Lakeland Industry & Community Association

SEPTEMBER 2021

Monthly Ambient Air Quality Monitoring Integrated Sampling Report

LICA-202109-INTEGRATED

October 21, 2021

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October 21, 2021

Alberta Environment and Parks (AEP)
11th Floor, Oxbridge Place
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Edmonton, AB, T5K 2J6

RE: LICA –September 2021 Monthly Ambient Air Quality Monitoring Integrated Sampling Report

Enclosed is the September 2021 Monthly Ambient Air Quality Monitoring Integrated Sampling Report for the Lakeland Industry and Community Association's (LICA) regional air quality monitoring network. This report summarizes monitoring data for samples collected using integrated methods including volatile organic compounds, polycyclic aromatic hydrocarbons, polycyclic aromatic compounds, particulate matter, ozone, hydrogen sulphide, sulphur dioxide, and nitrogen dioxide.

The representative of the Person Responsible for this monitoring program is

LICA Airshed
Michael Bisaga, Monitoring Programs Manager
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This report has been prepared, reviewed and submitted by Michael Bisaga & Lily Lin of the LICA Airshed.

NETWORK STATION SUMMARY

Listing of Air Monitoring Stations and Integrated Sampling Stations

Station Name	Cold Lake South
Station ID	1174
Coordinates	54.41402, -110.23316
VOCs	√
PAHs	√
Partisol	√
Passive	√

Listing of Passive Sampling Stations

Site ID	Name	Latitude	Longitude
2	Sand River	54.53658	-111.20898
3	Therien	54.31085	-111.22607
4	Flat Lake	54.07262	-111.20510
5	Lake Eliza	53.82417	-111.16605
6	Telegraph Creek	53.74068	-110.57655
8	Muriel-Kehewin	54.09340	-110.74437
9	Dupre	54.33462	-110.77965
10	La Corey	54.49967	-110.81792
11	Wolf lake	54.698845	-110.769700
12	Foster Creek	55.03343	-110.50453
13	Primrose	54.75848	-110.45217
14	Tamarack (formerly Maskwa)	54.60518	-110.45263
15	Ardmore	54.40670	-110.46202
16	Frog Lake	53.89065	-110.38418
17	Clear Range	53.55648	-110.15423
18	Fishing Lake	53.90295	-110.07623
19	Beaverdam	54.16925	-110.23285
22	Cold Lake South (1)	54.41370	-110.23285
23	Medley-Martineau	54.72430	-110.06618
24	Fort George	53.87830	-110.74807
25	Burnt Lake	54.79104	-110.33424
26	Mahihkan	54.63738	-110.57538
27	Mahkeses	54.59014	-110.38028
28	Town of Bonnyville	54.27530	-110.74065
29	Cold Lake South (2)	54.41385	-110.23283
32	St. Lina	54.21639	-111.50295

Listing of Passive Aromatic Compounds Stations

Site ID	Name	Latitude	Longitude
9	Dupre	54.33462	-110.77965
10	La Corey	54.49967	-110.81792
15	Ardmore	54.40670	-110.46202
18	Fishing Lake	53.90295	-110.07623
24	Fort George	53.87830	-110.74807
32	St. Lina	54.21639	-111.50295

List of Contractors who performed the air monitoring activities

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Prepared By	Electronic Submission Conducted By
Intermittent (VOCs/PAHs)	Bureau Veritas	InnoTech Alberta Inc	LICA	LICA
Intermittent (PACs)	Bureau Veritas	ECCC	AEP	AEP
Partisols	Bureau Veritas	InnoTech Alberta Inc	LICA	LICA
Passives	Bureau Veritas	Bureau Veritas	LICA	LICA

Monitoring Notes during the Month of September 2021

Cold Lake South Station

- **Volatile Organic Compounds (VOCs)**
  - Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
  - The VOC sampler is programed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Five samples were collected this month: on September 1, 7, 13, 19 and 25.
- **Polycyclic Aromatic Hydrocarbons (PAHs)**
  - Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
  - The PUF sampler is programed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Five samples were collected this month: on September 1, 7, 13, 19 and 25.
- **Partisols**
  - The Partisol sampler is programed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Five samples were collected this month: on September 1, 7, 13, 19 and 25. However, no analytical results for September 7 samples are available as the sample filters went missing during shipping and cannot be retrieved.

- **Passives**
    - There were no exceedances of the AAAQOs for all monitored parameters at any of the passive stations during this month.
    - The passive sample filters were installed at the stations between August 30 and September 1, and were removed between September 29 and October 1.
    - A total of 8 duplicate samples were collected: 1 for H2S, 3 for SO2, 2 for NO2 and 2 for O3.
    - No samples were collected at station 25. The field technician has not completed the necessary safety orientation for the CNRL Primrose/Burnt Lake site and access is not permitted at this time.

Passive polycyclic aromatic compounds (PACs) Stations

- The PAC sampling program began in September 2019, and is designed to collect a 2-month integrated sample.
- No PAC samples were collected as the PAC sampling program has been paused due to the EC laboratory closure during the COVID-19 pandemic.

Revisions to Alberta's Ambient Air Quality Data Warehouse

No revisions to historical data previously submitted to the Alberta's Ambient Air Quality Data Warehouse were made this month.

Deviations from Authorized Monitoring Methods

There were no deviations from authorized monitoring methods.

Certification

The report was prepared and submitted by Lily Lin in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).

Lily Lin
Data & Reporting Specialist
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The report was reviewed by Mike Bisaga in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).

I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. I also certify that at the time of this report's submission, all air data have been electronically uploaded to Alberta ETS as required by the AMD.

Michael Bisaga
Monitoring Programs Manager
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INTEGRATED SAMPLING RESULTS SUMMARY

COLD LAKE SOUTH STATION

- **VOCs analytical results**

Sample Date	2021-09-01	2021-09-07	2021-09-13	2021-09-19	2021-09-25
Canister ID	32211	31820	32255	28881	32240
Maximum Reading (ppbv)	2.3	2.8	2.4	6.9	3.2
Parameter	Acetone	Acetone	Acetone	Acetone	Acetone

- **PAHs analytical results**

Sample Date	2021-09-01		2021-09-07		2021-09-13		2021-09-19		2021-09-25	
PUF S/N	TE-10		TE-05		TE-04		TE-11		9801	
Volume (Vstd m^3)	330.33		330.33		330.33		330.33		330.33	
Maximum Reading	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3
	0.13	0.39	0.08	0.24	0.14	0.42	0.11	0.33	0.14	0.42
Parameter	Phenanthrene		Phenanthrene		Phenanthrene		Phenanthrene		Phenanthrene	

- **Partisol analytical results**
  - **$PM_{2.5}$**

Sample Date	2021-09-01		2021-09-13		2021-09-19		2021-09-25	
Filter #	P7011830		P7011828		P7011835		C9264687	
Volume (Vstd m^3)	20.8		21.1		21.0		20.8	
Parameter	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)
Particulate Matter	0.060	0.003	0.042	0.002	0.041	0.002	0.039	0.002

  - **$PM_{2.5-10}$**

Sample Date	2021-09-01		2021-09-13		2021-09-19		2021-09-25	
Filter #	P7011831		P7011829		P7011836		C9264688	
Volume (Vstd m^3)	2.31		2.35		2.34		2.32	
Parameter	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)
PM2.5-10 Mass	0.071	0.031	0.060	0.026	0.078	0.033	0.126	0.054

- **Passive analytical results**

	H_2S		NO_2		O_3		SO_2	
Minimum (ppb)	0.13	#12	0.2	#23	15.2	#23	0.2	#3
Maximum (ppb)	2.25	#27	3.5	#10	30.6	#5	1.8	#27
Average (ppb)	0.41	-	1.00	-	22.95	-	0.43	-

