

September 04, 2018

Cascade Corporation- Fairview, OR

Sample Delivery Group: L1020810
Samples Received: 08/25/2018
Project Number: PNG0564S17
Description: Cascade Sampling

Report To: Erin Dunbar/Cindy Bartlett
2201 NE 201st Avenue
Fairview, OR 97024-9718

Entire Report Reviewed By:



Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY



PWB1-LTS-082418 L1020810-01 GW

Collected by Pat Yadon	Collected date/time 08/24/18 11:50	Received date/time 08/25/18 08:45
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1157573	1	08/26/18 18:03	08/26/18 18:03	BMB

1
Cp

2
Tc

3
Ss

TRIP BLANK L1020810-02 GW

Collected by Pat Yadon	Collected date/time 08/24/18 00:00	Received date/time 08/25/18 08:45
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1157573	1	08/26/18 15:43	08/26/18 15:43	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1161008	1	09/03/18 21:41	09/03/18 21:41	DWR

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		25.0	1	08/26/2018 18:03	WG1157573
Acrolein	ND		50.0	1	08/26/2018 18:03	WG1157573
Acrylonitrile	ND		5.00	1	08/26/2018 18:03	WG1157573
Benzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Bromobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Bromodichloromethane	ND		0.500	1	08/26/2018 18:03	WG1157573
Bromoform	ND		0.500	1	08/26/2018 18:03	WG1157573
Bromomethane	ND		2.50	1	08/26/2018 18:03	WG1157573
n-Butylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
sec-Butylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
tert-Butylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Carbon disulfide	ND		0.500	1	08/26/2018 18:03	WG1157573
Carbon tetrachloride	ND		0.500	1	08/26/2018 18:03	WG1157573
Chlorobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Chlorodibromomethane	ND		0.500	1	08/26/2018 18:03	WG1157573
Chloroethane	ND		2.50	1	08/26/2018 18:03	WG1157573
Chloroform	ND		0.500	1	08/26/2018 18:03	WG1157573
Chloromethane	ND		1.25	1	08/26/2018 18:03	WG1157573
2-Chlorotoluene	ND		0.500	1	08/26/2018 18:03	WG1157573
4-Chlorotoluene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,2-Dibromo-3-Chloropropane	ND		2.50	1	08/26/2018 18:03	WG1157573
1,2-Dibromoethane	ND		0.500	1	08/26/2018 18:03	WG1157573
Dibromomethane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,2-Dichlorobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,3-Dichlorobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,4-Dichlorobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Dichlorodifluoromethane	ND		2.50	1	08/26/2018 18:03	WG1157573
1,1-Dichloroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,2-Dichloroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1-Dichloroethene	ND		0.500	1	08/26/2018 18:03	WG1157573
cis-1,2-Dichloroethene	ND		0.500	1	08/26/2018 18:03	WG1157573
trans-1,2-Dichloroethene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,2-Dichloropropane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1-Dichloropropene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,3-Dichloropropane	ND		1.00	1	08/26/2018 18:03	WG1157573
cis-1,3-Dichloropropene	ND		0.500	1	08/26/2018 18:03	WG1157573
trans-1,3-Dichloropropene	ND		0.500	1	08/26/2018 18:03	WG1157573
2,2-Dichloropropane	ND		0.500	1	08/26/2018 18:03	WG1157573
Di-isopropyl ether	ND		0.500	1	08/26/2018 18:03	WG1157573
Ethylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Hexachloro-1,3-butadiene	ND		1.00	1	08/26/2018 18:03	WG1157573
Isopropylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
p-Isopropyltoluene	ND		0.500	1	08/26/2018 18:03	WG1157573
2-Butanone (MEK)	ND		5.00	1	08/26/2018 18:03	WG1157573
Methylene Chloride	ND		2.50	1	08/26/2018 18:03	WG1157573
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	08/26/2018 18:03	WG1157573
Methyl tert-butyl ether	ND		0.500	1	08/26/2018 18:03	WG1157573
Naphthalene	ND		2.50	1	08/26/2018 18:03	WG1157573
n-Propylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Styrene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1,1,2-Tetrachloroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1,2,2-Tetrachloroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
Tetrachloroethene	ND		0.500	1	08/26/2018 18:03	WG1157573
Toluene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,2,3-Trichlorobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1,1-Trichloroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
1,1,2-Trichloroethane	ND		0.500	1	08/26/2018 18:03	WG1157573
Trichloroethene	2.04		0.500	1	08/26/2018 18:03	WG1157573
Trichlorofluoromethane	ND		2.50	1	08/26/2018 18:03	WG1157573
1,2,3-Trichloropropane	ND		2.50	1	08/26/2018 18:03	WG1157573
1,2,4-Trimethylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,2,3-Trimethylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
1,3,5-Trimethylbenzene	ND		0.500	1	08/26/2018 18:03	WG1157573
Vinyl chloride	ND		0.500	1	08/26/2018 18:03	WG1157573
Xylenes, Total	ND		1.50	1	08/26/2018 18:03	WG1157573
(S) Toluene-d8	110		80.0-120		08/26/2018 18:03	WG1157573
(S) Dibromofluoromethane	93.8		75.0-120		08/26/2018 18:03	WG1157573
(S) 4-Bromofluorobenzene	90.7		77.0-126		08/26/2018 18:03	WG1157573

