

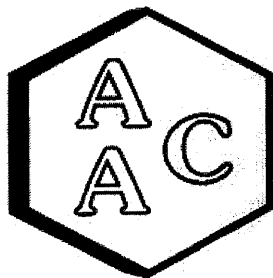
Volatile Organic Compound Analysis Results for Samples Collected in Nuiqsut, Alaska

Sample Location: Nuiqsut Ambient Air Quality Monitoring Station

Date Sample Collected: 3/9/2022

Analysis Conducted by: Atmospheric Analysis & Consulting, Inc.

Analysis Method: EPA Method TO-15



Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

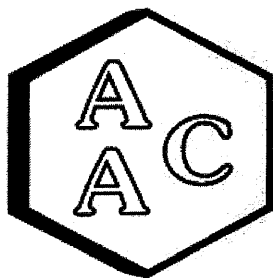
CLIENT : SLR International Corporation
PROJECT NO : 220499
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 03/11/2022
DATE REPORTED : 03/11/2022
ANALYST : RC

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

<i>Client ID</i>	NUI AQMS			Sample Reporting Limit (SRL) (MRL _x DF's)	Method Reporting Limit (MRL)
<i>AAC ID</i>	220499-28746				
<i>Date Sampled</i>	03/09/2022				
<i>Date Analyzed</i>	03/11/2022				
<i>Can Dilution Factor</i>	1.61				
<i>Compound</i>	Result	Qualifier	Analysis DF		
Chlorodifluoromethane	<SRL	U	1	0.81	0.50
Propene	<SRL	U	1	1.61	1.00
Dichlorodifluoromethane	<SRL	U	1	0.81	0.50
Chloromethane	<SRL	U	1	0.81	0.50
Dichlorotetrafluoroethane	<SRL	U	1	0.81	0.50
Vinyl Chloride	<SRL	U	1	0.81	0.50
Methanol	<SRL	U	1	8.07	5.00
1,3-Butadiene	<SRL	U	1	0.81	0.50
Bromomethane	<SRL	U	1	0.81	0.50
Chloroethane	<SRL	U	1	0.81	0.50
Dichlorofluoromethane	<SRL	U	1	0.81	0.50
Ethanol	<SRL	U	1	3.23	2.00
Vinyl Bromide	<SRL	U	1	0.81	0.50
Acetone	<SRL	U	1	3.23	2.00
Trichlorofluoromethane	<SRL	U	1	0.81	0.50
2-Propanol (IPA)	<SRL	U	1	3.23	2.00
Acrylonitrile	<SRL	U	1	3.23	2.00
1,1-Dichloroethene	<SRL	U	1	0.81	0.50
Methylene Chloride (DCM)	<SRL	U	1	1.61	1.00
Allyl Chloride	<SRL	U	1	1.61	1.00
Carbon Disulfide	<SRL	U	1	3.23	2.00
Trichlorotrifluoroethane	<SRL	U	1	0.81	0.50
trans-1,2-Dichloroethene	<SRL	U	1	0.81	0.50
1,1-Dichloroethane	<SRL	U	1	0.81	0.50
Methyl Tert Butyl Ether (MTBE)	<SRL	U	1	0.81	0.50
Vinyl Acetate	<SRL	U	1	1.61	1.00
2-Butanone (MEK)	<SRL	U	1	1.61	1.00
cis-1,2-Dichloroethene	<SRL	U	1	0.81	0.50
Hexane	<SRL	U	1	0.81	0.50
Chloroform	<SRL	U	1	0.81	0.50
Ethyl Acetate	<SRL	U	1	0.81	0.50
Tetrahydrofuran	<SRL	U	1	0.81	0.50
1,2-Dichloroethane	<SRL	U	1	0.81	0.50
1,1,1-Trichloroethane	<SRL	U	1	0.81	0.50
Benzene	<SRL	U	1	0.81	0.50





Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : SLR International Corporation
PROJECT NO : 220499
MATRIX : AIR
UNITS : PPB (v/v)