ANALYTICAL SAMPLING RESULTS

COLD LAKE SOUTH STATION

VOCS

LICA ENVIRONMENTAL STEWARDS

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - September 2021

Volatile Organic Compounds (VOCs) Results

Sample Date		2021-09-01	2021-09-07	2021-09-13	2021-09-19	2021-09-25
Canister ID		32211	31820	32255	28881	32240
Method		AC-058	AC-058	AC-058	AC-058	AC-058
Maximum Reading (ppbv)		2.3	2.8	2.4	6.9	3.2
Parameter		Acetone	Acetone	Acetone	Acetone	Acetone

Parameter	AAAQOs (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	RDL (ppbv)
1,1,1-Trichloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1,2,2-Tetrachloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1,2-Trichloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1-Dichloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1-Dichloroethylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
1,2,3-Trimethylbenzene		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05
1,2,4-Trichlorobenzene		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.8
1,2,4-Trimethylbenzene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.05
1,2-Dibromoethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,2-Dichlorobenzene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03
1,2-Dichloroethane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
1,2-Dichloropropane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
1,3,5-Trimethylbenzene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
1,3-Butadiene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
1,3-Dichlorobenzene		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.3
1,4-Dichlorobenzene		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4
1,4-Dioxane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.4
1-Butene		0.13	0.13	< 0.06	0.08	0.08	0.02
1-Hexene		< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	0.02
1-Pentene		< 0.03	0.11	0.08	0.1	0.06	0.01
2,2,4-Trimethylpentane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2,2-Dimethylbutane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2,3,4-Trimethylpentane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2,3-Dimethylbutane		< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.02
2,3-Dimethylpentane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
2,4-Dimethylpentane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
2-Methylheptane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2-Methylhexane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
2-Methylpentane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
3-Methylheptane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
3-Methylhexane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
3-Methylpentane		0.17	0.17	0.12	0.17	0.08	0.01
Acetone	2400	2.3	2.8	2.4	6.9	3.2	0.4
Acrolein	1.9	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.3
Benzene	9.0	0.22	0.21	0.09	0.13	0.13	0.01
Benzyl chloride		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Bromodichloromethane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
Bromoform		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Bromomethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Carbon disulfide	10	0.08	0.08	< 0.02	< 0.02	< 0.02	0.01
Carbon tetrachloride		0.15	0.16	0.11	0.14	0.08	0.01
Chlorobenzene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Chloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Chloroform		< 0.02	< 0.02	< 0.02	0.07	0.04	0.02
Chloromethane		0.54	0.62	0.59	0.9	0.57	0.02
cis-1,2-Dichloroethene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
cis-1,3-Dichloropropene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.04
cis-2-Butene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
cis-2-Pentene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Cyclohexane		0.29	0.29	0.17	0.18	0.17	0.02
Cyclopentane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Dibromochloromethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Ethanol		1.0	1.1	1.4	3.6	2.6	0.3
Ethyl acetate		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Ethylbenzene	460	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
Freon-11		0.29	0.33	0.28	0.41	0.24	0.02
Freon-113		0.14	0.15	0.09	0.13	0.09	0.01
Freon-114		0.06	0.06	< 0.03	0.03	< 0.03	0.02

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - September 2021

Volatile Organic Compounds (VOCs) Results

Sample Date		2021-09-01	2021-09-07	2021-09-13	2021-09-19	2021-09-25
Canister ID		32211	31820	32255	28881	32240
Method		AC-058	AC-058	AC-058	AC-058	AC-058
Maximum Reading (ppbv)		2.3	2.8	2.4	6.9	3.2
Parameter		Acetone	Acetone	Acetone	Acetone	Acetone

Parameter	AAAQOs (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	RDL (ppbv)
Freon-12		0.56	0.7	0.7	0.71	0.55	0.02
Hexachloro-1,3-butadiene		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.5
Isobutane		0.47	0.52	0.5	0.8	0.31	0.02
Isopentane		0.26	0.27	0.31	0.38	0.20	0.03
Isoprene		0.25	0.26	0.29	< 0.02	0.12	0.01
Isopropyl alcohol		< 0.3	< 0.3	< 0.3	0.8	< 0.3	0.4
Isopropylbenzene		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.01
m,p-Xylene		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.03
m-Diethylbenzene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
m-Ethyltoluene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.08
Methyl butyl ketone		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.5
Methyl ethyl ketone		< 0.3	< 0.3	< 0.3	0.8	< 0.3	0.3
Methyl isobutyl ketone		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Methyl methacrylate		< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.07
Methyl tert butyl ether		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03
Methylcyclohexane		< 0.02	< 0.02	< 0.02	< 0.02	0.11	0.01
Methylcyclopentane		0.17	0.17	0.11	0.19	0.09	0.02
Methylene chloride		< 0.3	< 0.3	< 0.3	5.5	< 0.3	0.3
n-Butane		0.27	0.29	0.33	0.54	0.21	0.03
n-Decane		< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.06
n-Dodecane		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
n-Heptane		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.01
n-Hexane	5960	0.22	0.22	0.12	0.85	< 0.03	0.01
n-Nonane		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.01
n-Octane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
n-Pentane		0.19	0.2	0.2	0.7	0.08	0.1
n-Propylbenzene		< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.05
n-Undecane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5
Naphthalene		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.5
o-Ethyltoluene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
o-Xylene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
p-Diethylbenzene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
p-Ethyltoluene		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.07
Styrene	52.0	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.04
Tetrachloroethylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
Tetrahydrofuran		< 0.3	< 0.3	< 0.3	0.7	< 0.3	0.4
Toluene	499	< 0.03	< 0.03	< 0.03	1.17	0.11	0.01
trans-1,2-Dichloroethylene		< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.01
trans-1,3-Dichloropropylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
trans-2-Butene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
trans-2-Pentene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Trichloroethylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
Vinyl acetate		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Vinyl chloride	51	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02

PAHS

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - September 2021

Polycyclic Aromatic Hydrocarbons (PAHs) Results

Sample Date	2021-09-01		2021-09-07		2021-09-13		2021-09-19		2021-09-25	
PUF S/N	TE-10		TE-05		TE-04		TE-11		9801	
Volume (Vstd m^3)	330.33		330.33		330.33		330.33		330.33	
Method	AC-066		AC-066		AC-066		AC-066		AC-066	
Maximum Reading	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3
	0.13	0.39	0.08	0.24	0.14	0.42	0.11	0.33	0.14	0.42
Parameter	Phenanthrene		Phenanthrene		Phenanthrene		Phenanthrene		Phenanthrene	

Parameter	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	RDL (ug)
1-Methylnaphthalene	< 0.01	0.00	0.03	0.09	< 0.01	0.00	< 0.01	0.00	0.04	0.12	0.01
2-Methylnaphthalene	0.02	0.06	0.05	0.15	0.02	0.06	0.01	0.03	0.06	0.18	0.01
3-Methylcholanthrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
7,12-Dimethylbenz(a)anthracene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Acenaphthene	0.01	0.03	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.07	0.21	0.01
Acenaphthylene	0.01	0.03	0.02	0.06	0.02	0.06	0.01	0.03	0.01	0.03	0.01
Acridine	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Anthracene	0.01	0.03	0.02	0.06	0.02	0.06	0.01	0.03	< 0.01	0.00	0.01
Benzo(a)anthracene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(a)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(b,j,k)fluoranthene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(c)phenanthrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(e)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(ghi)perylene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Chrysene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Dibenzo(a,h)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Dibenzo(a,i)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Dibenzo(a,l)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Dibenzo(ah)anthracene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Fluoranthene	0.03	0.09	0.02	0.06	0.04	0.12	0.03	0.09	0.02	0.06	0.01
Fluorene	0.03	0.09	0.03	0.09	0.04	0.12	0.02	0.06	0.04	0.12	0.01
Indeno(1,2,3-cd)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Naphthalene	0.01	0.03	0.04	0.12	< 0.01	0.00	0.01	0.03	0.03	0.09	0.01
Perylene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Phenanthrene	0.13	0.39	0.08	0.24	0.14	0.42	0.11	0.33	0.14	0.42	0.01
Pyrene	0.03	0.09	0.02	0.06	0.04	0.12	0.03	0.09	0.02	0.06	0.01
Retene	0.07	0.21	0.05	0.15	0.06	0.18	0.05	0.15	0.05	0.15	0.01

