene			5.00	5.087		ug/L		102	80 - 120	0	30
Bromodichloromethane			5.00	5.230		ug/L		105	73 - 124	1	30
Bromoform			5.00	5.049		ug/L		101	49 - 144	5	30
Bromomethane			5.00	4.703		ug/L		94	60 - 136	4	30
Carbon disulfide			5.00	4.866		ug/L		97	67 - 130	1	30
Carbon tetrachloride			5.00	5.159		ug/L		103	64 - 141	2	30
Chlorobenzene			5.00	5.208		ug/L		104	80 - 120	1	30
Chloroethane			5.00	4.621		ug/L		92	63 - 120	2	30
Chloroform			5.00	5.091		ug/L		102	80 - 120	1	30
Chloromethane			5.00	4.587		ug/L		92	56 - 124	5	30
cis-1,2-Dichloroethene			5.00	5.160		ug/L		103	80 - 122	1	30
cis-1,3-Dichloropropene			5.00	5.322		ug/L		106	67 - 121	1	30
Dibromochloromethane			5.00	5.258		ug/L		105	64 - 138	3	30
Ethylbenzene			5.00	5.090		ug/L		102	80 - 120	0	30
Freon 113			5.00	5.060		ug/L		101	75 - 133	5	30
m&p-Xylene			10.0	10.44		ug/L		104	80 - 120	1	30
Methylene Chloride			5.00	5.035		ug/L		101	80 - 120	1	30
o-Xylene			5.00	5.036		ug/L		101	80 - 120	0	30
Styrene			5.00	5.349		ug/L		107	80 - 120	1	30
Tetrachloroethene			5.00	5.106		ug/L		102	80 - 120	1	30
Toluene			5.00	5.108		ug/L		102	80 - 120	0	30
trans-1,2-Dichloroethene			5.00	5.112		ug/L		102	80 - 122	0	30
trans-1,3-Dichloropropene			5.00	5.665		ug/L		113	61 - 129	3	30
Trichloroethene			5.00	5.059		ug/L		101	80 - 120	0	30
Trichlorofluoromethane			5.00	4.913		ug/L		98	62 - 136	3	30
Vinyl chloride			5.00	4.615		ug/L		92	60 - 125	4	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*97*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: LCSD 410-161671/8
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl acetate			12.5	13.51		ug/L		108	38 - 145	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*

Method: 8260C LL - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 410-161671/8
Matrix: Water
Analysis Batch: 161671

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 410-160043/1-A
Matrix: Water
Analysis Batch: 161623

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 160043

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.300	U	0.300		ug/L		08/13/21 09:45	08/18/21 05:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Benzo(a)pyrene-d12 (Surr)	*90*		*10 - 110*	*08/13/21 09:45*	*08/18/21 05:55*	*1*
Fluoranthene-d10 (Surr)	*94*		*47 - 128*	*08/13/21 09:45*	*08/18/21 05:55*	*1*
1-Methylnaphthalene-d10 (Surr)	*85*		*36 - 111*	*08/13/21 09:45*	*08/18/21 05:55*	*1*

Lab Sample ID: LCS 410-160043/2-A
Matrix: Water
Analysis Batch: 161623

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 160043

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	0.6881		ug/L		69	23 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Benzo(a)pyrene-d12 (Surr)	*92*		*10 - 110*
Fluoranthene-d10 (Surr)	*92*		*47 - 128*
1-Methylnaphthalene-d10 (Surr)	*81*		*36 - 111*

QC Association Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

GC/MS VOA

Analysis Batch: 161003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-50825-1	Trip Blank1-0821	Total/NA	Water	8260C LL	
410-50825-2	D-08i-0821	Total/NA	Water	8260C LL	
410-50825-4	BOP-59i-0821	Total/NA	Water	8260C LL	
410-50825-5	BOP-57ia-0821	Total/NA	Water	8260C LL	
410-50825-6	BOP-73i-0821	Total/NA	Water	8260C LL	
410-50825-6 - DL	BOP-73i-0821	Total/NA	Water	8260C LL	
MB 410-161003/10	Method Blank	Total/NA	Water	8260C LL	
LCS 410-161003/5	Lab Control Sample	Total/NA	Water	8260C LL	
LCS 410-161003/7	Lab Control Sample	Total/NA	Water	8260C LL	
LCSD 410-161003/6	Lab Control Sample Dup	Total/NA	Water	8260C LL	
LCSD 410-161003/8	Lab Control Sample Dup	Total/NA	Water	8260C LL	

Analysis Batch: 161671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-50825-3	BOP-Dup1-0821	Total/NA	Water	8260C LL	
410-50825-4 - RA	BOP-59i-0821	Total/NA	Water	8260C LL	
MB 410-161671/10	Method Blank	Total/NA	Water	8260C LL	
LCS 410-161671/4	Lab Control Sample	Total/NA	Water	8260C LL	
LCS 410-161671/7	Lab Control Sample	Total/NA	Water	8260C LL	
LCSD 410-161671/5	Lab Control Sample Dup	Total/NA	Water	8260C LL	
LCSD 410-161671/8	Lab Control Sample Dup	Total/NA	Water	8260C LL	

GC/MS Semi VOA

Prep Batch: 160043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-50825-2	D-08i-0821	Total/NA	Water	3510C	
410-50825-3	BOP-Dup1-0821	Total/NA	Water	3510C	
410-50825-4	BOP-59i-0821	Total/NA	Water	3510C	
410-50825-5	BOP-57ia-0821	Total/NA	Water	3510C	
410-50825-6	BOP-73i-0821	Total/NA	Water	3510C	
MB 410-160043/1-A	Method Blank	Total/NA	Water	3510C	
LCS 410-160043/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 161623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 410-160043/1-A	Method Blank	Total/NA	Water	8270E SIM	160043
LCS 410-160043/2-A	Lab Control Sample	Total/NA	Water	8270E SIM	160043

Analysis Batch: 162676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-50825-2	D-08i-0821	Total/NA	Water	8270E SIM	160043
410-50825-3	BOP-Dup1-0821	Total/NA	Water	8270E SIM	160043
410-50825-4	BOP-59i-0821	Total/NA	Water	8270E SIM	160043
410-50825-5	BOP-57ia-0821	Total/NA	Water	8270E SIM	160043
410-50825-6	BOP-73i-0821	Total/NA	Water	8270E SIM	160043

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Client Sample ID: Trip Blank1-0821
Date Collected: 08/09/21 00:00
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		1	161003	08/16/21 21:59	K4WN	ELLE

Client Sample ID: D-08i-0821
Date Collected: 08/09/21 10:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		1	161003	08/17/21 03:19	K4WN	ELLE
Total/NA	Prep	3510C			160043	08/13/21 09:45	R9CT	ELLE
Total/NA	Analysis	8270E SIM		1	162676	08/20/21 11:36	X3ZL	ELLE

Client Sample ID: BOP-Dup1-0821
Date Collected: 08/09/21 10:38
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		1	161671	08/18/21 16:57	J5QQ	ELLE
Total/NA	Prep	3510C			160043	08/13/21 09:45	R9CT	ELLE
Total/NA	Analysis	8270E SIM		1	162676	08/20/21 12:07	X3ZL	ELLE

Client Sample ID: BOP-59i-0821
Date Collected: 08/09/21 12:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL	RA	1	161671	08/18/21 17:19	J5QQ	ELLE
Total/NA	Analysis	8260C LL		1	161003	08/17/21 04:44	K4WN	ELLE
Total/NA	Prep	3510C			160043	08/13/21 09:45	R9CT	ELLE
Total/NA	Analysis	8270E SIM		1	162676	08/20/21 12:37	X3ZL	ELLE

Client Sample ID: BOP-57ia-0821
Date Collected: 08/09/21 14:00
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		1	161003	08/16/21 23:24	K4WN	ELLE
Total/NA	Prep	3510C			160043	08/13/21 09:45	R9CT	ELLE
Total/NA	Analysis	8270E SIM		1	162676	08/20/21 13:07	X3ZL	ELLE

Client Sample ID: BOP-73i-0821
Date Collected: 08/10/21 12:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL		20	161003	08/17/21 05:26	K4WN	ELLE

Lab Chronicle

Client: Landau & Associates, Inc.
Job ID: 410-50825-1
Project/Site: Boeing Portland, Annual GW Event

Client Sample ID: BOP-73i-0821
Date Collected: 08/10/21 12:35
Date Received: 08/11/21 10:29

Lab Sample ID: 410-50825-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C LL	DL	200	161003	08/17/21 05:48	K4WN	ELLE
Total/NA	Prep	3510C			160043	08/13/21 09:45	R9CT	ELLE
Total/NA	Analysis	8270E SIM		1	162676	08/20/21 13:37	X3ZL	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Landau & Associates, Inc. Job ID: 410-50825-1
Project/Site: Boeing Portland, Annual GW Event

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	PA200001-018	09-11-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E SIM	3510C	Water	1,4-Dioxane

Method Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Method	Method Description	Protocol	Laboratory
8260C LL	Volatile Organic Compounds by GC/MS	SW846	ELLE
8270E SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	ELLE
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	ELLE
5030C	Purge and Trap	SW846	ELLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Landau & Associates, Inc.
Project/Site: Boeing Portland, Annual GW Event