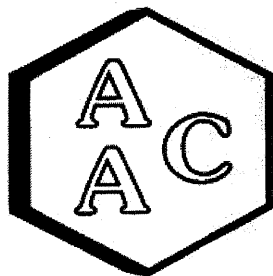
DATE RECEIVED : 03/11/2022
DATE REPORTED : 03/11/2022
ANALYST : RC

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

<i>Client ID</i>	NUI AQMS			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
<i>AAC ID</i>	220499-28746				
<i>Date Sampled</i>	03/09/2022				
<i>Date Analyzed</i>	03/11/2022				
<i>Can Dilution Factor</i>	1.61				
<i>Compound</i>	Result	Qualifier	Analysis DF		
Carbon Tetrachloride	<SRL	U	1	0.81	0.50
Cyclohexane	<SRL	U	1	0.81	0.50
1,2-Dichloropropane	<SRL	U	1	0.81	0.50
Bromodichloromethane	<SRL	U	1	0.81	0.50
1,4-Dioxane	<SRL	U	1	1.61	1.00
Trichloroethene (TCE)	<SRL	U	1	0.81	0.50
2,2,4-Trimethylpentane	<SRL	U	1	0.81	0.50
Heptane	<SRL	U	1	0.81	0.50
cis-1,3-Dichloropropene	<SRL	U	1	0.81	0.50
4-Methyl-2-pentanone (MiBK)	<SRL	U	1	0.81	0.50
trans-1,3-Dichloropropene	<SRL	U	1	0.81	0.50
1,1,2-Trichloroethane	<SRL	U	1	0.81	0.50
Toluene	<SRL	U	1	0.81	0.50
2-Hexanone (MBK)	<SRL	U	1	1.61	1.00
Dibromochloromethane	<SRL	U	1	0.81	0.50
1,2-Dibromoethane	<SRL	U	1	0.81	0.50
Tetrachloroethene (PCE)	<SRL	U	1	0.81	0.50
Chlorobenzene	<SRL	U	1	0.81	0.50
Ethylbenzene	<SRL	U	1	0.81	0.50
m & p-Xylene	<SRL	U	1	1.61	1.00
Bromoform	<SRL	U	1	0.81	0.50
Styrene	<SRL	U	1	0.81	0.50
1,1,2,2-Tetrachloroethane	<SRL	U	1	0.81	0.50
o-Xylene	<SRL	U	1	0.81	0.50
4-Ethyltoluene	<SRL	U	1	0.81	0.50
1,3,5-Trimethylbenzene	<SRL	U	1	0.81	0.50
1,2,4-Trimethylbenzene	<SRL	U	1	0.81	0.50
Benzyl Chloride (a-Chlorotoluene)	<SRL	U	1	0.81	0.50
1,3-Dichlorobenzene	<SRL	U	1	0.81	0.50
1,4-Dichlorobenzene	<SRL	U	1	0.81	0.50
1,2-Dichlorobenzene	<SRL	U	1	0.81	0.50
1,2,4-Trichlorobenzene	<SRL	U	1	0.81	0.50
Hexachlorobutadiene	<SRL	U	1	0.81	0.50
BFB-Surrogate Std. % Recovery		83%			70-130%

U - Compound was not detected at or above the SRL.





Atmospheric Analysis & Consulting, Inc.

QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/11/2022
 MATRIX : High Purity N₂
 UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-02
 CALIBRATION STD ID : MS1-030722-01
 ANALYST : RC

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15 Continuing Calibration Verification of the 03/01/2022 Calibration