PARTISOLS

AKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - September 2021

Partisol Results - $PM_{2.5}$

Sample Date		**2021-09-01**	**2021-09-13**	**2021-09-19**	**2021-09-25**
Filter #		**P7011830**	**P7011828**	**P7011835**	**C9264687**
Volume (Vstd m^3)		**20.8**	**21.1**	**21.0**	**20.8**
Method		**AC-029**	**AC-029**	**AC-029**	**AC-029**

Parameter	**AAAQO (mg/m3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**RDL (mg)**
Particulate Matter	0.029	**0.060**	**0.003**	**0.042**	**0.002**	**0.041**	**0.002**	**0.039**	**0.002**	0.004

PM2.5 Mass in ug/m3	**2.885**	**1.991**	**1.952**	**1.875**
RDL in ug/m3	**0.192**	**0.190**	**0.190**	**0.192**

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - September 2021

Partisol Results -$PM_{2.5}$-PM_{10}

Sample Date	**2021-09-01**	**2021-09-13**	**2021-09-19**	**2021-09-25**
Filter #	**P7011831**	**P7011829**	**P7011836**	**C9264688**
Volume (Vstd m^3)	**2.31**	**2.35**	**2.34**	**2.32**
Method	**AC-029**	**AC-029**	**AC-029**	**AC-029**

Parameter	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**RDL (mg)**
PM2.5-10 Mass	**0.071**	**0.031**	**0.060**	**0.026**	**0.078**	**0.033**	**0.126**	**0.054**	0.004

PM2.5-10 Mass in ug/m3	**30.736**	**25.532**	**33.333**	**54.310**
RDL in ug/m3	**1.732**	**1.702**	**1.709**	**1.724**

PASSIVE SAMPLES

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - September 2021

Passive Results

	H_2S		NO_2		O_3		SO_2	
Minimum (ppb)	0.13	#12	0.2	#23	15.2	#23	0.2	#3
Maximum (ppb)	2.25	#27	3.5	#10	30.6	#5	1.8	#27
Average (ppb)	0.41	-	1.00	-	22.95	-	0.43	-

No.	Station	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate
3	Therien	0.30		0.7		23.1		0.2	
4	Flat Lake	-		0.6		30.5		0.3	
5	Lake Eliza	0.59		0.6		30.6		0.4	
6	Telegraph Creek	-		2.7		19.9		0.5	
8	Muriel-Kehewin	-		0.6		25.7		0.3	
9	Dupre	-		0.8		21.9		0.3	
10	La Corey	0.28		3.5		17.6		0.3	
11	Wolf Lake	0.17		0.5		17.5		0.2	
12	Foster Creek	0.13		0.3		20.7		0.3	
13	Primrose	0.16		0.5		24.1		0.5	
14	Maskwa	0.37		1.3		23.7		1.4	
15	Ardmore	-		1.0		22.5		0.2	
16	Frog Lake	0.32		1.0		20.6		0.3	
17	Clear Range	0.36		0.9		22.1		0.4	
18	Fishing Lake	0.18		0.5	0.6	18.3	19.4	0.2	
19	Beaverdam	-		0.5	0.5	26.3	24.8	0.2	
22	Cold Lake South (1)	0.30		0.9		21.9		0.3	
23	Medley-Martineau	-		0.2		15.2		0.2	0.2
24	Fort George	0.16		1.6		23.6		0.3	0.3
25	Burnt Lake	Missing 1		-		-		Missing 1	
26	Mahihkan	0.22		-		-		0.7	0.7
27	Mahkeses	2.25	2.31	-		-		1.8	
28	Town of Bonnyville	-		2.0		26.6		0.5	
29	Cold Lake South (2)	0.25	0.25	0.9		25.3		0.3	
32	St. Lina	0.47		0.4		27.1		0.3	
Reportable Detection Limit (RDL)		**0.02**		**0.1**		**0.1**		**0.1**	

Note:

1 - : Sample collection was not required at the station.

2 Missing 1: Access to the station was not possible due to lack of permit to access the stations.

3 Blank (Duplicate): no duplicate sample was taken.

End of Report

Lakeland Industry & Community Association

SEPTEMBER 2021

Ambient Air Monitoring

Certified Laboratory Analysis Report

LAB-LICA-202109

Operation and Maintenance:
Bureau Veritas Canada

Data Validation and Analytical Report:
Bureau Veritas Canada and InnoTech Alberta

October 21, 2021

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Cold Lake South Station

Volatile Organic Compounds (VOCs) & Polycyclic Aromatic Hydrocarbons (PAHs) Samples

Sample ID 21090079-001 **Priority** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Sep 01, 2021

RECEIVED
SEP 10 2021

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	32211
Station ID:	LICA 01	**Installation Date/Time (mst):**	Aug 27, 2021@ 10:56
Sample ID:	LICA/VOC/CLS/Sep 01, 2021	**Removal Date/Time (mst):**	Sep 03, 2021@ 18:10

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
September 1, 2021	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	**Final Pressure (psi)**
-27.2	18.9

Flow Settings		
Flow Reading (sccm)	**Pot Set Point**	**Pump Set (psi)**
10.00	4.98	24.0

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Final leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Total leak rate = n/a psi over n/a minutes

****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****

Timer reset to zero prior to sampling? YES (yes/no)

Date of last audit: August 4, 2021 (due every 3 months)

Last date of sample line purging / replacement: August 4, 2021 (due every 6 months)

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID 21090079-002 Priority Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Sep 01, 2021

RECEIVED
SEP 10 2021

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-10
Location:	Cold Lake South	Motor S/N:	1138/100-1020
Station ID:	LICA 01	Installation Date/Time:	Aug 27, 2021 @ 10:58
Field Sample ID:	LICA/PUF/CLS/Sep 01, 2021	Removal Date/Time:	Sep 03, 2021 @ 18:12

Sample Data Collection Information

Sample Date:	01-Sep-21	Average Pressure (mmHg)	704
Start Time (mst):	0:00	Average Flow (Q_{std})	229
End Time (mst):	23:59	Average Tempurature (°C)	16.2
Elapsed Time (Hours):	24	Volume (Vstd m^3)	330.33

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	YES	NO
Average temperature appears correct?	YES	NO
Average pressure appears correct?	YES	NO
Any error messages? (if yes list below)	YES	NO
Sample duration 24 hours?	YES	NO
Date of last calibration/audit:	04-Aug-21	
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32211

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: TSQ on: MAY 1 8 2021

Evacuated: MAY 2 7 2021 Recertified: AUG 1 1 2021

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Sep 01, 2021

Sampled By: Alex Yamporr

Starting Vacuum: -27.2 "Hg

End Vacuum: 19 KG +18.9 "Hg/psig

InnoTech ALBERTA

Canister ID: TE-10

This cleaned canister meets or exceeds TO-15 Method Specifications

PUF

Proofed by: on:

Evacuated: Recertified:

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Sep 01, 2021

Sampled By: Alex Yamporr

Starting Vacuum: "Hg

End Vacuum: "Hg/psig

Sample ID 21090079-001 Priority Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Sep 01, 2021

PO Bag 4000
Vegreville, Alberta
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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Arianna Cook 780 812 2182
Lakeland Industry and Community Assn
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