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 08/24/18 00:00

L1020810

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		25.0	1	08/26/2018 15:43	WG1157573
Acrolein	ND		50.0	1	08/26/2018 15:43	WG1157573
Acrylonitrile	ND		5.00	1	08/26/2018 15:43	WG1157573
Benzene	ND		0.500	1	09/03/2018 21:41	WG1161008
Bromobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
Bromodichloromethane	ND		0.500	1	08/26/2018 15:43	WG1157573
Bromoform	ND		0.500	1	08/26/2018 15:43	WG1157573
Bromomethane	ND		2.50	1	08/26/2018 15:43	WG1157573
n-Butylbenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
sec-Butylbenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
tert-Butylbenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
Carbon disulfide	ND		0.500	1	08/26/2018 15:43	WG1157573
Carbon tetrachloride	ND		0.500	1	08/26/2018 15:43	WG1157573
Chlorobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
Chlorodibromomethane	ND		0.500	1	08/26/2018 15:43	WG1157573
Chloroethane	ND		2.50	1	08/26/2018 15:43	WG1157573
Chloroform	ND		0.500	1	08/26/2018 15:43	WG1157573
Chloromethane	ND		1.25	1	08/26/2018 15:43	WG1157573
2-Chlorotoluene	ND		0.500	1	08/26/2018 15:43	WG1157573
4-Chlorotoluene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,2-Dibromo-3-Chloropropane	ND		2.50	1	08/26/2018 15:43	WG1157573
1,2-Dibromoethane	ND		0.500	1	08/26/2018 15:43	WG1157573
Dibromomethane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,2-Dichlorobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,3-Dichlorobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,4-Dichlorobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
Dichlorodifluoromethane	ND		2.50	1	08/26/2018 15:43	WG1157573
1,1-Dichloroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,2-Dichloroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1-Dichloroethene	ND		0.500	1	08/26/2018 15:43	WG1157573
cis-1,2-Dichloroethene	ND		0.500	1	08/26/2018 15:43	WG1157573
trans-1,2-Dichloroethene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,2-Dichloropropane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1-Dichloropropene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,3-Dichloropropane	ND		1.00	1	08/26/2018 15:43	WG1157573
cis-1,3-Dichloropropene	ND		0.500	1	08/26/2018 15:43	WG1157573
trans-1,3-Dichloropropene	ND		0.500	1	08/26/2018 15:43	WG1157573
2,2-Dichloropropane	ND		0.500	1	08/26/2018 15:43	WG1157573
Di-isopropyl ether	ND		0.500	1	08/26/2018 15:43	WG1157573
Ethylbenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
Hexachloro-1,3-butadiene	ND		1.00	1	08/26/2018 15:43	WG1157573
Isopropylbenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
p-Isopropyltoluene	ND		0.500	1	08/26/2018 15:43	WG1157573
2-Butanone (MEK)	ND		5.00	1	08/26/2018 15:43	WG1157573
Methylene Chloride	ND		2.50	1	08/26/2018 15:43	WG1157573
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	08/26/2018 15:43	WG1157573
Methyl tert-butyl ether	ND		0.500	1	08/26/2018 15:43	WG1157573
Naphthalene	ND		2.50	1	09/03/2018 21:41	WG1161008
n-Propylbenzene	ND		0.500	1	09/03/2018 21:41	WG1161008
Styrene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1,1,2-Tetrachloroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1,2,2-Tetrachloroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
Tetrachloroethene	ND		0.500	1	08/26/2018 15:43	WG1157573
Toluene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,2,3-Trichlorobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Collected date/time: 08/24/18 00:00