Analyte Compounds	Source ¹	CCV ²	% Recovery ³
4-BFB (surrogate standard)	10.00	9.34	93
Chlorodifluoromethane	10.50	10.62	101
Propene	10.60	10.30	97
Dichlorodifluoromethane	10.40	11.13	107
Dimethyl Ether	10.80	9.81	91
Chloromethane	10.40	11.87	114
Dichlorotetrafluoroethane	10.30	12.31	120
Vinyl Chloride	10.50	11.87	113
Acetaldehyde	HR 22.50	31.43	140
Methanol	HR 20.10	76.09	379
1,3-Butadiene	10.60	11.83	112
Bromomethane	10.40	10.95	105
Chloroethane	10.30	10.66	103
Dichlorofluoromethane	10.50	11.49	109
Ethanol	11.20	9.41	84
Vinyl Bromide	10.50	11.27	107
Acrolein	11.10	11.52	104
Acetone	10.60	9.93	94
Trichlorofluoromethane	10.50	11.15	106
2-Propanol (IPA)	11.00	10.53	96
Acrylonitrile	11.40	13.34	117
1,1-Dichloroethene	10.40	10.18	98
Methylene Chloride (DCM)	10.50	10.41	99
TertButanol (TBA)	11.30	11.17	99
Allyl Chloride	10.40	9.81	94
Carbon Disulfide	10.50	10.75	102
Trichlorotrifluoroethane	10.40	10.54	101
trans-1,2-Dichloroethene	10.60	9.93	94
1,1-Dichloroethane	10.50	8.89	85
Methyl Tert Butyl Ether (MTBE)	LR 10.50	6.95	66
Vinyl Acetate	11.00	9.16	83
2-Butanone (MEK)	10.60	8.88	84
cis-1,2-Dichloroethene	10.50	9.47	90
Hexane	10.70	8.12	76
Chloroform	10.60	8.71	82
Ethyl Acetate	10.60	8.49	80
Tetrahydrofuran	10.20	8.01	79
1,2-Dichloroethane	LR 10.50	6.83	65
1,1,1-Trichloroethane	10.40	8.29	80
Benzene	10.60	8.89	84
Carbon Tetrachloride	10.20	9.06	89
Cyclohexane	10.50	8.70	83

Analyte Compounds (Continued)	Source ¹	CCV ²	% Recovery ³
1,2-Dichloropropane	10.50	9.09	87
Bromodichloromethane	10.40	8.31	80
1,4-Dioxane	10.40	8.57	82
Trichloroethene (TCE)	10.40	10.00	96
2,2,4-Trimethylpentane	10.40	9.80	94
Methyl Methacrylate	11.00	8.69	79
Heptane	10.50	8.74	83
cis-1,3-Dichloropropene	10.40	8.22	79
4-Methyl-2-pentanone (MiBK)	10.40	8.85	85
trans-1,3-Dichloropropene	10.50	7.46	71
1,1,2-Trichloroethane	10.50	9.62	92
Toluene	10.60	9.50	90
2-Hexanone (MBK)	10.50	9.07	86
Dibromochloromethane	10.30	11.12	108
1,2-Dibromoethane	10.60	10.36	98
Tetrachloroethene (PCE)	10.40	9.81	94
Chlorobenzene	10.60	10.03	95
Ethylbenzene	10.50	9.80	93
m & p-Xylene	21.00	21.08	100
Bromoform	10.50	11.27	107
Styrene	10.50	10.50	100
1,1,2,2-Tetrachloroethane	10.50	12.08	115
o-Xylene	10.50	10.54	100
1,2,3-Trichloropropane	10.40	11.61	112
Isopropylbenzene (Cumene)	10.40	11.31	109
α-Pinene	11.40	10.49	92
2-Chlorotoluene	10.40	11.34	109
n-Propylbenzene	10.50	11.49	109
4-Ethyltoluene	10.30	11.33	110
1,3,5-Trimethylbenzene	10.30	10.89	106
β-Pinene	11.30	11.37	101
1,2,4-Trimethylbenzene	10.30	11.19	109
Benzyl Chloride (a-Chlorotoluene)	10.40	9.81	94
1,3-Dichlorobenzene	10.40	11.82	114
1,4-Dichlorobenzene	10.30	11.48	111
Sec-ButylBenzene	10.40	11.79	113
1,2-Dichlorobenzene	10.60	11.45	108
n-ButylBenzene	10.40	11.87	114
1,2-Dibromo-3-Chloropropane	10.40	11.97	115
1,2,4-Trichlorobenzene	11.00	10.95	100
Naphthalene	11.50	11.53	100
Hexachlorobutadiene	11.00	11.51	105

¹ Concentration of analyte compound in certified source standard.

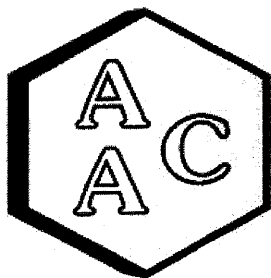
² Measured result from daily Continuing Calibration Verification (CCV).