INVOICE: Lica Communal Mail

CLIENT SAMPLE ID: LICA/PUF/CLS/Sep 01, 2021
Matrix: Air Filter
CANISTER ID: TE-10
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 01-Sep-21 0:00
DATE RECEIVED: 10-Sep-21
REPORT CREATED: 18-Oct-21
REPORT NUMBER: 21090079
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-002	1-Methylnaphthalene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	2-Methylnaphthalene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Acenaphthene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Anthracene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Sep 01, 2021	TE-10	Air Filter	01-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090079 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Fluoranthene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Fluorene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Naphthalene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Phenanthrene		0.13	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Pyrene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090079-002	Retene		0.07	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 01, 2021	32211	Ambient Air	01-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090079 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Sep-21
21090079-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Sep-21
21090079-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Sep-21
21090079-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Sep-21
21090079-001	1-Butene/Isobutylene	I	0.13	ppbv	0.06	AC-058	14-Sep-21
21090079-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Sep-21
21090079-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	14-Sep-21
21090079-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 01, 2021	32211	Ambient Air	01-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090079 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	3-Methylpentane		0.17	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Acetone		2.3	ppbv	0.4	AC-058	14-Sep-21
21090079-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Benzene		0.22	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Carbon disulfide	I	0.08	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Carbon tetrachloride		0.15	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Chloromethane		0.54	ppbv	0.04	AC-058	14-Sep-21
21090079-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Cyclohexane		0.29	ppbv	0.04	AC-058	14-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 01, 2021	32211	Ambient Air	01-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090079 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Ethanol		1.0	ppbv	0.5	AC-058	14-Sep-21
21090079-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Freon-11		0.29	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Freon-113		0.14	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Freon-114	I	0.06	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Freon-12		0.56	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Isobutane		0.47	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Isopentane		0.26	ppbv	0.04	AC-058	14-Sep-21
21090079-001	Isoprene		0.25	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090079-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090079-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Sep-21
21090079-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Sep-21
21090079-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Methylcyclopentane		0.17	ppbv	0.05	AC-058	14-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 01, 2021	32211	Ambient Air	01-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090079 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	n-Butane		0.27	ppbv	0.02	AC-058	14-Sep-21
21090079-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Sep-21
21090079-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090079-001	n-Hexane		0.22	ppbv	0.03	AC-058	14-Sep-21
21090079-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	n-Pentane		0.19	ppbv	0.04	AC-058	14-Sep-21
21090079-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Sep-21
21090079-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Sep-21
21090079-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090079-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090079-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090079-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Sep-21
21090079-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090079-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090079-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 01, 2021	32211	Ambient Air	01-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090079 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090079-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090079-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21

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Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090079	01	18-Oct-21	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

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Order Comments

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Sample ID 21090101-001 **Priority** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Sep 07, 2021

RECEIVED
SEP 13 2021

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	~~31820~~
Station ID:	LICA 01	**Installation Date/Time (mst):**	Sep 03, 2021@ 18:15
Sample ID:	LICA/VOC/CLS/Sep 07, 2021	**Removal Date/Time (mst):**	Sep 10, 2021@ 10:41

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
September 7, 2021	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.5	19.9

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.98	24.0

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Date of last audit: August 4, 2021 (due every 3 months)

Last date of sample line purging / replacement: August 4, 2021 (due every 6 months)

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID 21090101-002 **Priority** Normal

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Sep 07, 2021

RECEIVED
SEP 13 2021

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-05
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Sep 03, 2021 @ 18:21
Field Sample ID:	LICA/PUF/CLS/Sep 07, 2021	**Removal Date/Time:**	Sep 10, 2021 @ 10:44

Sample Data Collection Information

Sample Date:	07-Sep-21	**Average Pressure (mmHg)**	712
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	17.7
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.33

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Date of last calibration/audit:	**04-Aug-21**	
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

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Canister ID: 31820

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: DOS 4 on: MAY 19 2021

Evacuated: MAY 25 2021 Recertified: AUG 11 2021

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Sep 7, 2021

Sampled By: Alex Yacupov

Starting Vacuum: -27.5 "Hg

End Vacuum: KG +19.9 21 "Hg/ psig

InnoTech ALBERTA

Canister ID: TE-05

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: PUF

Evacuated: Recertified:

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Sep 7 2021

Sampled By: Alex Yacupov

Starting Vacuum: "Hg

End Vacuum: "Hg/ psig

Sample ID 21090101-001 Priority Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Sep 07, 2021

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Arianna Cook 780 812 2182
Lakeland Industry and Community Assn
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

INVOICE: Lica Communal Mail

CLIENT SAMPLE ID: LICA/PUF/CLS/Sep 07, 2021
Matrix: Air Filter
CANISTER ID: TE-05
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 07-Sep-21 0:00
DATE RECEIVED: 13-Sep-21
REPORT CREATED: 18-Oct-21
REPORT NUMBER: 21090101
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-002	1-Methylnaphthalene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	2-Methylnaphthalene		0.05	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Acenaphthene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Acenaphthylene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Anthracene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Sep 07, 2021	TE-05	Air Filter	07-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090101 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Fluoranthene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Fluorene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Naphthalene		0.04	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Phenanthrene		0.08	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Pyrene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090101-002	Retene		0.05	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 07, 2021	31820	Ambient Air	07-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090101 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Sep-21
21090101-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Sep-21
21090101-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Sep-21
21090101-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Sep-21
21090101-001	1-Butene/Isobutylene	I	0.13	ppbv	0.06	AC-058	14-Sep-21
21090101-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Sep-21
21090101-001	1-Pentene		0.11	ppbv	0.03	AC-058	14-Sep-21
21090101-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	14-Sep-21
21090101-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 07, 2021	31820	Ambient Air	07-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090101 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	3-Methylpentane		0.17	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Acetone		2.8	ppbv	0.4	AC-058	14-Sep-21
21090101-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Benzene		0.21	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Carbon disulfide	I	0.08	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Carbon tetrachloride		0.16	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Chloromethane		0.62	ppbv	0.04	AC-058	14-Sep-21
21090101-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Cyclohexane		0.29	ppbv	0.04	AC-058	14-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 07, 2021	31820	Ambient Air	07-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090101 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Ethanol		1.1	ppbv	0.5	AC-058	14-Sep-21
21090101-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Freon-11		0.33	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Freon-113		0.15	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Freon-114	I	0.06	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Freon-12		0.70	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Isobutane		0.52	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Isopentane		0.27	ppbv	0.04	AC-058	14-Sep-21
21090101-001	Isoprene		0.26	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090101-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090101-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Sep-21
21090101-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Sep-21
21090101-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Methylcyclopentane		0.17	ppbv	0.05	AC-058	14-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 07, 2021	31820	Ambient Air	07-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090101 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	n-Butane		0.29	ppbv	0.02	AC-058	14-Sep-21
21090101-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Sep-21
21090101-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090101-001	n-Hexane		0.22	ppbv	0.03	AC-058	14-Sep-21
21090101-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	n-Pentane		0.20	ppbv	0.04	AC-058	14-Sep-21
21090101-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Sep-21
21090101-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Sep-21
21090101-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090101-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090101-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Sep-21
21090101-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Sep-21
21090101-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Sep-21
21090101-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21
21090101-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 07, 2021	31820	Ambient Air	07-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090101 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090101-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Sep-21
21090101-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Sep-21

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Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090101	01	18-Oct-21	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

Order Comments

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Sample ID 21090136-001 **Priority** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Sep 13, 2021

RECEIVED
SEP 15 2021
JW

Maxxam Analytics

ction Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	32255
Station ID:	LICA 01	**Installation Date/Time (mst):**	Sep 10, 2021@ 10:52
Sample ID:	LICA/VOC/CLS/Sep 13, 2021	**Removal Date/Time (mst):**	Sep 14, 2021@ 14:32

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
September 13, 2021	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.2	18.9

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.98	24.0

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Final leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Total leak rate = n/a psi over n/a minutes

****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****

Timer reset to zero prior to sampling? YES (yes/no)

Date of last audit: August 4, 2021 (due every 3 months)

Last date of sample line purging / replacement: August 4, 2021 (due every 6 months)

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID 21090136-002 **Priority** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Sep 13, 2021

RECEIVED
SEP 15 2021

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-04
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Sep 10, 2021 @ 10:56
Field Sample ID:	LICA/PUF/CLS/Sep 13, 2021	**Removal Date/Time:**	Sep 14, 2021 @ 14:36

Sample Data Collection Information

Sample Date:	13-Sep-21	**Average Pressure (mmHg)**	708
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	13.9
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.33

