

ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
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Laboratory Job ID: 410-47645-1

Client Project/Site: Boeing: Portland/ 0025116.620.640

For:

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

Attn: Evelyn Ives



Authorized for release by:
7/26/2021 9:57:54 AM

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Results relate only to the items tested and the sample(s) as received by the laboratory.



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.

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A handwritten signature in black ink, reading "Vanessa N. Badman".

Vanessa Badman
Project Manager
7/26/2021 9:57:54 AM



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Definitions/Glossary

Client: Landau & Associates, Inc.
Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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/ 0025116.620.640

Job ID: 410-47645-1

Job ID: 410-47645-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-47645-1

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 (410-47645-2). 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/ 0025116.620.640

Job ID: 410-47645-1

Client Sample ID: TSA Blank

Lab Sample ID: 410-47645-1

No Detections.

Client Sample ID: Trip Blank

Lab Sample ID: 410-47645-2

No Detections.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

Client Sample ID: TSA Blank

Lab Sample ID: 410-47645-1

Date Collected: 07/16/21 08:55

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		80 - 120		07/23/21 12:21	1
Dibromofluoromethane (Surr)	102		80 - 120		07/23/21 12:21	1
4-Bromofluorobenzene (Surr)	93		80 - 120		07/23/21 12:21	1
Toluene-d8 (Surr)	95		80 - 120		07/23/21 12:21	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.323	U	0.323	ug/L		07/23/21 09:58	07/24/21 05:13	1

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

Client Sample ID: TSA Blank

Lab Sample ID: 410-47645-1

Date Collected: 07/16/21 08:55

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 05:13	1
Fluoranthene-d10 (Surr)	89		47 - 128	07/23/21 09:58	07/24/21 05:13	1
1-Methylnaphthalene-d10 (Surr)	76		36 - 111	07/23/21 09:58	07/24/21 05:13	1

Client Sample ID: Trip Blank

Lab Sample ID: 410-47645-2

Date Collected: 07/16/21 00:00

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 11:39	1
1,1,2,2-Tetrachloroethane	0.200	U	0.200	ug/L			07/23/21 11:39	1
1,1,2-Trichloroethane	0.200	U	0.200	ug/L			07/23/21 11:39	1
1,1-Dichloroethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
1,1-Dichloroethene	0.200	U	0.200	ug/L			07/23/21 11:39	1
1,2-Dichloroethane	0.200	U	0.200	ug/L			07/23/21 11:39	1
1,2-Dichloropropane	0.500	U	0.500	ug/L			07/23/21 11:39	1
2-Butanone	5.00	U	5.00	ug/L			07/23/21 11:39	1
2-Hexanone	5.00	U	5.00	ug/L			07/23/21 11:39	1
4-Methyl-2-pentanone	5.00	U	5.00	ug/L			07/23/21 11:39	1
Acetone	5.00	U	5.00	ug/L			07/23/21 11:39	1
Benzene	0.200	U	0.200	ug/L			07/23/21 11:39	1
Bromodichloromethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
Bromoform	1.00	U	1.00	ug/L			07/23/21 11:39	1
Bromomethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
Carbon disulfide	0.500	U	0.500	ug/L			07/23/21 11:39	1
Carbon tetrachloride	0.200	U	0.200	ug/L			07/23/21 11:39	1
Chlorobenzene	0.500	U	0.500	ug/L			07/23/21 11:39	1
Chloroethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
Chloroform	0.200	U	0.200	ug/L			07/23/21 11:39	1
Chloromethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
cis-1,2-Dichloroethene	0.200	U	0.200	ug/L			07/23/21 11:39	1
cis-1,3-Dichloropropene	0.200	U	0.200	ug/L			07/23/21 11:39	1
Dibromochloromethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
Ethylbenzene	0.500	U	0.500	ug/L			07/23/21 11:39	1
Freon 113	0.500	U	0.500	ug/L			07/23/21 11:39	1
m&p-Xylene	0.500	U	0.500	ug/L			07/23/21 11:39	1
Methylene Chloride	0.500	U	0.500	ug/L			07/23/21 11:39	1
o-Xylene	0.500	U	0.500	ug/L			07/23/21 11:39	1
Styrene	0.500	U	0.500	ug/L			07/23/21 11:39	1
Tetrachloroethene	0.200	U	0.200	ug/L			07/23/21 11:39	1
Toluene	0.200	U	0.200	ug/L			07/23/21 11:39	1
trans-1,2-Dichloroethene	0.200	U	0.200	ug/L			07/23/21 11:39	1
trans-1,3-Dichloropropene	0.200	U	0.200	ug/L			07/23/21 11:39	1
Trichloroethene	0.200	U	0.200	ug/L			07/23/21 11:39	1
Trichlorofluoromethane	0.500	U	0.500	ug/L			07/23/21 11:39	1
Vinyl acetate	0.500	U	0.500	ug/L			07/23/21 11:39	1
Vinyl chloride	0.200	U	0.200	ug/L			07/23/21 11:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		80 - 120		07/23/21 11:39	1

Eurofins Lancaster Laboratories Env, LLC

Client Sample Results

Client: Landau & Associates, Inc.
Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