³ The acceptable range for analyte recovery is 100±30%.

HR - Recovery for this compound was high. Results should be considered biased high.

LR - Recovery for this compound was low. Results should be considered estimated.





Atmospheric Analysis & Consulting, Inc

QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/11/2022

MATRIX : High Purity N₂

UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-02

CALIBRATION STD ID : MS1-030722-01

ANALYST : RC

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Laboratory Control Spike Analysis

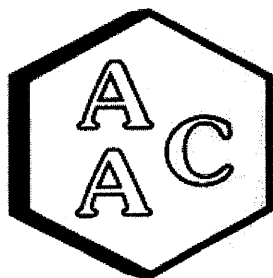
<i>System Monitoring Compounds</i>	<i>Sample Concentration</i>	<i>Spike Added</i>	<i>LCS¹ Recovery</i>	<i>LCSD¹ Recovery</i>	<i>LCS¹ % Recovery²</i>	<i>LCSD¹ % Recovery²</i>	<i>RPD³</i>
4-BFB (surrogate standard)	0.0	10.00	9.34	8.96	93.4	89.6	4.2
1,1-Dichloroethene	0.0	10.40	10.18	10.26	98	99	0.8
Methylene Chloride (DCM)	0.0	10.50	10.41	10.80	99	103	3.7
Benzene	0.0	10.60	8.89	9.20	84	87	3.4
Trichloroethene (TCE)	0.0	10.40	10.00	10.02	96	96	0.2
Toluene	0.0	10.60	9.50	9.61	90	91	1.2
Tetrachloroethene (PCE)	0.0	10.40	9.81	10.15	94	98	3.4
Chlorobenzene	0.0	10.60	10.03	10.15	95	96	1.2
Ethylbenzene	0.0	10.50	9.80	9.64	93	92	1.6
m & p-Xylene	0.0	21.00	21.08	21.09	100	100	0.0
o-Xylene	0.0	10.50	10.54	10.74	100	102	1.9

¹ Laboratory Control Spike (LCS) / Laboratory Control Spike Duplicate (LCSD)

² The acceptable range for analyte recovery is 100±30%.

³ Relative Percent Difference (RPD) between LCS recovery and LCSD recovery (acceptable range is <25%).





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QUALITY CONTROL / QUALITY ASSURANCE REPORT

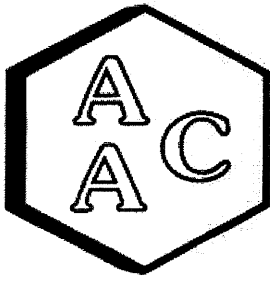
ANALYSIS DATE : 03/11/2022
 MATRIX : High Purity He or N₂
 UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-02
 ANALYST : RC