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Date of last calibration/audit:	**04-Aug-21**	
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32255

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ on: MAY 1 8 2021

Evacuated: MAY 2 7 2021 Recertified: AUG 1 1 2021

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Sep 13, 2021

Sampled By: Alex Yampov

19psi JMS

Starting Vacuum:	End Vacuum:
-27.2 "Hg	+18.9 "Hg/psig

InnoTech ALBERTA

Canister ID: TE-04

This cleaned canister meets or exceeds TO-15 Method Specifications

PUF

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Sep 13, 2021

Sampled By: Alex Yampov

Starting Vacuum:	End Vacuum:
_____ "Hg	_____ "Hg/psig

Sample ID 21090136-001 **Priority** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Sep 13, 2021

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Arianna Cook 780 812 2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Sep 13, 2021
Matrix: Air Filter
CANISTER ID: TE-04
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 13-Sep-21 0:00
DATE RECEIVED: 15-Sep-21
REPORT CREATED: 18-Oct-21
REPORT NUMBER: 21090136
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-002	1-Methylnaphthalene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	2-Methylnaphthalene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Acenaphthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Acenaphthylene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Anthracene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Sep 13, 2021	TE-04	Air Filter	13-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090136 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Fluoranthene		0.04	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Fluorene		0.04	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Naphthalene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Phenanthrene		0.14	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Pyrene		0.04	ug/Filter	0.01	AC-066	07-Oct-21
21090136-002	Retene		0.06	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 13, 2021	32255	Ambient Air	13-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090136 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Sep-21
21090136-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	15-Sep-21
21090136-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	15-Sep-21
21090136-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	15-Sep-21
21090136-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	15-Sep-21
21090136-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	15-Sep-21
21090136-001	1-Pentene	I	0.08	ppbv	0.03	AC-058	15-Sep-21
21090136-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	15-Sep-21
21090136-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 13, 2021	32255	Ambient Air	13-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090136 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	3-Methylpentane		0.12	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Acetone		2.4	ppbv	0.4	AC-058	15-Sep-21
21090136-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Benzene	I	0.09	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Carbon tetrachloride		0.11	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Chloromethane		0.59	ppbv	0.04	AC-058	15-Sep-21
21090136-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Cyclohexane	I	0.17	ppbv	0.04	AC-058	15-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 13, 2021	32255	Ambient Air	13-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090136 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Ethanol		1.4	ppbv	0.5	AC-058	15-Sep-21
21090136-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Freon-11		0.28	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Freon-113	I	0.09	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Freon-12		0.70	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Isobutane		0.50	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Isopentane		0.31	ppbv	0.04	AC-058	15-Sep-21
21090136-001	Isoprene		0.29	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	15-Sep-21
21090136-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	15-Sep-21
21090136-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	15-Sep-21
21090136-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	15-Sep-21
21090136-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Methylcyclopentane		0.11	ppbv	0.05	AC-058	15-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 13, 2021	32255	Ambient Air	13-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090136 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	n-Butane		0.33	ppbv	0.02	AC-058	15-Sep-21
21090136-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	15-Sep-21
21090136-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	15-Sep-21
21090136-001	n-Hexane	I	0.12	ppbv	0.03	AC-058	15-Sep-21
21090136-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	n-Pentane		0.20	ppbv	0.04	AC-058	15-Sep-21
21090136-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	15-Sep-21
21090136-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	15-Sep-21
21090136-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	15-Sep-21
21090136-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	15-Sep-21
21090136-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	15-Sep-21
21090136-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	15-Sep-21
21090136-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Sep-21
21090136-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21
21090136-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 13, 2021	32255	Ambient Air	13-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090136 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090136-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	15-Sep-21
21090136-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	15-Sep-21

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Revision History

Order ID	Ver	Date	Reason
21090136	01	18-Oct-21	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

Order Comments

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Sample ID 21090230-001 Priority Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Sep 19, 2021

RECEIVED
SEP 23 2021

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	28881
Station ID:	LICA 01	**Installation Date/Time (mst):**	Sep 14, 2021@ 14:43
Sample ID:	LICA/VOC/CLS/Sep 19, 2021	**Removal Date/Time (mst):**	Sep 22, 2021@ 10:33

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
September 19, 2021	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.2	20.0

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.98	24.0

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Final leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Total leak rate = n/a psi over n/a minutes

****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****

Timer reset to zero prior to sampling? YES (yes/no)

Date of last audit: August 4, 2021 (due every 3 months)

Last date of sample line purging / replacement: August 4, 2021 (due every 6 months)

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID 21090230-002 Priority Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Sep 19, 2021

RECEIVED
SEP 23 2021

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-11
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Sep 14, 2021 @ 14:45
Field Sample ID:	LICA/PUF/CLS/Sep 19, 2021	**Removal Date/Time:**	Sep 22, 2021 @ 10:24

Sample Data Collection Information

Sample Date:	19-Sep-21	**Average Pressure (mmHg)**	703
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	12.2
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.33

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Date of last calibration/audit:	**04-Aug-21**	
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 28881

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ on: MAY 18 2021

Evacuated: MAY 27 2021 Recertified: AUG 11 2021

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CCS/Sep 19, 2021

Sampled By: Alex Yaunpor

Starting Vacuum: -27.2 "Hg

End Vacuum: KG 20.0 20 "Hg/psig

InnoTech ALBERTA

Canister ID: TE-11

This cleaned canister meets or exceeds TO-15 Method Specifications

PUF

Proofed by: on:

Evacuated: Recertified:

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CCS/Sep 19, 2021

Sampled By: Alex Yaunpor

Starting Vacuum: "Hg

End Vacuum: "Hg/psig

Sample ID 21090230-001 **Priority** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Sep 19, 2021

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Arianna Cook 780 812 2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Sep 19, 2021
Matrix: Air Filter
CANISTER ID: TE-11
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 19-Sep-21 0:00
DATE RECEIVED: 23-Sep-21
REPORT CREATED: 18-Oct-21
REPORT NUMBER: 21090230
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-002	1-Methylnaphthalene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	2-Methylnaphthalene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Acenaphthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Anthracene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Sep 19, 2021	TE-11	Air Filter	19-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090230 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Fluoranthene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Fluorene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Naphthalene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Phenanthrene		0.11	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Pyrene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090230-002	Retene		0.05	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 19, 2021	28881	Ambient Air	19-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090230 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	29-Sep-21
21090230-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Sep-21
21090230-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Sep-21
21090230-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Sep-21
21090230-001	1-Butene/Isobutylene	I	0.08	ppbv	0.06	AC-058	29-Sep-21
21090230-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Sep-21
21090230-001	1-Pentene		0.10	ppbv	0.03	AC-058	29-Sep-21
21090230-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	29-Sep-21
21090230-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 19, 2021	28881	Ambient Air	19-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090230 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	3-Methylpentane		0.17	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Acetone		6.9	ppbv	0.4	AC-058	29-Sep-21
21090230-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Benzene	I	0.13	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Carbon tetrachloride		0.14	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Chloroform	I	0.07	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Chloromethane		0.90	ppbv	0.04	AC-058	29-Sep-21
21090230-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Cyclohexane	I	0.18	ppbv	0.04	AC-058	29-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 19, 2021	28881	Ambient Air	19-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090230 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Ethanol		3.6	ppbv	0.5	AC-058	29-Sep-21
21090230-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Freon-11		0.41	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Freon-113		0.13	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Freon-114	I	0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Freon-12		0.71	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Isobutane		0.80	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Isopentane		0.38	ppbv	0.04	AC-058	29-Sep-21
21090230-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Isopropyl alcohol		0.8	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090230-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090230-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Sep-21
21090230-001	Methyl ethyl ketone		0.8	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	29-Sep-21
21090230-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Methylcyclopentane		0.19	ppbv	0.05	AC-058	29-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 19, 2021	28881	Ambient Air	19-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090230 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-001	Methylene chloride		5.5	ppbv	0.3	AC-058	29-Sep-21
21090230-001	n-Butane		0.54	ppbv	0.02	AC-058	29-Sep-21
21090230-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Sep-21
21090230-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090230-001	n-Hexane		0.85	ppbv	0.03	AC-058	29-Sep-21
21090230-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	n-Pentane		0.70	ppbv	0.04	AC-058	29-Sep-21
21090230-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Sep-21
21090230-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Sep-21
21090230-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090230-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090230-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090230-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Tetrahydrofuran		0.7	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Toluene		1.17	ppbv	0.03	AC-058	29-Sep-21
21090230-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Sep-21
21090230-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090230-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090230-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 19, 2021	28881	Ambient Air	19-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090230 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090230-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090230-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21