Job ID: 410-50825-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-50825-1	Trip Blank1-0821	Water	08/09/21 00:00	08/11/21 10:29
410-50825-2	D-08i-0821	Water	08/09/21 10:35	08/11/21 10:29
410-50825-3	BOP-Dup1-0821	Water	08/09/21 10:38	08/11/21 10:29
410-50825-4	BOP-59i-0821	Water	08/09/21 12:35	08/11/21 10:29
410-50825-5	BOP-57ia-0821	Water	08/09/21 14:00	08/11/21 10:29
410-50825-6	BOP-73i-0821	Water	08/10/21 12:35	08/11/21 10:29

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Phone (717) 656-2300

Chain of Custody Record

410-50825 Chain of Custody

eurofins | Environment Testing America

Client Information	Sampler: JEC/EMW	Lab PM: Badman, Vanessa	COC No: 410-29675-9229.6
Client Contact: Deborah Taege	Phone:	E-Mail: vanessa.badman@eurofinset.com	Page: Page ~~6 of 29~~ 1 of 1
Company: The Boeing Company	PWSID:		Job #:
Address: Support Services PO BOX 34083	Due Date Requested:		
City: Seattle	TAT Requested (days): Standard		
State, Zip: WA, 98124	Compliance Project: Δ Yes Δ No		
Phone:	PO #: 025116.120.412		
Email: deborah.a.taege@boeing.com	WO #:		
Project Name: Boeing Portland, Annual GW Event	Project #: 41003196		
Site: Oregon	SSOW#:		

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C_LL - Boeing 38 8260C	5310C - (MOD) Total Organic Carbon	300_ORGFMS - Nitrate 300.0	300_ORGFMS - Nitrate, Nitrite	300_ORGFM_28D - Chloride/Sulfate by 300.0	RSK_175 - (MOD) AMEE RSK-175	SM4500NH3_D - Local Method	6010D - Total Iron 6010D	6010D - Dissolved Iron 6010D	NWTPH_Dx - (MOD) Local Method	1664A_NP - Oil & Grease and TPH	365.1 - (MOD) Total Phosphorus	8270E_SIM - 1,4-Dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		N	N	N	A	S	D	D	A	A	S	N		
TripBlank1-0821	—	—	—	W			X													2	Please see LIMS
D-08i-0821	8/9/21	1035	G	W			X												X	4	list for contacts
BOP-Dup1-0821	8/9/21	1038	G	W			X												X	5	to send results
BOP-59i-0821	8/9/21	1235	G	W			X												X	4	
BOP-57ia-0821	8/9/21	1400	G	W			X												X	5	
BOP-73i-0821	8/10/21	1235	G	W			X												X	5	

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by: Jessica Cavanaugh	Date/Time: 8/10/21 1545	Company: Landau Associates	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 8/11/21 1029	Company: FLE

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1.5

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 410-50825-1

Login Number: 50825
List Number: 1
Creator: Moeller, Colin

List Source: Eurofins Lancaster Laboratories Env, LLC

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	True	

ATTACHMENT 2

Data Validation Memorandum

Technical Memorandum

TO: Evelyn Ives, Project Manager

FROM: Kristi Schultz and Danielle Jorgensen

DATE: October 15, 2021

RE: **Boeing Portland Troutdale Gravel Aquifer (TGA)**
Third Quarter 2021 Groundwater Quality Sampling
Laboratory Data Quality Evaluation

This technical memorandum provides the results of a focused data validation associated with 48 groundwater samples, 5 field duplicates, 12 trip blanks, 1 bag blank, and 23 vapor samples collected during the third quarter 2021 TGA sampling event at Boeing Portland. Samples were analyzed by Eurofins Lancaster Laboratories Environmental (ELLE), located in Lancaster, Pennsylvania, and Eurofins Air Toxics (Air Toxics) located in Folsom, California. This data quality evaluation covers ELLE data packages 410-47646-1, 410-50760-1, 410-50825-1, 410-50917-1, 410-51117-1, 410-51341-1, 410-51491-1, 410-51503-1, 410-51718-1, 410-51730-1, and 410-54137-1 and Air Toxics data package 2108531. Samples submitted to ELLE were analyzed for volatile organic compounds ([VOCs], US Environmental Protection Agency [EPA] Method SW8260C); semivolatile organic compounds (SVOCs; EPA Method 8270E with selected ion monitoring [SIM]); conventional inorganic parameters including N-Nitrate, N-Nitrite, and sulfate (EPA Method 300.0); total and dissolved iron (EPA Method 6010D); N-Ammonia (Method SM 4500 NH3D-2011); total organic carbon (Method SM 5310 C-2011); diesel- and motor oil-range petroleum hydrocarbons (Oregon Department of Environmental Quality [ODEQ]-approved Method NWTPH-Dx); and methane, ethane, ethane, and acetylene (MEEA; Modified RSK 175). Samples submitted to Air Toxics were analyzed for VOCs (EPA Method TO-15).

The verification and validation check was conducted with guidance from applicable portions of EPA's *National Functional Guidelines for Organic Superfund Methods Data Review* (EPA 2017b) and the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA 2017a). Landau Associates, Inc. (LAI) performed an EPA-equivalent Level IIA verification and validation check on each laboratory data package, which included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody record (COCs); identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.

- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below. Data qualifiers are summarized in Table 1.

Chain-of-Custody Records

A signed COC record was attached to the data packages. The laboratory received all samples in good condition. All analyses were performed as requested, with the following exceptions:

- Multiple trip blanks in multiple laboratory data packages were noted as being received by the laboratory containing headspace. Project sample results were not qualified based on this issue.
- The laboratory noted in the case narrative for laboratory data package 410-50760-1 that samples BOP-85i-0821 and BOP-87i-0821 were diluted during VOC analysis due to sample foaming at the time of sample purging. Elevated reporting limits were provided. No qualification of the data was determined necessary.
- The laboratory noted in the case narratives for data packages 410-50760-1, 410-51341-1, and 410-51718-1 that the vials used for the Trial 2 MEEA analyses of samples BOP-88i-0821, BOP-80i-0821, and E-3-0821 contained headspace. Associated reported results were qualified as estimated (J, UJ), as indicated in Table 1.
- Per the data package 410-50760-1 and 410-51341-1 case narratives, the sample vials used for the TOC and metals analyses for sample BOP-88i-0821, and the TOC analysis for sample E-7-0821, were received with a pH >2. Due to improper sample preservation, the reported results were qualified as estimated (J), as indicated in Table 1.
- The laboratory noted in the case narrative for data packages 410-50825-1 and 410-51117-1 that the vials used for the VOC reanalyses of samples BOP-59i-0821 and BOP-77i-0821 contained headspace. Results from these analytical batches will not be reported; no qualification of the data was determined necessary.
- The laboratory noted in the case narratives for data packages 410-50917-1 and 410-51718-1 that the vials used for the VOC reanalysis of samples BOP-W-0821 and LAI-8-0821 contained headspace. Associated reported results were qualified as estimated (J), as indicated in Table 1.
- The laboratory noted in the case narrative for data package 410-50917-1 that the vial used for the MEEA analysis of sample E-12-0821 contained headspace. Associated reported results were qualified as estimated (J, UJ), as indicated in Table 1.
- The laboratory noted in the case narrative for data package 410-51117-1 that the vial used for the VOC reanalysis of sample BOP-76i-0821 contained headspace. Associated reported results were qualified as estimated (J), as indicated in Table 1.
- The laboratory noted for samples BOP-74i-0821 and BOP-77i-0821 in data package 410-51117-1, the reporting limit check standard for total iron was outside acceptance limits, high biased. The associated sample results were qualified as estimated (J), as indicated in Table 1.

- The laboratory noted for sample BOP-74i-0821 and BOP-77i-0821 in data package 410-51117-1, the metals continuing calibration blank (CCB) was outside acceptance limits. Further communication with the laboratory determined the iron concentrations in the project samples was more than 10 times the concentration in the CCB. No qualification of the data was determined necessary.

No special cleanups or handling methods were requested.

Upon receipt by ELLE, the sample container information was compared to the associated chain-of-custody and the cooler temperatures were recorded. The coolers were received with temperatures within the EPA-recommended limit of ≤6°C. No qualification of the data was necessary.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within EPA- and project-specified holding times, with the following, exceptions:

- The laboratory noted in the case narrative for data packages 410-50760-1, 410-51117-1, and 410-410-51341-1 that preserved vials were submitted for the MEEA analysis for samples BOP-88i-0821, BOP-76i-0821, and E-7-0821; however, the pH at the time of analysis was 5. This shortens the hold time from 14 to 7 days. The analyses were completed within the shortened hold time; no qualification of the data was necessary.
- Per the data package 410-51341-1 case narrative, samples BOP-80i-0821 and BOP-81i-0821 were analyzed for nitrate outside the method-recommended hold time due to analyst error. Associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- Per the data package 410-51491-1, 410-51503-1, and 410-51718-1 case narratives, multiple samples were analyzed for nitrate outside the method-recommended hold time due to failure of quality control parameters in the original analysis. Associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- Per the data package 410-51718-1 case narrative, a preserved vial was submitted for the VOC analysis for LAI-4-0821; however, at the time of analysis, the pH was >2. This shortens the hold time from 14 to 7 days; the sample was analyzed within the shortened hold time. No qualification of the data was necessary.