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15 Method Blank Analysis

Analyte Compounds	MB 031122	Reporting Limit (RL)	Analyte Compounds (Continued)	MB 031122	Reporting Limit (RL)
4-BFB (surrogate standard)	86%	100±30%	1,2-Dichloropropane	<RL	0.5
Chlorodifluoromethane	<RL	0.5	Bromodichloromethane	<RL	0.5
Propene	<RL	1.0	1,4-Dioxane	<RL	1.0
Dichlorodifluoromethane	<RL	0.5	Trichloroethene (TCE)	<RL	0.5
Dimethyl Ether	<RL	0.5	2,2,4-Trimethylpentane	<RL	0.5
Chloromethane	<RL	0.5	Methyl Methacrylate	<RL	0.5
Dichlorotetrafluoroethane	<RL	0.5	Heptane	<RL	0.5
Vinyl Chloride	<RL	0.5	cis-1,3-Dichloropropene	<RL	0.5
Acetaldehyde	<RL	5.0	4-Methyl-2-pentanone (MiBK)	<RL	0.5
Methanol	<RL	5.0	trans-1,3-Dichloropropene	<RL	0.5
1,3-Butadiene	<RL	0.5	1,1,2-Trichloroethane	<RL	0.5
Bromomethane	<RL	0.5	Toluene	<RL	0.5
Chloroethane	<RL	0.5	2-Hexanone (MBK)	<RL	1.0
Dichlorofluoromethane	<RL	0.5	Dibromochloromethane	<RL	0.5
Ethanol	<RL	2.0	1,2-Dibromoethane	<RL	0.5
Vinyl Bromide	<RL	0.5	Tetrachloroethene (PCE)	<RL	0.5
Acrolein	<RL	1.0	Chlorobenzene	<RL	0.5
Acetone	<RL	2.0	Ethylbenzene	<RL	0.5
Trichlorofluoromethane	<RL	0.5	m & p-Xylene	<RL	1.0
2-Propanol (IPA)	<RL	2.0	Bromoform	<RL	0.5
Acrylonitrile	<RL	2.0	Styrene	<RL	0.5
1,1-Dichloroethene	<RL	0.5	1,1,2,2-Tetrachloroethane	<RL	0.5
Methylene Chloride (DCM)	<RL	1.0	o-Xylene	<RL	0.5
TertButanol (TBA)	<RL	0.5	1,2,3-Trichloropropane	<RL	0.5
Allyl Chloride	<RL	1.0	Isopropylbenzene (Cumene)	<RL	0.5
Carbon Disulfide	<RL	2.0	α-Pinene	<RL	0.5
Trichlorotrifluoroethane	<RL	0.5	2-Chlorotoluene	<RL	0.5
trans-1,2-Dichloroethane	<RL	0.5	n-Propylbenzene	<RL	0.5
1,1-Dichloroethane	<RL	0.5	4-Ethyltoluene	<RL	0.5
Methyl Tert Butyl Ether (MTBE)	<RL	0.5	1,3,5-Trimethylbenzene	<RL	0.5
Vinyl Acetate	<RL	1.0	β-Pinene	<RL	0.5
2-Butanone (MEK)	<RL	1.0	1,2,4-Trimethylbenzene	<RL	0.5
cis-1,2-Dichloroethene	<RL	0.5	Benzyl Chloride (a-Chlorotoluene)	<RL	0.5
Hexane	<RL	0.5	1,3-Dichlorobenzene	<RL	0.5
Chloroform	<RL	0.5	1,4-Dichlorobenzene	<RL	0.5
Ethyl Acetate	<RL	0.5	Sec-ButylBenzene	<RL	0.5
Tetrahydrofuran	<RL	0.5	1,2-Dichlorobenzene	<RL	0.5
1,2-Dichloroethane	<RL	0.5	n-ButylBenzene	<RL	0.5
1,1,1-Trichloroethane	<RL	0.5	1,2-Dibromo-3-Chloropropane	<RL	0.5
Benzene	<RL	0.5	1,2,4-Trichlorobenzene	<RL	0.5
Carbon Tetrachloride	<RL	0.5	Naphthalene	<RL	1.0
Cyclohexane	<RL	0.5	Hexachlorobutadiene	<RL	0.5





Atmospheric Analysis & Consulting, Inc.

QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/11/2022
 MATRIX : Air
 UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-02
 ANALYST : RC
 DILUTION FACTOR¹ : x1

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Duplicate Analysis of AAC Sample ID: CCV/LCSD