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Date: October 18, 2021

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Revision History

Order ID	Ver	Date	Reason
21090230	01	18-Oct-21	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

Order Comments

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Sample ID 21090288-001 Priority Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Sep 25, 2021

RECEIVED
SEP 29 2021

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	32240
Station ID:	LICA 01	**Installation Date/Time (mst):**	Sep 22, 2021@ 10:41
Sample ID:	LICA/VOC/CLS/Sep 25, 2021	**Removal Date/Time (mst):**	Sep 28, 2021@ 13:19

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
September 25, 2021	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.4	18.5

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.98	24.0

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Final leak check deployment vacuum (in. Hg) = n/a @ n/a mst

Total leak rate = n/a psi over n/a minutes

****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****

Timer reset to zero prior to sampling? YES (yes/no)

Date of last audit: August 4, 2021 (due every 3 months)

Last date of sample line purging / replacement: August 4, 2021 (due every 6 months)

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID 21090288-002 Priority Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Sep 25, 2021

RECEIVED
SEP 29 2021

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	9801
Location:	Cold Lake South	Motor S/N:	1138/100-1020
Station ID:	LICA 01	Installation Date/Time:	Sep 22, 2021 @ 10:49
Field Sample ID:	LICA/PUF/CLS/Sep 25, 2021	Removal Date/Time:	Sep 28, 2021 @ 13:16

Sample Data Collection Information

Sample Date:	25-Sep-21	Average Pressure (mmHg)	704
Start Time (mst):	0:00	Average Flow (Q_{std})	229
End Time (mst):	23:59	Average Tempurature (°C)	16
Elapsed Time (Hours):	24	Volume (Vstd m^3)	330.33

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	(YES)	NO
Average temperature appears correct?	(YES)	NO
Average pressure appears correct?	(YES)	NO
Any error messages? (if yes list below)	YES	(NO)
Sample duration 24 hours?	(YES)	NO
Date of last calibration/audit:	04-Aug-21	
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32240

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: DOS 4 on: MAY 2 1 2021

Evacuated: MAY 2 5 2021 Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Sep 25, 2021

Sampled By: Alex Yakupov

Starting Vacuum:	End Vacuum:
-27.4 "Hg	+18.5 "Hg/psig (19 KG)

InnoTech ALBERTA

Canister ID: 9801

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: PUF on: _____

Evacuated: _____ Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Sep 25, 2021

Sampled By: Alex Yakupov

Starting Vacuum:	End Pressure:
_____ "Hg	_____ "Hg/ psig

Sample ID 21090288-001 Priority Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Sep 25, 2021

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Arianna Cook 780 812 2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Sep 25, 2021
Matrix: Air Filter
CANISTER ID: 9801
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 25-Sep-21 0:00
DATE RECEIVED: 29-Sep-21
REPORT CREATED: 18-Oct-21
REPORT NUMBER: 21090288
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-002	1-Methylnaphthalene		0.04	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	2-Methylnaphthalene		0.06	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Acenaphthene		0.07	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Sep 25, 2021	9801	Air Filter	25-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090288 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Fluoranthene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Fluorene		0.04	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Naphthalene		0.03	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Phenanthrene		0.14	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Pyrene		0.02	ug/Filter	0.01	AC-066	07-Oct-21
21090288-002	Retene		0.05	ug/Filter	0.01	AC-066	07-Oct-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 25, 2021	32240	Ambient Air	25-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090288 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	29-Sep-21
21090288-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Sep-21
21090288-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Sep-21
21090288-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Sep-21
21090288-001	1-Butene/Isobutylene	I	0.08	ppbv	0.06	AC-058	29-Sep-21
21090288-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Sep-21
21090288-001	1-Pentene	I	0.06	ppbv	0.03	AC-058	29-Sep-21
21090288-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	29-Sep-21
21090288-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021 Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 25, 2021	32240	Ambient Air	25-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090288 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	3-Methylpentane	I	0.08	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Acetone		3.2	ppbv	0.4	AC-058	29-Sep-21
21090288-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Benzene	I	0.13	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Carbon tetrachloride	I	0.08	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Chloroform	I	0.04	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Chloromethane		0.57	ppbv	0.04	AC-058	29-Sep-21
21090288-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Cyclohexane	I	0.17	ppbv	0.04	AC-058	29-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 25, 2021	32240	Ambient Air	25-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090288 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Ethanol		2.6	ppbv	0.5	AC-058	29-Sep-21
21090288-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Freon-11		0.24	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Freon-113	I	0.09	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Freon-12		0.55	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Isobutane		0.31	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Isopentane		0.20	ppbv	0.04	AC-058	29-Sep-21
21090288-001	Isoprene		0.12	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090288-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090288-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Sep-21
21090288-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	29-Sep-21
21090288-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	Methylcyclohexane		0.11	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Methylcyclopentane	I	0.09	ppbv	0.05	AC-058	29-Sep-21

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 25, 2021	32240	Ambient Air	25-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090288 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	n-Butane		0.21	ppbv	0.02	AC-058	29-Sep-21
21090288-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Sep-21
21090288-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090288-001	n-Hexane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	n-Pentane	I	0.08	ppbv	0.04	AC-058	29-Sep-21
21090288-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Sep-21
21090288-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Sep-21
21090288-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090288-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090288-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Sep-21
21090288-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Toluene	I	0.11	ppbv	0.03	AC-058	29-Sep-21
21090288-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Sep-21
21090288-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Sep-21
21090288-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21
21090288-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Sep 25, 2021	32240	Ambient Air	25-Sep-21 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 21090288 **REPORT CREATED:** 18-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090288-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Sep-21
21090288-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 18, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090288	01	18-Oct-21	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

Order Comments

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Partisol Samples

Sample ID 21090078-001 **Priority** Normal

Customer ID: LICA
Cust Samp ID: P7011830

RECEIVED
SEP 10 2021

I 2000i-D Sample Data Sheet

Date Sampled:	9/01/21
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1) 1	COURSE (2) 2
Filter Type:	47mm	47mm
Filter #:	P7011830	P7011831
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	15.3	
Pressure	704	
Std Volume (Instrument)	20.8	2.31

Comments: Weather Conditions, etc.

n/a

Last Audit Date: 04-Aug-21

Install by (Sign/Date): Alex Yakupov Date: 27-Aug-21

Removed by (Sign/Date) Alex Yakupov Date: 03-Sep-21

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID 21090078-002 Priority Normal

Customer ID: LICA
Cust Samp ID: P7011831

RECEIVED
SEP 10 2021

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: July 27/21

Project: LICA/Bureau Veritas Labs

Prepared by: S Melenka

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	P7011830 → P7011831

Returns: coolers, large and small containers may be shipped to: Innotech Alberta, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Arianna Cook 780 812 2182
Lakeland Industry and Community Assn
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

INVOICE: Lica Communal Mail

CLIENT SAMPLE ID: P7011830
Matrix: Air Filter
CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - PM 2.5 - Fine
DATE SAMPLED: 01-Sep-21 0:00
DATE RECEIVED: 10-Sep-21
REPORT CREATED: 15-Sep-21
REPORT NUMBER: 21090078
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090078-001	Particulate Weight		0.060	mg	0.004	AC-029	13-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: September 15, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
P7011831		Air Filter	01-Sep-21 0:00