Client Sample ID: Trip Blank

Lab Sample ID: 410-47645-2

Date Collected: 07/16/21 00:00

Matrix: Water

Date Received: 07/17/21 09:51

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Dibromofluoromethane (Surr)	101		80 - 120		07/23/21 11:39	1
4-Bromofluorobenzene (Surr)	93		80 - 120		07/23/21 11:39	1
Toluene-d8 (Surr)	95		80 - 120		07/23/21 11:39	1

Surrogate Summary

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (80-120)	DBFM (80-120)	BFB (80-120)	TOL (80-120)
410-47645-1	TSA Blank	101	102	93	95
410-47645-2	Trip Blank	104	101	93	95
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: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BAPd12 (10-110)	FLN10 (47-128)	MNPd10 (36-111)
410-47645-1	TSA Blank	83	89	76
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)

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
1,1,1-Trichloroethane	0.500	U	0.500	ug/L			07/23/21 11:18	1
1,1,1,2-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	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
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

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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
1,1,1,2-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 LCS		Limits
	%Recovery	Qualifier	
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

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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
LCS LCS							
Surrogate	%Recovery	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
1,1,1,2-Tetrachloroethane	5.00	5.191		ug/L		104	75 - 123	1	30
1,1,1,2-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

Eurofins Lancaster Laboratories Env, LLC

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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	LCSD 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	LCSD 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	MB 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	LCS Limits
Benzo(a)pyrene-d12 (Surr)	89		10 - 110
Fluoranthene-d10 (Surr)	86		47 - 128
1-Methylnaphthalene-d10 (Surr)	78		36 - 111

QC Association Summary

Client: Landau & Associates, Inc.
 Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

GC/MS VOA

Analysis Batch: 151977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-47645-1	TSA Blank	Total/NA	Water	8260C LL	
410-47645-2	Trip Blank	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
410-47645-1	TSA Blank	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
410-47645-1	TSA Blank	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.
Project/Site: Boeing/ Portland/ 0025116.620.640

Job ID: 410-47645-1

Client Sample ID: TSA Blank

Lab Sample ID: 410-47645-1

Date Collected: 07/16/21 08:55

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 12:21	UCB5	ELLE
Total/NA	Prep	3510C			151969	07/23/21 09:58	QTH7	ELLE
Total/NA	Analysis	8270E SIM		1	152261	07/24/21 05:13	X3ZL	ELLE

Client Sample ID: Trip Blank

Lab Sample ID: 410-47645-2

Date Collected: 07/16/21 00:00

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 11:39	UCB5	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.
Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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.
Project/Site: Boeing: Portland/ 0025116.620.640

Job ID: 410-47645-1

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/ 0025116.620.640

Job ID: 410-47645-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-47645-1	TSA Blank	Water	07/16/21 08:55	07/17/21 09:51
410-47645-2	Trip Blank	Water	07/16/21 00:00	07/17/21 09:51

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Lancaster Laboratories Environmental

Acct. #



410-47645 Chain of Custody

Boeing Chain of Custody

Environmental use only
Sample # _____
See side correspond.

1 Client Information					4 Analyses Requested										5 Remarks/Comments	
Site Location: <u>Boeing of Portland / Gretham, OR</u>					(4) <u>VOCs (EPA List) 82601</u> <u>8270E (SIM 1, 4 - DIBRANE)</u>											
Site Project: <u>TSA Boeing of Portland Annual</u>																
Site Program#: <u>0025116.1620.624 1640 full</u>																
Boeing PM: <u>Debbie Targe</u>																
Consultant Contact: <u>Evelyn Ives</u>																
Report To: <u>Debbie Targe + Evelyn Ives +</u>																
Invoice To: <input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify): <u>Dani Jorgensen</u>																
Sampler: <u>JEL</u> # of Coolers: <u>1</u>																
2 Sample Identification		3 Collected		3 Matrix	No. of Containers											
<u>-0721 full</u>		Date	Time													
<u>TSA Blank -0721</u>		<u>7/16/21</u>	<u>855</u>	<u>Air</u>	<u>5</u>											
<u>TRIP blank -0721 full</u>		<u>—</u>	<u>—</u>	<u>Air</u>	<u>2</u>											
6 Turnaround Time Requested (please circle)					Relinquished by: <u>JG</u>		Date/Time: <u>7/16/21 1000</u>		Received by: _____		Date/Time: _____		7			
<input checked="" type="radio"/> Standard 5 day 4 day					Relinquished by: _____		Date/Time: _____		Received by: _____		Date/Time: _____					
<input type="radio"/> 72 hour 48 hour 24 hour					Relinquished by: _____		Date/Time: _____		Received by: _____		Date/Time: _____					
Date needed: _____					Relinquished by commercial carrier (circle):		Temperature upon Receipt: <u>1.0 °C</u>		Custody Seals Intact?: Yes No							
					<input type="radio"/> UPS <input checked="" type="radio"/> FedEx <input type="radio"/> Other: _____											

- 1
- 2
- 3
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Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 410-47645-1

Login Number: 47645

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Sanchez, Melvin E

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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 ($\leq 6^{\circ}\text{C}$, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable ($\leq 6^{\circ}\text{C}$, 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	