Blank Results

Laboratory Method Blanks

At least one method blank was analyzed with each batch of samples for analysis. Target analytes were not detected at concentrations greater than the reporting limits in the associated method blanks. No qualification of the data was necessary.

Field Trip Blanks and Field Equipment Blanks

Twelve trip blanks were submitted to the laboratory for VOC analysis with the sample batches. Target analytes were not detected at concentrations greater than the reporting limits in the trip blanks, with the following exceptions:

- Methylene chloride was detected in the trip blank associated with laboratory data package 410-47646-1. Methylene chloride was not detected in the associated samples at concentrations greater than the laboratory reporting limit. No qualification of the data was necessary.

No field equipment blanks were submitted for analysis with these sample batches.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the organics analyses. Recovery values for the surrogate spikes were within the current laboratory-specified control limits for all project samples, with the following exceptions:

- Recoveries of the surrogate propene associated with the MEEA initial and reanalysis of sample BOP-88i-0821 in data package 410-50760-1 were greater than the laboratory-specified control limits. The reanalysis results were qualified as "do not report" (DNR), as indicated in Table 1. Reported results from the original analysis were qualified as estimated (J), as indicated in Table 1.
- Recovery of the surrogate fluoranthene-d10 associated with the SVOC analysis of sample BOP-59i-0821 in data package 410-50825-1 was less than the laboratory-specified control limits. EPA National Functional Guidelines recommend two or more surrogates of the same fraction be out of limits before qualification; no qualification of the data was determined necessary.
- Recoveries of the surrogate propene associated with the MEEA initial and reanalysis of sample E-7-0821 in data package 410-51341-1 were greater than the laboratory-specified control limits. The reanalysis results were qualified as "do not report" (DNR), as indicated in Table 1. Detected concentrations from the original analysis will not be reported; therefore, no qualification of the data was necessary.
- The case narrative for data package 410-51718-1 indicates the surrogate recovery was out of limits for the laboratory duplicate associated with the diesel- and motor oil-range petroleum hydrocarbon analysis. Project sample results are not qualified based on surrogate recoveries for QC samples. No qualification of the data was determined necessary.
- Recoveries of surrogates o-terphenyl and chlorobenzene associated with the diesel- and motor oil-range petroleum hydrocarbon analysis of sample LAI-8-0821 in data package 410-51718-1 were greater than the laboratory-specified control limits. Associated results were qualified as estimated (J), as indicated in Table 1.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Replicate Results

At least one MS and/or laboratory replicate sample were analyzed with the conventionals, diesel- and motor oil-range petroleum hydrocarbon, and/or metals parameters in data packages 410-50917-1,

410-51117-1, 410-51341-1, 410-51491-1, and 410-51718-1. The recovery values for each required spiking compound and/or the relative percent differences (RPDs) between the laboratory replicate results were within the current project-specified and/or laboratory-specified control limits for all project samples with the following exceptions:

- The MS recovery for nitrate-N associated with the conventionals analysis of sample E-16-0821 in data package 410-50917-1 was greater than the laboratory-specified control limits. Nitrate-N was not detected at concentrations greater than the reporting limit in the associated sample; no qualification of the data was necessary.
- The MS recovery for nitrite-N associated with the conventionals analysis of sample E-16-0821 in data package 410-50917-1 was greater than the laboratory-specified control limits. Nitrite-N was not reported for the parent sample; no qualification of the data was determined necessary.
- The MS recovery for sulfate associated with the conventionals analysis of sample E-16-0821 in data package 410-50917-1 was greater than the laboratory-specified control limits. The associated sample result was qualified as estimated (J), as indicated in Table 1.
- The MS recovery for nitrate-N associated with the conventionals analysis of sample BOP-74i-0821 in data package 410-51117-1 was significantly less than the laboratory-specified control limit. The reported result was consistent with historical results and determined usable; therefore, the result was qualified as estimated (J), as indicated in Table 1.
- The MS recovery for sulfate associated with the conventionals analysis of sample BOP-74i-0821 in data package 410-51117-1 was greater than the laboratory-specified control limit. The associated sample result was qualified as estimated (J), as indicated in Table 1.
- The laboratory duplicate RPD for total phosphorus associated with the conventionals analysis of sample TowerEff-0821 in data package 410-51491-1 was greater than the laboratory-specified control limit. The associated sample result was qualified as estimated (J), as indicated in table 1.
- The laboratory duplicate RPDs for diesel and C16-C36 associated with the diesel- and motor oil-range petroleum hydrocarbon analysis of sample LAI-7-0821 in data package 410-51718-1 were greater than the laboratory-specified control limits. The associated sample results were qualified as estimated (J), as indicated in Table 1.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) Results

At least one laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) was analyzed with each batch of samples for analysis. Recoveries and RPDs for the laboratory control samples and associated duplicates were within the current laboratory-specified control limits, with the following exception:

- The LCS/LCSD recoveries for acetylene associated with the MEEA analysis in laboratory data package 410-51117-1 were greater than the laboratory-specified control limit. Acetylene was not detected at concentrations greater than the laboratory reporting limit in the associated samples; no qualification of the data was necessary.

Blind Field Duplicate Results

As specified in the QAPP, blind field duplicate samples were collected at a rate of one blind field duplicate sample per 20 samples, but not less than one blind field duplicate per sampling round. Five pairs of blind field duplicate water samples (TowerInf-0821/TowerInD-0821, TowerEff-0821/TowerEfD-0821, BOP-Dup1-0821/D-08i-0821, BOP-W-0821/BOP-10i-0821, and BOP-X-0821/BOP-56i-0821) were submitted for analysis with data packages 410-50760-1, 410-50825-1, 410-50917-1, and 410-51491-1.

A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for the duplicate sample pairs submitted for analysis were within the project-specified control limits, with the following exception:

- The RPD for trichloroethene associated with the VOC analysis of sample pair BOP-Dup1-0821/D-08i-0821 in data package 410-50825-1 was greater than the project-specified control limit. The associated reported results were qualified as estimated (J), as indicated in Table 1.
- The RPD for 2-butanone associated with the VOC analysis of sample pair BOP-W-0821/BOP-10i-0821 in data package 410-50917-1 was greater than the project-specified control limit. The associated reported results were qualified as estimated (J), as indicated in Table 1.

Total and Dissolved Metals Concentrations

The analytical results for total and dissolved metals were compared for each project sample. A project-specified control limit of 20 percent was used to evaluate the RPDs between the total and dissolved metals results, except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. The RPDs between the total and dissolved metals results were within the project-specified control limits for all project samples, with the following exceptions:

- The RPDs for total and dissolved iron for samples BOP-88i-0821 in data package 410-50760-1 and TowerInf-0821 in data package 410-51491-1 were greater than 20 percent. The associated sample results were qualified as estimated (J), as indicated in Table 1.

Quantitation Limits

Project-specified quantitation limits were met for all samples except for instances where dilution was performed due to the presence of high level target species or sample matrix interference.

In those instances when an analysis result exceeded the linear range of the instrument, the laboratory appended an “E” flag to the data and reported a subsequent dilution analysis. For those samples, the “E” flagged result is qualified as “DNR” for Do Not Report, and the dilution analysis result is reported for that specific compound. For all other results, the original analysis results are reported because of the lower reporting limits, so the corresponding dilution analysis results are qualified as “DNR”.

Audit/Corrective Action Records

No corrective action records were generated for these sample batches. Based on the laboratory's case narratives, continuing calibration verification (CCV) recovery results were within laboratory-specified control limits, with the following exceptions:

- The CCV recoveries for batch 410-151977 was low for acetone associated with the VOC analysis in data package 410-47646-1. The associated sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The CCV recoveries for batch 410-161003 were low for 2-butanone; 2-hexanone; 4-methyl-2-pentanone; acetone; and 1,2-dichloroethane associated with the VOC analyses in data packages 410-50760-1, 410-50825-1, 410-50917-1, and 410-51117-1. The associated reported sample results were qualified as estimated (J, UJ), as indicated in Table 1.
- The laboratory noted in the case narrative for data packages 410-50825-1 and 410-51117-1 that for samples BOP-59i-0821 and BOP-77i-0821, the VOC internal standard response was low during the initial analysis. Sample reanalysis confirmed the low internal standard response. The initial analysis results were qualified as estimated (J+, UJ), and the reanalysis results as "do not report" (DNR), as indicated in Table 1.
- The laboratory noted in the case narratives for data packages 410-51117-1 and 410-51718-1 that the CCV recoveries for batches 410-161347, 410-162820, and 410-163358 were high for acetylene associated with the MEEA analysis. Acetylene was not detected at concentrations greater than the laboratory reporting limit in the associated samples; therefore, no qualification of the data was necessary.
- Freon 113 was detected in the VOC dilution reanalysis of sample E-6-0821 in data package 410-51341-1, but the analyte was not detected in the original analysis. The laboratory reviewed the data and determined the detection was likely due to the dilution reanalysis being performed on a different sample vial than the original analysis (all other detections matched up well). Since there is no cleanup level for this analyte, the detected result was qualified as "do not report" (DNR), as indicated in Table 1.
- The laboratory noted in the case narrative for data package 410-51718-1 that for sample LAI-8-0821, the VOC internal standard response was low during the reanalysis analysis. Associated reported sample results were qualified as estimated (J), as indicated in Table 1.
- The CCV recoveries for batch 410-169898 were high for vinyl acetate associated with the VOC analysis in data package 410-54137-1. Vinyl acetate was not detected at concentrations greater than the laboratory reporting limit in the associated samples; therefore, no qualification of the data was necessary.