L1020810

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1,1-Trichloroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
1,1,2-Trichloroethane	ND		0.500	1	08/26/2018 15:43	WG1157573
Trichloroethene	ND		0.500	1	08/26/2018 15:43	WG1157573
Trichlorofluoromethane	ND		2.50	1	08/26/2018 15:43	WG1157573
1,2,3-Trichloropropane	ND		2.50	1	08/26/2018 15:43	WG1157573
1,2,4-Trimethylbenzene	ND		0.500	1	09/03/2018 21:41	WG1161008
1,2,3-Trimethylbenzene	ND		0.500	1	09/03/2018 21:41	WG1161008
1,3,5-Trimethylbenzene	ND		0.500	1	08/26/2018 15:43	WG1157573
Vinyl chloride	ND		0.500	1	08/26/2018 15:43	WG1157573
Xylenes, Total	ND		1.50	1	09/03/2018 21:41	WG1161008
(S) Toluene-d8	109		80.0-120		08/26/2018 15:43	WG1157573
(S) Toluene-d8	102		80.0-120		09/03/2018 21:41	WG1161008
(S) Dibromofluoromethane	92.6		75.0-120		08/26/2018 15:43	WG1157573
(S) Dibromofluoromethane	95.7		75.0-120		09/03/2018 21:41	WG1161008
(S) 4-Bromofluorobenzene	95.8		77.0-126		08/26/2018 15:43	WG1157573
(S) 4-Bromofluorobenzene	100		77.0-126		09/03/2018 21:41	WG1161008

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3338707-5 08/26/18 11:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		1.05	25.0
Acrolein	U		3.97	50.0
Acrylonitrile	U		0.873	5.00
Benzene	U		0.0896	0.500
Bromobenzene	U		0.133	0.500
Bromodichloromethane	U		0.0800	0.500
Bromoform	U		0.186	0.500
Bromomethane	U		0.157	2.50
n-Butylbenzene	U		0.143	0.500
sec-Butylbenzene	U		0.134	0.500
tert-Butylbenzene	U		0.183	0.500
Carbon disulfide	U		0.101	0.500
Carbon tetrachloride	U		0.159	0.500
Chlorobenzene	U		0.140	0.500
Chlorodibromomethane	U		0.128	0.500
Chloroethane	U		0.141	2.50
Chloroform	U		0.0860	0.500
Chloromethane	U		0.153	1.25
2-Chlorotoluene	U		0.111	0.500
4-Chlorotoluene	U		0.0972	0.500
1,2-Dibromo-3-Chloropropane	U		0.325	2.50
Dibromomethane	U		0.117	0.500
1,2-Dibromoethane	U		0.193	0.500
1,2-Dichlorobenzene	U		0.101	0.500
1,3-Dichlorobenzene	U		0.130	0.500
1,4-Dichlorobenzene	U		0.121	0.500
Dichlorodifluoromethane	U		0.127	2.50
1,1-Dichloroethane	U		0.114	0.500
1,1-Dichloroethene	U		0.188	0.500
cis-1,2-Dichloroethene	U		0.0933	0.500
trans-1,2-Dichloroethene	U		0.152	0.500
1,2-Dichloroethane	U		0.108	0.500
1,2-Dichloropropane	U		0.190	0.500
1,1-Dichloropropene	U		0.128	0.500
1,3-Dichloropropane	U		0.147	1.00
cis-1,3-Dichloropropene	U		0.0976	0.500
trans-1,3-Dichloropropene	U		0.222	0.500
2,2-Dichloropropane	U		0.0929	0.500
Hexachloro-1,3-butadiene	U		0.157	1.00
Di-isopropyl ether	U		0.0924	0.500