DESCRIPTION: Cold Lake South - PM 10 - Course

REPORT NUMBER: 21090078 **REPORT CREATED:** 15-Sep-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090078-002	Particulate Weight		0.071	mg	0.004	AC-029	13-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: September 15, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090078	01	15-Sep-21	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

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Canada T9C 1T4
(780) 632-8211

Order Comments

PO Bag 4000
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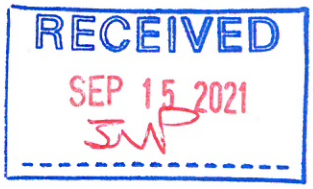
Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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



Partisol 2000i-D Sample Data Sheet

Date Sampled:	9/13/21
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

Sample ID 21090137-001 **Priority** Normal

Customer ID: LICA
Cust Samp ID: P7011828

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	P7011828	P7011829
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	12.7	
Pressure	708	
Std Volume (Instrument)	21.1	2.35

Comments: Weather Conditions, etc.

n/a

Last Audit Date: 04-Aug-21

Install by (Sign/Date): Alex Yakupov Date: 10-Sep-21

Removed by (Sign/Date) Alex Yakupov Date: 14-Sep-21

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID 21090137-002 Priority Normal

Customer ID: LICA
Cust Samp ID: P7011829

RECEIVED
SEP 15 2021

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: July 27/21

Project: LICA/Bureau Veritas Labs

Prepared by: S. Zulenka

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	P7011828 → P7011829

Returns: coolers, large and small containers may be shipped to: Innotech Alberta, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Arianna Cook 780 812 2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
P7011828	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - Fine - PM 2.5

DATE SAMPLED: 13-Sep-21 0:00
DATE RECEIVED: 15-Sep-21
REPORT CREATED: 23-Sep-21
REPORT NUMBER: 21090137
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090137-001	Particulate Weight		0.042	mg	0.004	AC-029	16-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: September 23, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
P7011829		Air Filter	13-Sep-21 0:00

DESCRIPTION: Cold Lake South - Course - PM 10

REPORT NUMBER: 21090137 **REPORT CREATED:** 23-Sep-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090137-002	Particulate Weight		0.060	mg	0.004	AC-029	16-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: September 23, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090137	01	23-Sep-21	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

Order Comments

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Sample ID 21090229-001 **Priority** Normal

Customer ID: LICA
Cust Samp ID: P7011835

RECEIVED
SEP 23 2021

ıl 2000i-D Sample Data Sheet

Date Sampled:	9/19/21
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1) 1	COURSE (2) 2
Filter Type:	47mm	47mm
Filter #:	P7011835	P7011836
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	11.9	
Pressure	703	
Std Volume (Instrument)	21	2.34

Comments: Weather Conditions, etc.

n/a

Last Audit Date: 04-Aug-21

Install by (Sign/Date): Alex Yakupov Date: 14-Sep-21

Removed by (Sign/Date) Alex Yakupov Date: 22-Sep-21

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID 21090229-002 **Priority** Normal

Customer ID: LICA
Cust Samp ID: P7011836

RECEIVED
SEP 23 2021

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: JUL 27 2021

Project: LICA/Bureau Veritas Labs

Prepared by:

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	P7011835 → P7011836

Returns: coolers, large and small containers may be shipped to: Innotech Alberta, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Arianna Cook 780 812 2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
P7011835	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - PM 2.5 - Fine

DATE SAMPLED: 19-Sep-21 0:00
DATE RECEIVED: 23-Sep-21
REPORT CREATED: 04-Oct-21
REPORT NUMBER: 21090229
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090229-001	Particulate Weight		0.041	mg	0.004	AC-029	28-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 4, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
P7011836		Air Filter	19-Sep-21 0:00

DESCRIPTION: Cold Lake South - PM 10 - Course

REPORT NUMBER: 21090229 **REPORT CREATED:** 04-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090229-002	Particulate Weight		0.078	mg	0.004	AC-029	28-Sep-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 4, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090229	01	04-Oct-21	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

Order Comments

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Sample ID 21090287-001 Priority Normal

Customer ID: LICA
Cust Samp ID: C9264687

RECEIVED
SEP 29 2021

2000i-D Sample Data Sheet

Date Sampled:	9/25/21
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1) 1	COURSE (2) 2
Filter Type:	47mm	47mm
Filter #:	C9264687	C9264688
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	14.5	
Pressure	704	
Std Volume (Instrument)	20.8	2.32

Comments: Weather Conditions, etc.

n/a

Last Audit Date: 04-Aug-21

Install by (Sign/Date): Alex Yakupov Date: 22-Sep-21

Removed by (Sign/Date) Alex Yakupov Date: 28-Sep-21

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

ample ID 21090287-002 Priority Normal

ustomer ID: LICA
ust Samp ID: C9264688

RECEIVED
SEP 29 2021

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: Aug 24/21

Project: LICA/Bureau Veritas Labs

Prepared by:

For information contact.
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C9264687 → C9264688

Returns: coolers, large and small containers may be shipped to: Innotech Alberta, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Arianna Cook 780 812 2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C9264687	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - PM 2.5 - Fine

DATE SAMPLED: 25-Sep-21 0:00
DATE RECEIVED: 29-Sep-21
REPORT CREATED: 08-Oct-21
REPORT NUMBER: 21090287
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090287-001	Particulate Weight		0.039	mg	0.004	AC-029	05-Oct-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 8, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C9264688		Air Filter	25-Sep-21 0:00

DESCRIPTION: Cold Lake South - PM 10 - Course

REPORT NUMBER: 21090287 **REPORT CREATED:** 08-Oct-21 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
21090287-002	Particulate Weight		0.126	mg	0.004	AC-029	05-Oct-21

Report certified by: Rebecca Holgate, Account Coordinator On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: October 8, 2021

Inquiries: (780) 632 8455 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
21090287	01	08-Oct-21	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

Qualifiers

Data Qualifier	Translation
B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

Order Comments

PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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

Passive Samples

Passive Sampler Field Sheet for LICA, Sep 2021 sample period

ID	SAMPLER				START		END		NOTES
					DATE	TIME	DATE	TIME	
3	H_2S	SO_2	NO_2	O_3	Aug 30/21	18:06	Sep 29/21	17:41	
4	---	SO_2	NO_2	O_3	Aug 31/21	12:09	Sep 30/21	12:24	
5	H_2S	SO_2	NO_2	O_3	Aug 31/21	13:22	Sep 30/21	13:55	
6	---	SO_2	NO_2	O_3	Aug 31/21	15:23	Sep 30/21	15:17	
8	---	SO_2	NO_2	O_3	Aug 31/21	10:52	Sep 30/21	11:24	
9	---	SO_2	NO_2	O_3	Aug 30/21	17:26	Sep 29/21	17:03	
10	H_2S	SO_2	NO_2	O_3	Sep 01/21	09:58	Oct 1/21	14:05	
11	H_2S	SO_2	NO_2	O_3	Sep 01/21	10:24	Oct 1/21	13:27	
12	H2S	SO2	NO2	O3	Sep 01/21	11:32	Oct 1/21	12:42	
13	H_2S	SO_2	NO_2	O_3	Aug 30/21	14:56	Sep 29/2021	14:30	
14	H_2S	SO_2	NO_2	O_3	Aug 30/21	13:47	Sep 29, 2021	13:27	isotop room sampling installed/removed
15	---	SO_2	NO_2	O_3	Aug 30/21	16:10	Sep 29/21	15:52	
16	H_2S	SO_2	NO_2	O_3	Aug 31/21	18:50	Sep 30/21	18:30	
17	H_2S	SO_2	NO_2	O_3	Aug 30/21	17:45	Sep 30/21	16:14	
18	H_2S	SO_2	NO_2	O_3	Aug 31/21	16:20	Sep 30/21	17:32	(+2) See Duplicates
19	---	SO_2	NO_2	O_3	Aug 31/21	19:23	Sep 30/21	18:55	(+2) See Duplicates
22	H_2S	SO_2	NO_2	O_3	Aug 30/21	09:21	Sep 29/21	10:21	
23	---	SO_2	NO_2	O_3	Aug 30/21	12:10	Sep 29/21	11:48	(+1) See Duplicates
24	H_2S	SO_2	NO_2	O_3	Aug 31/21	14:14	Sep 30/21	14:35	(+1) See Duplicates
25	H2S	SO2	---	---					
26	H_2S	SO_2	---	---	Aug 30/21	13:23	Sep 29/21	13:49	(+1) See Duplicates
27	H_2S	SO_2	---	---	Aug 30/21	14:14	Sep 29/21	13:07	(+1) See Duplicates
28	---	SO_2	NO_2	O_3	Aug 30/21	17:09	Sep 29/21	16:47	
29	H_2S	SO_2	NO_2	O_3	Aug 30/21	09:33	Sep 29/21	10:33	(+1) See Duplicates
32	H_2S	SO_2	NO_2	O_3	Aug 30/21	18:57	Sep 29/21	18:32	
40	H_2S	SO_2	NO_2	O_3	Station removed	---	Station removed	---	
DUPLICATES									
18	---	---	NO_2	O_3	Aug 30/21	16:20	Sep 30/21	17:32	
19	---	---	NO_2	O_3	Aug 31/21	19:23	Sep 30/21	18:55	
23	---	SO2	---	---	Aug 30/21	12:10	Sep 29/21	11:48	
24	---	SO2	---	---	Aug 31/21	14:14	Sep 30/21	14:35	
26	---	SO2	---	---	Aug 30/21	13:23	Sep 29/21	13:49	
27	H2S	---	---	---	Aug 30/21	14:14	Sep 29/21	15:07	
29	H_2S	---	---	---	Aug 30/21	09:33	Sep 29/21	10:33	