Completeness and Overall Data Quality

The completeness for this data set is 100 percent, which meets the project-specified goal of 90 percent minimum.

Data precision was evaluated through laboratory control sample duplicates, laboratory duplicates, matrix spike duplicates, and blind field duplicates. Data accuracy was evaluated through laboratory control samples, matrix spikes, and surrogate spikes. No data were rejected.

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[P:\025\116\FILERM\R\TGA\14_DIOXANE REPORT-2021\ATTACHMENT 3\TGA 3Q21 TM.DOCX]

Attachments

Table 1. Summary of Data Qualifiers

References

EPA. 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. Washington, DC: US Environmental Protection Agency.

EPA. 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. Washington, DC: US Environmental Protection Agency.

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-47646-1	TGABlank-0721	Acetone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-86i-0821 (orig)	2-Butanone	379	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-86i-0821 (DL)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Acetone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Chloroform	4.60		DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Chloromethane	7.54		DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	cis-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Freon 113	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Toluene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Trichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-86i-0821 (DL)	Vinyl Chloride	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (orig)	2-Butanone	11600	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-87i-0821 (DL)	1,1,1-Trichloroethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	1,1,2,2-Tetrachloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	1,1,2-Trichloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	1,1-Dichloroethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	1,1-Dichloroethene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	1,2-Dichloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	1,2-Dichloropropane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	2-Hexanone	250	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	4-Methyl-2-pentanone	250	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Acetone	250	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Benzene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Bromodichloromethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Bromoform	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Bromomethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Carbon disulfide	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Carbon tetrachloride	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Chlorobenzene	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Chloroethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Chloroform	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Chloromethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	cis-1,2-Dichloroethene	11.7		DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	cis-1,3-Dichloropropene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Dibromochloromethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Ethylbenzene	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Freon 113	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	m,p-Xylene	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Methylene Chloride	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	o-Xylene	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Styrene	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Tetrachloroethene	10.0	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-50760-1	BOP-87i-0821 (DL)	Toluene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	trans-1,2-Dichloroethene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	trans-1,3-Dichloropropene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Trichloroethene	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Trichlorofluoromethane	25.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Vinyl Acetate	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-87i-0821 (DL)	Vinyl Chloride	21.7		DNR	Do not report; use original analysis result
410-50760-1	E-13-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-50760-1	E-13-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	E-13-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	E-13-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	E-13-0821	Acetone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-57ib-0821 (orig)	1,1-Dichloroethene	55.8	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-57ib-0821 (orig)	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-57ib-0821 (orig)	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-57ib-0821 (orig)	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-57ib-0821 (orig)	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-57ib-0821 (orig)	Acetone	30.5		J	Low continuing calibration recovery
410-50760-1	BOP-57ib-0821 (orig)	Trichloroethene	92.4	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-57ib-0821 (DL)	1,1,1-Trichloroethane	11.9		DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	2-Butanone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Acetone	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	cis-1,2-Dichloroethene	8.57		DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Freon 113	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Tetrachloroethene	5.44		DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Toluene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-57ib-0821 (DL)	Vinyl Chloride	2.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-X-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-X-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-X-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-X-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-X-0821	Acetone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (orig)	1,2-Dichloroethane	2.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (orig)	2-Butanone	17500	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-88i-0821 (orig)	2-Hexanone	50.0	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (orig)	4-Methyl-2-pentanone	50.0	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (orig)	Acetone	140		J	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (DL)	1,1,1-Trichloroethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	1,1,2,2-Tetrachloroethane	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	1,1,2-Trichloroethane	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	1,1-Dichloroethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	1,1-Dichloroethene	20.0	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-50760-1	BOP-88i-0821 (DL)	1,2-Dichloroethane	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	1,2-Dichloropropane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	2-Butanone	19200		J	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (DL)	2-Hexanone	500	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	4-Methyl-2-pentanone	500	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Acetone	500	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Benzene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Bromodichloromethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Bromoform	100	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Bromomethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Carbon disulfide	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Carbon tetrachloride	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Chlorobenzene	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Chloroethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Chloroform	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Chloromethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	cis-1,2-Dichloroethene	79.1		DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	cis-1,3-Dichloropropene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Dibromochloromethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Ethylbenzene	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Freon 113	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	m,p-Xylene	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Methylene Chloride	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	o-Xylene	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Styrene	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Tetrachloroethene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Toluene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	trans-1,2-Dichloroethene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	trans-1,3-Dichloropropene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Trichloroethene	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Trichlorofluoromethane	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Vinyl Acetate	50.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Vinyl Chloride	20.0	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-82i-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-82i-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-82i-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-82i-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-82i-0821	Acetone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-83i-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-83i-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-83i-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-83i-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50760-1	BOP-83i-0821	Acetone	5.26		J	Low continuing calibration recovery
410-50760-1	BOP-88i-0821 (orig)	Ethane	34.6		J	High surrogate recovery
410-50760-1	BOP-88i-0821 (orig)	Ethene	63.4		J	High surrogate recovery
410-50760-1	BOP-88i-0821 (orig)	Methane	18500	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-88i-0821 (DL)	Acetylene	1000	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Ethane	1000	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (DL)	Ethene	1000	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (RA)	Acetylene	5.00	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (RA)	Ethane	34.6		DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (RA)	Ethene	58.3		DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821 (RA)	Methane	17800	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-73i-0821 (orig)	Ethene	1460	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-73i-0821 (orig)	Methane	11100	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-73i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-73i-0821 (DL)	Ethane	503		DNR	Do not report; use original analysis result
410-50760-1	BOP-73i-0821 (DL)	Ethene	1490		J	Sample vial contained headspace
410-50760-1	BOP-73i-0821 (DL)	Methane	13000		J	Sample vial contained headspace
410-50760-1	BOP-82i-0821 (orig)	Methane	2770	E	DNR	Do not report; use dilution analysis result
410-50760-1	BOP-82i-0821 (DL)	Acetylene	100	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-82i-0821 (DL)	Ethane	100	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-82i-0821 (DL)	Ethene	100	U	DNR	Do not report; use original analysis result
410-50760-1	BOP-88i-0821	Total Iron	1300000		J	Sample improperly preserved; dissolved concentration >20% RPD of total concentration
410-50760-1	BOP-88i-0821	Dissolved Iron	9460000		J	Sample improperly preserved; dissolved concentration >20% RPD of total concentration
410-50760-1	BOP-88i-0821	Total Organic Carbon	26100		J	Sample improperly preserved
410-50825-1	D-08i-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-50825-1	D-08i-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	D-08i-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	D-08i-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	D-08i-0821	Acetone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	D-08i-0821	Trichloroethene	1.98		J	High field duplicate RPD
410-50825-1	BOP-Dup1-0821	Trichloroethene	1.35		J	High field duplicate RPD
410-50825-1	BOP-59i-0821 (orig)	1,1,1-Trichloroethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	1,1,2,2-Tetrachloroethane	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	1,1,2-Trichloroethane	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	1,1-Dichloroethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	1,1-Dichloroethene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	1,2-Dichloroethane	0.200	U	UJ	Low internal standard recovery, low continuing calibration recovery
410-50825-1	BOP-59i-0821 (orig)	1,2-Dichloropropane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	2-Butanone	5.00	U	UJ	Low internal standard recovery, low continuing calibration recovery
410-50825-1	BOP-59i-0821 (orig)	2-Hexanone	5.00	U	UJ	Low internal standard recovery, low continuing calibration recovery
410-50825-1	BOP-59i-0821 (orig)	4-Methyl-2-pentanone	5.00	U	UJ	Low internal standard recovery, low continuing calibration recovery
410-50825-1	BOP-59i-0821 (orig)	Acetone	8.00		J+	Low internal standard recovery, low continuing calibration recovery
410-50825-1	BOP-59i-0821 (orig)	Benzene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Bromodichloromethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Bromoform	1.00	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Bromomethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Carbon disulfide	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Carbon tetrachloride	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Chlorobenzene	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Chloroethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Chloroform	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Chloromethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	cis-1,2-Dichloroethene	0.739		J+	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	cis-1,3-Dichloropropene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Dibromochloromethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Ethylbenzene	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Freon 113	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	m,p-Xylene	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Methylene Chloride	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	o-Xylene	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Styrene	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Tetrachloroethene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Toluene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	trans-1,2-Dichloroethene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	trans-1,3-Dichloropropene	0.200	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Trichloroethene	0.828		J+	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Trichlorofluoromethane	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Vinyl Acetate	0.500	U	UJ	Low internal standard recovery
410-50825-1	BOP-59i-0821 (orig)	Vinyl Chloride	6.63		J+	Low internal standard recovery
410-50825-1	BOP-59i-0821 (RA)	1,1,1-Trichloroethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	1,1,2,2-Tetrachloroethane	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	1,1,2-Trichloroethane	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	1,1-Dichloroethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	1,1-Dichloroethene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	1,2-Dichloroethane	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	1,2-Dichloropropane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	2-Butanone	5.000	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	2-Hexanone	5.00	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	4-Methyl-2-pentanone	5.00	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Acetone	8.74		DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Benzene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Bromodichloromethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Bromoform	1.00	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Bromomethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Carbon disulfide	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Carbon tetrachloride	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Chlorobenzene	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Chloroethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Chloroform	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Chloromethane	0.500	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-50825-1	BOP-59i-0821 (RA)	cis-1,2-Dichloroethene	0.758		DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	cis-1,3-Dichloropropene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Dibromochloromethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Ethylbenzene	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Freon 113	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	m,p-Xylene	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Methylene Chloride	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	o-Xylene	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Styrene	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Tetrachloroethene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Toluene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	trans-1,2-Dichloroethene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	trans-1,3-Dichloropropene	0.200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Trichloroethene	0.665		DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Trichlorofluoromethane	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Vinyl Acetate	0.500	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-59i-0821 (RA)	Vinyl Chloride	5.10		DNR	Do not report; use original analysis result