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3338707-5 08/26/18 11:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Ethylbenzene	U		0.158	0.500
Isopropylbenzene	U		0.126	0.500
p-Isopropyltoluene	U		0.138	0.500
2-Butanone (MEK)	U		1.28	5.00
Methylene Chloride	U		1.07	2.50
4-Methyl-2-pentanone (MIBK)	U		0.823	5.00
n-Propylbenzene	U		0.162	0.500
Styrene	U		0.117	0.500
1,1,1,2-Tetrachloroethane	U		0.120	0.500
1,1,2,2-Tetrachloroethane	U		0.130	0.500
Methyl tert-butyl ether	U		0.102	0.500
1,1,2-Trichlorotrifluoroethane	U		0.164	0.500
Tetrachloroethene	U		0.199	0.500
Naphthalene	0.217	U	0.174	2.50
1,2,3-Trichlorobenzene	U		0.164	0.500
1,2,4-Trichlorobenzene	U		0.355	0.500
1,1,1-Trichloroethane	U		0.0940	0.500
1,1,2-Trichloroethane	U		0.186	0.500
Trichloroethene	U		0.153	0.500
Trichlorofluoromethane	U		0.130	2.50
1,2,3-Trichloropropane	U		0.247	2.50
1,2,4-Trimethylbenzene	U		0.123	0.500
1,2,3-Trimethylbenzene	U		0.0739	0.500
1,3,5-Trimethylbenzene	U		0.124	0.500
Toluene	U		0.412	0.500
Vinyl chloride	U		0.118	0.500
Xylenes, Total	U		0.316	1.50
(S) Toluene-d8	111			80.0-120
(S) Dibromofluoromethane	93.8			75.0-120
(S) 4-Bromofluorobenzene	93.0			77.0-126

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3338707-1 08/26/18 08:59 • (LCSD) R3338707-2 08/26/18 09:19

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Acetone	125	117	123	94.0	98.1	19.0-160			4.32	27
Acrolein	125	135	139	108	111	10.0-160			3.10	26
Acrylonitrile	125	128	129	102	103	55.0-149			0.492	20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3338707-1 08/26/18 08:59 • (LCSD) R3338707-2 08/26/18 09:19

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromobenzene	25.0	24.2	24.5	96.8	98.0	73.0-121			1.17	20
Bromodichloromethane	25.0	25.6	25.4	103	102	75.0-120			0.735	20
Bromoform	25.0	24.7	25.4	98.9	102	68.0-132			2.65	20
Bromomethane	25.0	6.62	6.97	26.5	27.9	10.0-160			5.28	25
n-Butylbenzene	25.0	23.6	24.0	94.2	96.0	73.0-125			1.86	20
sec-Butylbenzene	25.0	26.1	26.1	104	104	75.0-125			0.0123	20
tert-Butylbenzene	25.0	24.8	25.5	99.2	102	76.0-124			2.92	20
Carbon disulfide	25.0	23.2	22.9	93.0	91.8	61.0-128			1.26	20
Carbon tetrachloride	25.0	23.7	24.4	94.7	97.5	68.0-126			2.97	20
Chlorobenzene	25.0	28.7	28.9	115	116	80.0-121			0.746	20
Chlorodibromomethane	25.0	27.5	27.1	110	108	77.0-125			1.47	20
Chloroethane	25.0	25.0	23.6	100	94.4	47.0-150			5.89	20
Chloroform	25.0	24.8	24.8	99.1	99.2	73.0-120			0.0846	20
Chloromethane	25.0	20.1	20.3	80.5	81.3	41.0-142			0.915	20
2-Chlorotoluene	25.0	25.2	25.4	101	101	76.0-123			0.669	20
4-Chlorotoluene	25.0	23.7	24.2	94.9	96.6	75.0-122			1.78	20
1,2-Dibromo-3-Chloropropane	25.0	27.6	27.8	110	111	58.0-134			0.559	20
Dibromomethane	25.0	24.2	24.2	96.8	96.8	80.0-120			0.0687	20
1,2-Dichlorobenzene	25.0	27.1	28.2	108	113	79.0-121			3.83	20
1,3-Dichlorobenzene	25.0	26.0	26.7	104	107	79.0-120			2.77	20
1,4-Dichlorobenzene	25.0	26.3	25.7	105	103	79.0-120			2.02	20
Benzene	25.0	24.0	23.9	96.0	95.6	70.0-123			0.414	20
Dichlorodifluoromethane	25.0	29.9	29.3	120	117	51.0-149			1.88	20
1,1-Dichloroethane	25.0	24.0	23.7	95.8	94.7	70.0-126			1.24	20
1,1-Dichloroethene	25.0	25.5	25.0	102	100	71.0-124			1.82	20
cis-1,2-Dichloroethene	25.0	24.1	24.4	96.3	97.6	73.0-120			1.35	20
trans-1,2-Dichloroethene	25.0	25.0	25.0	100	100	73.0-120			0.0686	20
1,2-Dichloropropane	25.0	26.0	25.1	104	100	77.0-125			3.26	20
1,1-Dichloropropene	25.0	24.3	24.0	97.2	96.1	74.0-126			1.14	20
1,3-Dichloropropane	25.0	27.9	27.1	111	109	80.0-120			2.55	20
cis-1,3-Dichloropropene	25.0	28.4	28.8	113	115	80.0-123			1.49	20
trans-1,3-Dichloropropene	25.0	26.6	26.1	106	104	78.0-124			1.94	20
2,2-Dichloropropane	25.0	24.8	24.1	99.0	96.6	58.0-130			2.51	20
Hexachloro-1,3-butadiene	25.0	22.8	23.9	91.1	95.8	54.0-138			5.01	20
Isopropylbenzene	25.0	27.1	27.2	108	109	76.0-127			0.595	20
1,2-Dibromoethane	25.0	29.4	29.3	118	117	80.0-122			0.307	20
p-Isopropyltoluene	25.0	26.2	26.7	105	107	76.0-125			1.95	20
2-Butanone (MEK)	125	120	121	95.8	97.0	44.0-160			1.32	20
Methylene Chloride	25.0	22.7	22.4	90.7	89.6	67.0-120			1.28	20
4-Methyl-2-pentanone (MIBK)	125	138	137	110	110	68.0-142			0.101	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3338707-1 08/26/18 08:59 • (LCSD) R3338707-2 08/26/18 09:19