Analyte Compounds	Sample	Duplicate	RPD ²
4-BFB (surrogate standard)	9.34	8.96	4.2
Chlorodifluoromethane	10.6	10.6	0.1
Propene	10.3	10.3	0.2
Dichlorodifluoromethane	11.1	10.9	2.0
Dimethyl Ether	9.81	9.35	4.8
Chloromethane	11.9	11.8	0.3
Dichlorotetrafluoroethane	12.3	12.2	0.7
Vinyl Chloride	11.9	11.9	0.1
Acetaldehyde	31.4	32.5	3.3
Methanol	76.1	79.2	4.0
1,3-Butadiene	11.8	12.3	3.9
Bromomethane	11.0	10.8	1.2
Chloroethane	10.7	10.2	4.6
Dichlorofluoromethane	11.5	11.7	1.6
Ethanol	9.41	9.95	5.6
Vinyl Bromide	11.3	11.3	0.4
Acrolein	11.5	11.3	1.8
Acetone	9.93	9.57	3.7
Trichlorofluoromethane	11.2	10.9	1.9
2-Propanol (IPA)	10.5	10.9	3.5
Acrylonitrile	13.3	12.9	3.3
1,1-Dichloroethene	10.2	10.3	0.8
Methylene Chloride (DCM)	10.4	10.8	3.7
TertButanol (TBA)	11.2	11.1	0.7
Allyl Chloride	9.81	9.61	2.1
Carbon Disulfide	10.8	11.0	2.5
Trichlorotrifluoroethane	10.5	10.7	1.3
trans-1,2-Dichloroethene	9.93	9.88	0.5
1,1-Dichloroethane	8.89	8.75	1.6
Methyl Tert Butyl Ether (MTBE)	6.95	6.97	0.3
Vinyl Acetate	9.16	9.31	1.6
2-Butanone (MEK)	8.88	8.88	0.0
cis-1,2-Dichloroethene	9.47	9.45	0.2
Hexane	8.12	8.12	0.0
Chloroform	8.71	8.80	1.0
Ethyl Acetate	8.49	8.62	1.5
Tetrahydrofuran	8.01	8.01	0.0
1,2-Dichloroethane	6.83	7.10	3.9
1,1,1-Trichloroethane	8.29	8.34	0.6
Benzene	8.89	9.20	3.4
Carbon Tetrachloride	9.06	9.30	2.6
Cyclohexane	8.70	9.09	4.4

Analyte Compounds (Continued)	Sample	Duplicate	RPD ²
1,2-Dichloropropane	9.09	9.35	2.8
Bromodichloromethane	8.31	8.51	2.4
1,4-Dioxane	8.57	9.00	4.9
Trichloroethene (TCE)	10.0	10.0	0.2
2,2,4-Trimethylpentane	9.80	9.84	0.4
Methyl Methacrylate	8.69	8.87	2.1
Heptane	8.74	8.61	1.5
cis-1,3-Dichloropropene	8.22	8.33	1.3
4-Methyl-2-pentanone (MiBK)	8.85	8.97	1.3
trans-1,3-Dichloropropene	7.46	7.61	2.0
1,1,2-Trichloroethane	9.62	9.77	1.5
Toluene	9.50	9.61	1.2
2-Hexanone (MBK)	9.07	9.33	2.8
Dibromochloromethane	11.1	11.3	1.9
1,2-Dibromoethane	10.4	10.6	2.3
Tetrachloroethene (PCE)	9.81	10.2	3.4
Chlorobenzene	10.0	10.2	1.2
Ethylbenzene	9.80	9.64	1.6
m & p-Xylene	21.1	21.1	0.0
Bromoform	11.3	11.2	1.1
Styrene	10.5	10.2	2.7
1,1,2,2-Tetrachloroethane	12.1	12.2	0.6
o-Xylene	10.5	10.7	1.9
1,2,3-Trichloropropane	11.6	11.4	1.6
Isopropylbenzene (Cumene)	11.3	11.1	1.9
α-Pinene	10.5	10.1	4.2
2-Chlorotoluene	11.3	11.4	0.2
n-Propylbenzene	11.5	11.2	3.0
4-Ethyltoluene	11.3	11.1	1.7
1,3,5-Trimethylbenzene	10.9	10.7	1.8
β-Pinene	11.4	9.67	16.2
1,2,4-Trimethylbenzene	11.2	11.1	0.9
Benzyl Chloride (a-Chlorotoluene)	9.81	9.70	1.1
1,3-Dichlorobenzene	11.8	11.5	2.5
1,4-Dichlorobenzene	11.5	11.3	1.8
Sec-ButylBenzene	11.8	11.5	2.6
1,2-Dichlorobenzene	11.5	11.5	0.4
n-ButylBenzene	11.9	11.6	2.1
1,2-Dibromo-3-Chloropropane	12.0	11.7	2.5
1,2,4-Trichlorobenzene	11.0	11.0	0.4
Naphthalene	11.5	11.7	1.5
Hexachlorobutadiene	11.5	11.7	1.3

¹ Dilution factor is the product of the Canister Dilution Factor and the Analysis Dilution Factor.

² Relative Percent Difference (RPD) between Sample analysis and Duplicate analysis (acceptable range is <25%).

SRL - Sample Reporting Limit (minimum)