410-50825-1	BOP-57ia-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-57ia-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-57ia-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-57ia-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-57ia-0821	Acetone	5.00	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-73i-0821 (orig)	1,2-Dichloroethane	4.00	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-73i-0821 (orig)	2-Butanone	100	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-73i-0821 (orig)	2-Hexanone	100	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-73i-0821 (orig)	4-Methyl-2-pentanone	100	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-73i-0821 (orig)	Acetone	100	U	UJ	Low continuing calibration recovery
410-50825-1	BOP-73i-0821 (orig)	Vinyl Chloride	749	E	DNR	Do not report; use dilution analysis result
410-50825-1	BOP-73i-0821 (DL)	1,1,1-Trichloroethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	1,1,2,2-Tetrachloroethane	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	1,1,2-Trichloroethane	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	1,1-Dichloroethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	1,1-Dichloroethene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	1,2-Dichloroethane	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	1,2-Dichloropropane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	2-Butanone	1000	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	2-Hexanone	1000	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	4-Methyl-2-pentanone	1000	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Acetone	1000	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Benzene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Bromodichloromethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Bromoform	200	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Bromomethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Carbon disulfide	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Carbon tetrachloride	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Chlorobenzene	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Chloroethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Chloroform	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Chloromethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	cis-1,2-Dichloroethene	101		DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	cis-1,3-Dichloropropene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Dibromochloromethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Ethylbenzene	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Freon 113	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	m,p-Xylene	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Methylene Chloride	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	o-Xylene	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Styrene	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Tetrachloroethene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Toluene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	trans-1,2-Dichloroethene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	trans-1,3-Dichloropropene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Trichloroethene	40.0	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Trichlorofluoromethane	100	U	DNR	Do not report; use original analysis result
410-50825-1	BOP-73i-0821 (DL)	Vinyl Acetate	100	U	DNR	Do not report; use original analysis result
410-50917-1	E-12-0821 (orig)	Acetylene	5.00	U	UJ	Sample vial contained headspace
410-50917-1	E-12-0821 (orig)	Ethane	5.00	U	UJ	Sample vial contained headspace
410-50917-1	E-12-0821 (orig)	Ethene	5.00	U	UJ	Sample vial contained headspace
410-50917-1	E-12-0821 (orig)	Methane	5860	E	DNR	Do not report; use dilution analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-50917-1	E-12-0821 (DL)	Acetylene	250	U	DNR	Do not report; use original analysis result
410-50917-1	E-12-0821 (DL)	Ethane	250	U	DNR	Do not report; use original analysis result
410-50917-1	E-12-0821 (DL)	Ethene	250	U	DNR	Do not report; use original analysis result
410-50917-1	E-12-0821 (DL)	Methane	8190		J	Sample vial contained headspace
410-50917-1	E-15-0821 (orig)	Methane	6320	E	DNR	Do not report; use dilution analysis result
410-50917-1	E-15-0821 (DL)	Acetylene	250	U	DNR	Do not report; use original analysis result
410-50917-1	E-15-0821 (DL)	Ethane	250	U	DNR	Do not report; use original analysis result
410-50917-1	E-15-0821 (DL)	Ethene	250	U	DNR	Do not report; use original analysis result
410-50917-1	E-16-0821 (orig)	Methane	3600	E	DNR	Do not report; use dilution analysis result
410-50917-1	E-16-0821 (DL)	Acetylene	100	U	DNR	Do not report; use original analysis result
410-50917-1	E-16-0821 (DL)	Ethane	100	U	DNR	Do not report; use original analysis result
410-50917-1	E-16-0821 (DL)	Ethene	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (orig)	Methane	6200	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-07i-0821 (DL)	Acetylene	250	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Ethane	250	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Ethene	250	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (orig)	Methane	11400	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-10i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-50917-1	E-16-0821	Sulfate	5.62		J	High matrix spike recovery
410-50917-1	BOP-07i-0821 (orig)	Trichloroethene	137	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-07i-0821 (DL)	1,1,1-Trichloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	1,1,2,2-Tetrachloroethane	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	1,1,2-Trichloroethane	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	1,1-Dichloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	1,1-Dichloroethene	9.86		DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	1,2-Dichloroethane	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	1,2-Dichloropropane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	2-Butanone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	2-Hexanone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	4-Methyl-2-pentanone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Acetone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Benzene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Bromodichloromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Bromoform	20.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Bromomethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Carbon disulfide	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Carbon tetrachloride	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Chlorobenzene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Chloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Chloroform	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Chloromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	cis-1,2-Dichloroethene	9.39		DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	cis-1,3-Dichloropropene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Dibromochloromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Ethylbenzene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Freon 113	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	m,p-Xylene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Methylene Chloride	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	o-Xylene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Styrene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Tetrachloroethene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Toluene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	trans-1,2-Dichloroethene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	trans-1,3-Dichloropropene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Trichlorofluoromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Vinyl Acetate	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-07i-0821 (DL)	Vinyl Chloride	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (orig)	2-Butanone	72.7		J	High field duplicate RPD
410-50917-1	BOP-10i-0821 (orig)	cis-1,2-Dichloroethene	48.8	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-10i-0821 (orig)	Toluene	161	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-10i-0821 (DL)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	2-Butanone	86.60		DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-50917-1	BOP-10i-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Acetone	50.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Freon 113	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Trichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-10i-0821 (DL)	Vinyl Chloride	2.94		DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (orig)	2-Butanone	89.7		J	High field duplicate RPD
410-50917-1	BOP-W-0821 (orig)	cis-1,2-Dichloroethene	50.2	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-W-0821 (orig)	Toluene	162	E	DNR	Do not report; use dilution analysis result
410-50917-1	BOP-W-0821 (DL)	1,1,1-Trichloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	1,1,2,2-Tetrachloroethane	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	1,1,2-Trichloroethane	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	1,1-Dichloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	1,1-Dichloroethene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	1,2-Dichloroethane	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	1,2-Dichloropropane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	2-Butanone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	2-Hexanone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	4-Methyl-2-pentanone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Acetone	100	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Benzene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Bromodichloromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Bromoform	20.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Bromomethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Carbon disulfide	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Carbon tetrachloride	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Chlorobenzene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Chloroethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Chloroform	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Chloromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	cis-1,2-Dichloroethene	40.5		J	Sample vial contained headspace
410-50917-1	BOP-W-0821 (DL)	cis-1,3-Dichloropropene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Dibromochloromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Ethylbenzene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Freon 113	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	m,p-Xylene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Methylene Chloride	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	o-Xylene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Styrene	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Tetrachloroethene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Toluene	139		J	Sample vial contained headspace
410-50917-1	BOP-W-0821 (DL)	trans-1,2-Dichloroethene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	trans-1,3-Dichloropropene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Trichloroethene	4.00	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Trichlorofluoromethane	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Vinyl Acetate	10.0	U	DNR	Do not report; use original analysis result
410-50917-1	BOP-W-0821 (DL)	Vinyl Chloride	4.00	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-51117-1	BOP-09i-0821 (orig)	Methane	16200	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-09i-0821 (DL)	Acetylene	1000	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-09i-0821 (DL)	Ethane	1000	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-09i-0821 (DL)	Ethene	1000	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-74i-0821 (orig)	Methane	13200	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-74i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-74i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-74i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (orig)	Methane	12400	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-77i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (orig)	Methane	11500	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-76i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-72i-0821 (orig)	Methane	12100	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-72i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-72i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-72i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-75i-0821 (orig)	Methane	13500	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-75i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-75i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-75i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-74i-0821	Total Iron	199000		J	Reporting limit check standard out of control limits
410-51117-1	BOP-77i-0821	Total Iron	104000		J	Reporting limit check standard out of control limits
410-51117-1	BOP-74i-0821	Nitrate-N	1.02		J	Low matrix spike recovery
410-51117-1	BOP-74i-0821	Sulfate	18.8		J	High matrix spike recovery
410-51117-1	BOP-77i-0821 (orig)	2-Butanone	570	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-77i-0821 (orig)	cis-1,2-Dichloroethene	35.1	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-77i-0821 (DL)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	2-Butanone	613		J+	Low internal standard recovery
410-51117-1	BOP-77i-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Acetone	88.9		DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	cis-1,2-Dichloroethene	31.4		J+	Low internal standard recovery
410-51117-1	BOP-77i-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Freon 113	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Toluene	20.2		DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Trichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (DL)	Vinyl Chloride	8.04		DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-51117-1	BOP-77i-0821 (RA)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	2-Butanone	597		DNR	Do not report; use dilution analysis result
410-51117-1	BOP-77i-0821 (RA)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Acetone	115		DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	cis-1,2-Dichloroethene	33.0		DNR	Do not report; use dilution analysis result
410-51117-1	BOP-77i-0821 (RA)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Freon 113	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Toluene	22.3		DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Trichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-77i-0821 (RA)	Vinyl Chloride	10.1		DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (orig)	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-76i-0821 (orig)	2-Butanone	252	E	DNR	Do not report; use dilution analysis result
410-51117-1	BOP-76i-0821 (orig)	2-Hexanone	10.5		J	Low continuing calibration recovery
410-51117-1	BOP-76i-0821 (orig)	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-76i-0821 (orig)	Acetone	77.1		J	Low continuing calibration recovery
410-51117-1	BOP-76i-0821 (DL)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	2-Butanone	317		J	Sample vial contained headspace
410-51117-1	BOP-76i-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Acetone	109		DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	cis-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Freon 113	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-51117-1	BOP-76i-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Toluene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Trichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-76i-0821 (DL)	Vinyl Chloride	2.00	U	DNR	Do not report; use original analysis result
410-51117-1	BOP-72i-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-72i-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-72i-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-72i-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-72i-0821	Acetone	16.0		J	Low continuing calibration recovery
410-51117-1	BOP-75i-0821	1,2-Dichloroethane	0.200	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-75i-0821	2-Butanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-75i-0821	2-Hexanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-75i-0821	4-Methyl-2-pentanone	5.00	U	UJ	Low continuing calibration recovery
410-51117-1	BOP-75i-0821	Acetone	18.2		J	Low continuing calibration recovery
410-51341-1	E-6-0821 (orig)	cis-1,2-Dichloroethene	136	E	DNR	Do not report; use dilution analysis result
410-51341-1	E-6-0821 (DL)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	2-Butanone	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Acetone	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Freon 113	9.48		DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Toluene	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	trans-1,2-Dichloroethene	4.96		DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Trichloroethene	6.05		DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Vinyl Chloride	19.6		DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (orig)	2-Butanone	17200	E	DNR	Do not report; use dilution analysis result
410-51341-1	E-7-0821 (DL)	1,1,1-Trichloroethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	1,1,2,2-Tetrachloroethane	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	1,1,2-Trichloroethane	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	1,1-Dichloroethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	1,1-Dichloroethene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	1,2-Dichloroethane	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	1,2-Dichloropropane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	2-Hexanone	2500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	4-Methyl-2-pentanone	2500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Acetone	2500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Benzene	100	U	DNR	Do not report; use original analysis result