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
n-Propylbenzene	25.0	25.7	26.1	103	105	77.0-124			1.73	20
Styrene	25.0	26.9	27.2	108	109	73.0-130			1.15	20
1,1,1,2-Tetrachloroethane	25.0	27.8	28.0	111	112	75.0-125			0.806	20
1,1,2,2-Tetrachloroethane	25.0	27.7	28.2	111	113	65.0-130			1.75	20
1,2-Dichloroethane	25.0	24.4	24.7	97.6	98.7	70.0-128			1.21	20
1,1,2-Trichlorotrifluoroethane	25.0	25.9	25.7	104	103	69.0-132			0.692	20
Tetrachloroethene	25.0	28.3	28.3	113	113	72.0-132			0.138	20
1,2,3-Trichlorobenzene	25.0	26.4	28.6	106	115	50.0-138			8.16	20
1,2,4-Trichlorobenzene	25.0	26.2	27.1	105	109	57.0-137			3.58	20
1,1,1-Trichloroethane	25.0	24.3	24.6	97.3	98.2	73.0-124			0.972	20
1,1,2-Trichloroethane	25.0	28.1	27.8	112	111	80.0-120			1.12	20
Trichloroethene	25.0	25.7	25.8	103	103	78.0-124			0.254	20
Trichlorofluoromethane	25.0	28.0	27.5	112	110	59.0-147			1.89	20
1,2,3-Trichloropropane	25.0	27.8	27.5	111	110	73.0-130			0.875	20
1,2,4-Trimethylbenzene	25.0	25.8	26.0	103	104	76.0-121			0.706	20
Di-isopropyl ether	25.0	24.1	23.8	96.4	95.2	58.0-138			1.27	20
1,2,3-Trimethylbenzene	25.0	24.4	24.9	97.5	99.4	77.0-120			1.98	20
Ethylbenzene	25.0	28.0	28.1	112	112	79.0-123			0.228	20
1,3,5-Trimethylbenzene	25.0	27.7	27.6	111	110	76.0-122			0.370	20
Vinyl chloride	25.0	26.9	26.7	108	107	67.0-131			0.708	20
Methyl tert-butyl ether	25.0	24.9	24.7	99.7	98.7	68.0-125			1.00	20
Naphthalene	25.0	25.5	26.6	102	106	54.0-135			4.32	20
Toluene	25.0	26.8	26.7	107	107	79.0-120			0.477	20
Xylenes, Total	75.0	82.7	82.6	110	110	79.0-123			0.121	20
(S) Toluene-d8				106	105	80.0-120				
(S) Dibromofluoromethane				91.8	92.0	75.0-120				
(S) 4-Bromofluorobenzene				95.8	96.6	77.0-126				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3338767-4 09/03/18 21:08

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.0896	0.500
n-Propylbenzene	U		0.162	0.500
Naphthalene	U		0.174	2.50
1,2,4-Trimethylbenzene	U		0.123	0.500
1,2,3-Trimethylbenzene	U		0.0739	0.500
Xylenes, Total	U		0.316	1.50
(S) Toluene-d8	103			80.0-120
(S) Dibromofluoromethane	94.0			75.0-120
(S) 4-Bromofluorobenzene	97.9			77.0-126

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3338767-1 09/03/18 19:51 • (LCSD) R3338767-2 09/03/18 20:11