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-51341-1	E-7-0821 (DL)	Bromodichloromethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Bromoform	500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Bromomethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Carbon disulfide	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Carbon tetrachloride	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Chlorobenzene	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Chloroethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Chloroform	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Chloromethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	cis-1,2-Dichloroethene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	cis-1,3-Dichloropropene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Dibromochloromethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Ethylbenzene	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Freon 113	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	m,p-Xylene	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Methylene Chloride	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	o-Xylene	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Styrene	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Tetrachloroethene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Toluene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	trans-1,2-Dichloroethene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	trans-1,3-Dichloropropene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Trichloroethene	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Trichlorofluoromethane	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Vinyl Acetate	250	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Vinyl Chloride	100	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (orig)	Methane	1520	E	DNR	Do not report; use dilution analysis result
410-51341-1	E-6-0821 (DL)	Acetylene	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Ethane	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-6-0821 (DL)	Ethene	50.0	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (orig)	Methane	1520	E	DNR	Do not report; use dilution analysis result
410-51341-1	E-7-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (RA)	Acetylene	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (RA)	Ethane	5.00	U	DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (RA)	Ethene	5.67		DNR	Do not report; use original analysis result
410-51341-1	E-7-0821 (RA)	Methane	14900	E	DNR	Do not report; use dilution analysis result
410-51341-1	DP1-0821 (orig)	Methane	16400	E	DNR	Do not report; use dilution analysis result
410-51341-1	DP1-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51341-1	DP1-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51341-1	DP1-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-80i-0821 (orig)	Acetylene	5.00	U	UJ	Sample vial contained headspace
410-51341-1	BOP-80i-0821 (orig)	Ethane	5.00	U	UJ	Sample vial contained headspace
410-51341-1	BOP-80i-0821 (orig)	Ethene	5.00	U	UJ	Sample vial contained headspace
410-51341-1	BOP-80i-0821 (orig)	Methane	12300	E	DNR	Do not report; use dilution analysis result
410-51341-1	BOP-80i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-80i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-80i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-80i-0821 (DL)	Methane	16600		J	Sample vial contained headspace
410-51341-1	BOP-81i-0821 (orig)	Methane	14800	E	DNR	Do not report; use dilution analysis result
410-51341-1	BOP-81i-0821 (DL)	Acetylene	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-81i-0821 (DL)	Ethane	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-81i-0821 (DL)	Ethene	500	U	DNR	Do not report; use original analysis result
410-51341-1	BOP-80i-0821	Nitrate-N	0.547		J	Analyzed outside hold time
410-51341-1	BOP-81i-0821	Nitrate-N	0.679		J	Analyzed outside hold time
410-51341-1	E-7-0821	Total Organic Carbon	20100		J	Sample improperly preserved
410-51491-1	TowerInf-0821	Total Iron	608.0		J	Dissolved concentration >20% RPD of total concentration
410-51491-1	TowerInf-0821	Dissolved Iron	793.0		J	Dissolved concentration >20% RPD of total concentration
410-51491-1	TowerEff-0821	Nitrate-N	1.3		J	Analyzed outside hold time
410-51491-1	TowerEff-0821	Nitrite-N	0.5	U	UJ	Analyzed outside hold time
410-51491-1	TowerEff-0821	Total Phosphorus	1.1		J	High laboratory duplicate RPD
410-51503-1	BOP-16i-0821 (orig)	Methane	1980	E	DNR	Do not report; use dilution analysis result
410-51503-1	BOP-16i-0821 (DL)	Acetylene	50.0	U	DNR	Do not report; use original analysis result
410-51503-1	BOP-16i-0821 (DL)	Ethane	50.0	U	DNR	Do not report; use original analysis result
410-51503-1	BOP-16i-0821 (DL)	Ethene	50.0	U	DNR	Do not report; use original analysis result
410-51503-1	BOP-16i-0821	Nitrate-N	0.500	U	UJ	Analyzed outside hold time

Table 1
Summary of Data Qualifiers
Boeing Portland TGA Phase I

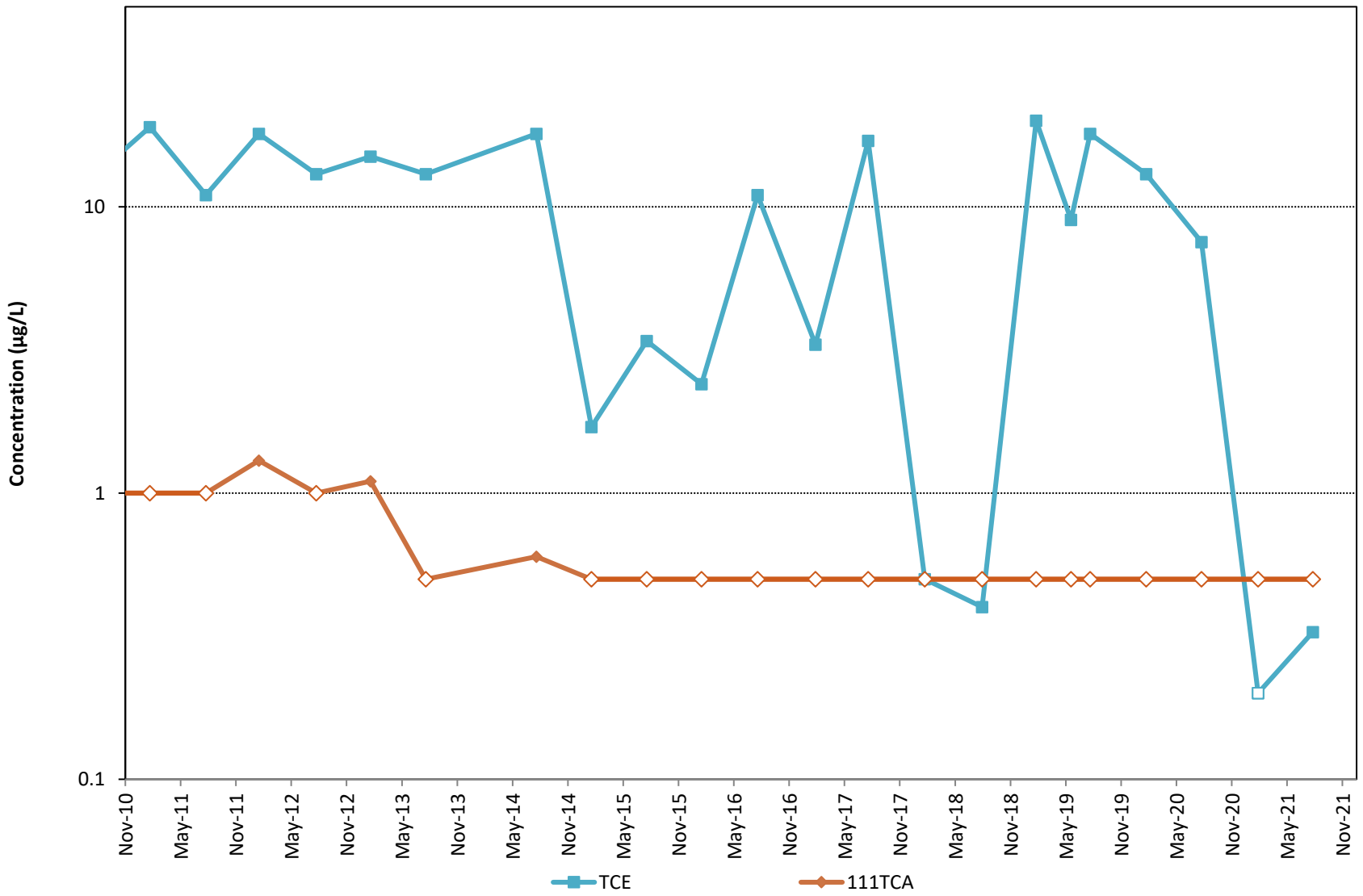
Data Package	Sample Number	Analyte	Result	Lab Qualifier	Data Qualifier	Reason
410-51503-1	E-2-0821	Nitrate-N	0.500	U	UJ	Analyzed outside hold time
410-51718-1	E-3-0821 (orig)	Methane	21700	E	DNR	Do not report; use dilution analysis result
410-51718-1	E-3-0821 (DL)	Acetylene	1000	U	DNR	Do not report; use original analysis result
410-51718-1	E-3-0821 (DL)	Ethane	1000	U	DNR	Do not report; use original analysis result
410-51718-1	E-3-0821 (DL)	Ethene	1000	U	DNR	Do not report; use original analysis result
410-51718-1	E-3-0821 (DL)	Methane	21100		J	Sample vial contained headspace
410-51718-1	E-3-0821	Nitrate-N	0.175		J	Analyzed outside hold time
410-51718-1	LAI-8-0821	Nitrate-N	0.100	U	UJ	Analyzed outside hold time
410-51718-1	LAI-7-0821	Nitrate-N	5.06		J	Analyzed outside hold time
410-51718-1	LAI-4-0821	Nitrate-N	1.48		J	Analyzed outside hold time
410-51718-1	LAI-8-0821	C12-C24	1190		J	High surrogate recovery
410-51718-1	LAI-8-0821	Diesel	1520		J	High surrogate recovery
410-51718-1	LAI-8-0821	C16-C36	2210		J	High surrogate recovery
410-51718-1	LAI-7-0821	Diesel	0.156		J	High laboratory duplicate RPD
410-51718-1	LAI-7-0821	C16-C36	0.354		J	High laboratory duplicate RPD
410-51718-1	LAI-8-0821 (orig)	cis-1,2-Dichloroethene	60.6	E	DNR	Do not report; use dilution analysis result
410-51718-1	LAI-8-0821 (DL)	1,1,1-Trichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	1,1,2,2-Tetrachloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	1,1,2-Trichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	1,1-Dichloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	1,1-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	1,2-Dichloroethane	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	1,2-Dichloropropane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	2-Butanone	50.0	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	2-Hexanone	50.0	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	4-Methyl-2-pentanone	50.0	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Acetone	141		DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Benzene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Bromodichloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Bromoform	10.0	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Bromomethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Carbon disulfide	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Carbon tetrachloride	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Chlorobenzene	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Chloroethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Chloroform	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Chloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	cis-1,2-Dichloroethene	51.8		J	Sample vial contained headspace, low internal standard recovery
410-51718-1	LAI-8-0821 (DL)	cis-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Dibromochloromethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Ethylbenzene	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Freon 113	9.48		DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	m,p-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Methylene Chloride	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	o-Xylene	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Styrene	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Tetrachloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Toluene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	trans-1,2-Dichloroethene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	trans-1,3-Dichloropropene	2.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Trichloroethene	3.16		DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Trichlorofluoromethane	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Vinyl Acetate	5.00	U	DNR	Do not report; use original analysis result
410-51718-1	LAI-8-0821 (DL)	Vinyl Chloride	2.25		DNR	Do not report; use original analysis result

E = concentration exceeds the calibration range
U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity and the result may be biased high.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
DNR = do not report

ATTACHMENT 3

VOC Time Series Plots

P:\025\116\FileRm\R\TGA\14_Dioxane Report-2021\Attachment 2\Plots_VOCs_14DioxaneLocations



Open symbol = nondetect
Closed symbol = detect

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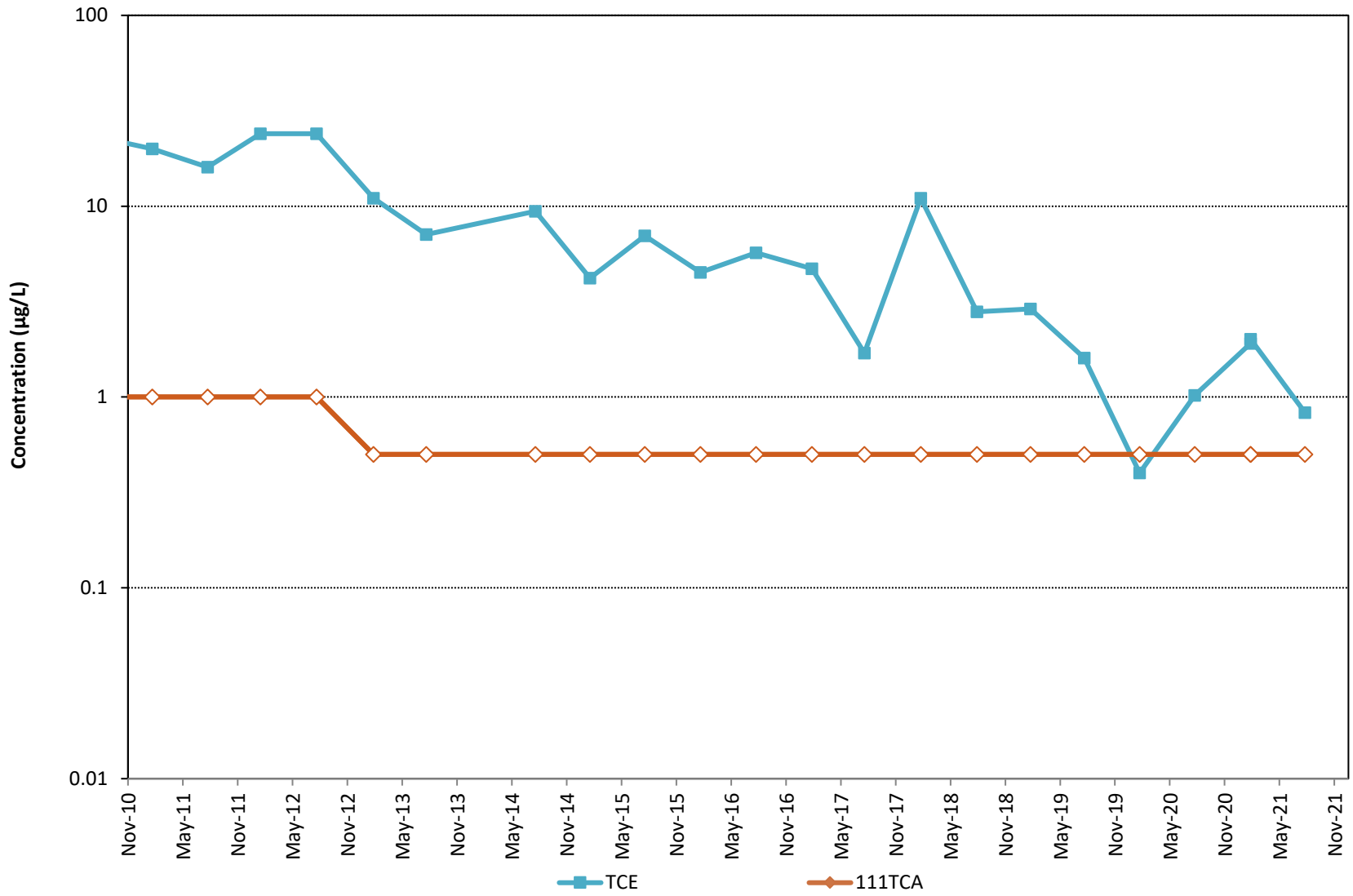
Boeing Portland Gresham, Oregon	**Selected Volatile Organic Compounds BOP-57(ia)**	Figure 3-1