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	24.6	25.0	98.5	100	70.0-123			1.67	20
n-Propylbenzene	25.0	27.4	27.8	110	111	77.0-124			1.11	20
1,2,4-Trimethylbenzene	25.0	27.3	27.9	109	112	76.0-121			2.14	20
1,2,3-Trimethylbenzene	25.0	25.3	25.5	101	102	77.0-120			0.824	20
Naphthalene	25.0	23.9	24.4	95.7	97.5	54.0-135			1.82	20
Xylenes, Total	75.0	84.5	84.4	113	113	79.0-123			0.118	20
(S) Toluene-d8				104	103	80.0-120				
(S) Dibromofluoromethane				94.5	92.8	75.0-120				
(S) 4-Bromofluorobenzene				97.1	97.6	77.0-126				

L1020805-25 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1020805-25 09/03/18 22:00 • (MS) R3338767-5 09/04/18 00:14 • (MSD) R3338767-6 09/04/18 00:33

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Benzene	25.0	U	25.0	24.6	99.9	98.4	1	17.0-158			1.51	27
n-Propylbenzene	25.0	U	27.7	27.8	111	111	1	31.0-154			0.395	28
1,2,4-Trimethylbenzene	25.0	U	27.4	27.8	110	111	1	26.0-154			1.27	27
1,2,3-Trimethylbenzene	25.0	U	25.3	25.1	101	100	1	32.0-149			0.740	28
Naphthalene	25.0	U	23.7	24.2	94.6	97.0	1	12.0-156			2.48	35
Xylenes, Total	75.0	U	84.7	83.5	113	111	1	29.0-154			1.43	28
(S) Toluene-d8					102	101		80.0-120				
(S) Dibromofluoromethane					95.5	95.7		75.0-120				
(S) 4-Bromofluorobenzene					96.8	96.7		77.0-126				



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
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Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

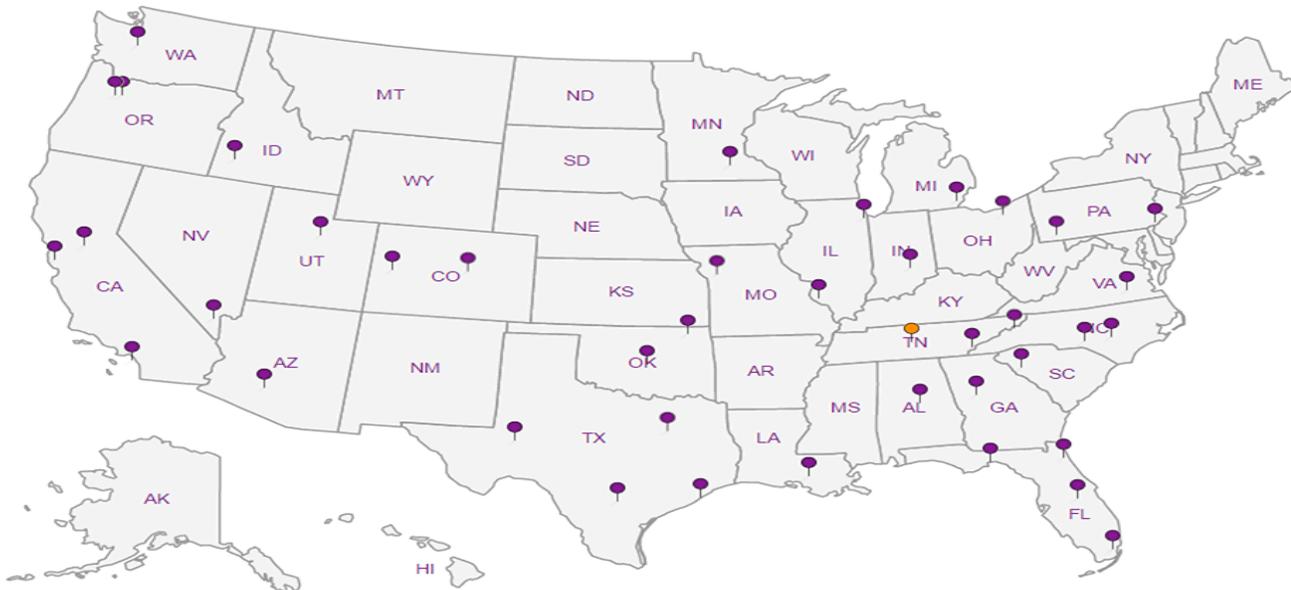
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