P:\025\116\FileRm\R\TGA\14_Dioxane Report-2021\Attachment 2\Plots_VOCs_14DioxaneLocations

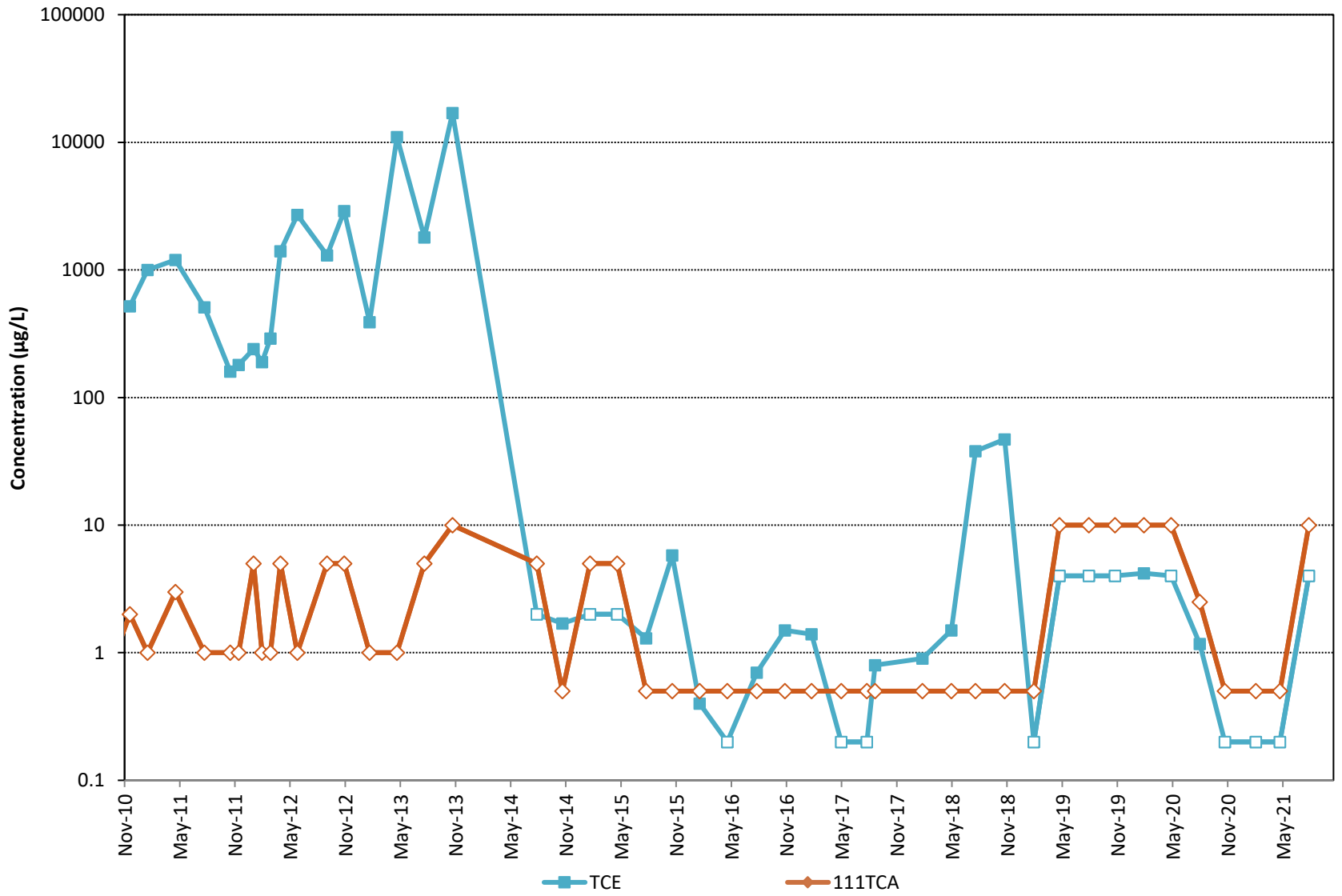


Open symbol = nondetect
Closed symbol = detect

LANDAU ASSOCIATES

Boeing Portland Gresham, Oregon	**Selected Volatile Organic Compounds BOP-59(i)**	Figure 3-2

P:\025\116\FileRm\R\TGA\14_Dioxane Report-2021\Attachment 2\Plots_VOCs_14DioxaneLocations



Open symbol = nondetect
Closed symbol = detect

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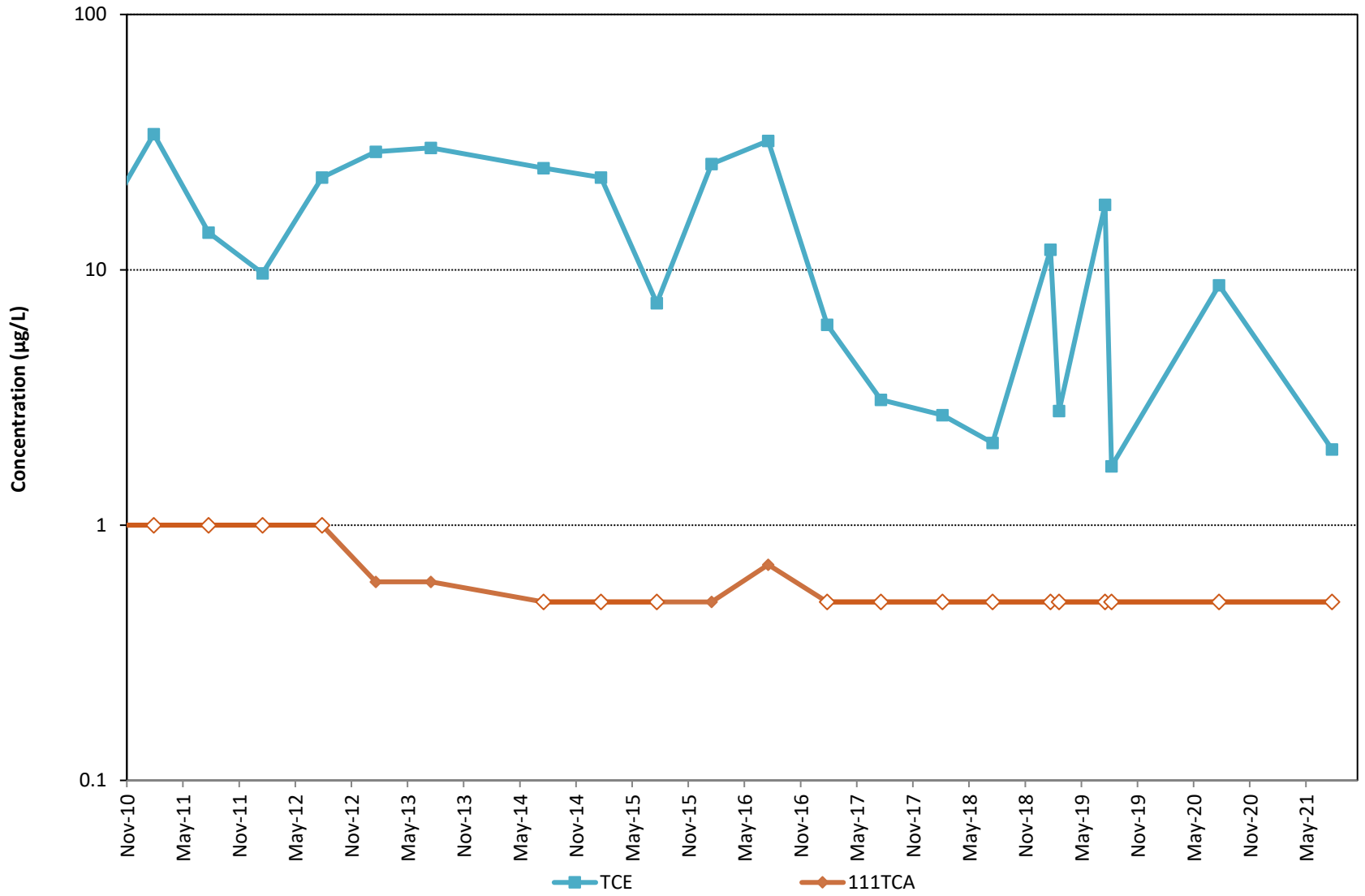
Boeing Portland Gresham, Oregon	**Selected Volatile Organic Compounds BOP-73(i)**	Figure 3-3

P:\025\116\FileRm\R\TGA\14_Dioxane Report-2021\Attachment 2\Plots_VOCs_14DioxaneLocations



Open symbol = nondetect
Closed symbol = detect

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Boeing Portland Gresham, Oregon	**Selected Volatile Organic Compounds D-8(i)**	Figure 3-4