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OCT 07 2021
07:30

33 SO_2
28 O_3
28 NO_2
22 H_2S

Your Project #: SEPTEMBER PASSIVES
Site Location: BONNYVILLE, AB

Attention: Monitoring

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
PO BOX 8237
5107W- 50TH STREET
BONNYVILLE, AB
CANADA T9N 2J5

Report Date: 2021/10/18
Report #: R3085625
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C175927
Received: 2021/10/07, 14:10

Sample Matrix: Air
Samples Received: 31

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
H2S Passive Analysis	18	2021/10/14	2021/10/18	PTC SOP-00150	Passive H2S in ATM
NO2 Passive Analysis	24	2021/10/12	2021/10/18	PTC SOP-00148	Passive NO2 in ATM
O3 Passive Analysis	24	2021/10/12	2021/10/18	PTC SOP-00197	EPA 300 R2.1
SO2 Passive Analysis	27	2021/10/07	2021/10/18	PTC SOP-00149	Passive SO2 in ATM

This report shall not be reproduced except in full, without the written approval of the laboratory.
Results relate only to the items tested.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Kristen Sywolos
Customer Service Supervisor/Oil & Gas Division
19 Oct 2021 15:06:52

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Service Passives,
Email: PassiveAir@bureauveritas.com
Phone# (780) 378-8500

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Edmonton: 6744 - 50th Street T6B 3M9 Telephone (780) 378-8500 Fax (780) 378-8699

Bureau Veritas Job #: C175927
Report Date: 2021/10/18

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: SEPTEMBER PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		AHQ397			AHQ398			AHQ399		
Sampling Date		2021/08/30 18:06			2021/08/31 12:09			2021/08/31 13:22		
	UNITS	3	RDL	QC Batch	4	RDL	QC Batch	5	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.30	0.02	A387358				0.59	0.02	A387358
Calculated NO2	ppb	0.7	0.1	A383512	0.6	0.1	A383512	0.6	0.1	A383512
Calculated O3	ppb	23.1	0.1	A383085	30.5	0.1	A383085	30.6	0.1	A383085
Calculated SO2	ppb	0.2	0.1	A379972	0.3	0.1	A379972	0.4	0.1	A379972
RDL = Reportable Detection Limit										

Bureau Veritas ID		AHQ400	AHQ401	AHQ402			AHQ403	AHQ404	AHQ405		
Sampling Date		2021/08/31 15:23	2021/08/31 10:52	2021/08/30 17:26			2021/09/01 09:58	2021/09/01 10:24	2021/09/01 11:32		
	UNITS	6	8	9	RDL	QC Batch	10	11	12	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb						0.28	0.17	0.13	0.02	A387358
Calculated NO2	ppb	2.7	0.6	0.8	0.1	A383512	3.5	0.5	0.3	0.1	A383512
Calculated O3	ppb	19.9	25.7	21.9	0.1	A383085	17.6	17.5	20.7	0.1	A383085
Calculated SO2	ppb	0.5	0.3	0.3	0.1	A379972	0.3	0.2	0.3	0.1	A379972
RDL = Reportable Detection Limit											

Bureau Veritas ID		AHQ406	AHQ407			AHQ408			AHQ409	AHQ410		
Sampling Date		2021/08/30 14:55	2021/08/30 13:47			2021/08/30 16:10			2021/08/31 18:50	2021/08/30 17:45		
	UNITS	13	14	RDL	QC Batch	15	RDL	QC Batch	16	17	RDL	QC Batch
Passive Monitoring												
Calculated H2S	ppb	0.16	0.37	0.02	A387358				0.32	0.36	0.02	A387358
Calculated NO2	ppb	0.5	1.3	0.1	A383512	1.0	0.1	A383512	1.0	0.9	0.1	A383512
Calculated O3	ppb	24.1	23.7	0.1	A383085	22.5	0.1	A383085	20.6	22.1	0.1	A383087
Calculated SO2	ppb	0.5	1.4	0.1	A379972	0.2	0.1	A379972	0.3	0.4	0.1	A379972
RDL = Reportable Detection Limit												

Bureau Veritas ID		AHQ411			AHQ412			AHQ413		
Sampling Date		2021/08/31 16:20			2021/08/31 19:23			2021/08/30 09:21		
	UNITS	18	RDL	QC Batch	19	RDL	QC Batch	22	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.18	0.02	A387358				0.30	0.02	A387358
Calculated NO2	ppb	0.5	0.1	A383512	0.5	0.1	A383512	0.9	0.1	A383512
Calculated O3	ppb	18.3	0.1	A383087	26.3	0.1	A383087	21.9	0.1	A383087
Calculated SO2	ppb	0.2	0.1	A379972	0.2	0.1	A379972	0.3	0.1	A379972
RDL = Reportable Detection Limit										

Bureau Veritas Laboratories Edmonton: 6744 - 50th Street T6B 3M9 Telephone (780) 378-8500 Fax (780) 378-8699

Bureau Veritas Job #: C175927
Report Date: 2021/10/18

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: SEPTEMBER PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		AHQ414			AHQ415			AHQ416	AHQ417		
Sampling Date		2021/08/30 12:10			2021/08/31 14:14			2021/08/30 13:23	2021/08/30 14:14		
	UNITS	23	RDL	QC Batch	24	RDL	QC Batch	26	27	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb				0.16	0.02	A387358	0.22	2.25	0.02	A387358
Calculated NO2	ppb	0.2	0.1	A383512	1.6	0.1	A383512				
Calculated O3	ppb	15.2	0.1	A383087	23.6	0.1	A383085				
Calculated SO2	ppb	0.2	0.1	A379972	0.3	0.1	A379974	0.7	1.8	0.1	A379974
RDL = Reportable Detection Limit											

Bureau Veritas ID		AHQ418			AHQ419		AHQ420			AHQ427		
Sampling Date		2021/08/30 17:09			2021/08/30 09:33		2021/08/30 18:51			2021/08/31 16:20		
	UNITS	28	RDL	QC Batch	29	QC Batch	32	RDL	QC Batch	18 DUP	RDL	QC Batch
Passive Monitoring												
Calculated H2S	ppb				0.25	A387358	0.47	0.02	A387362			
Calculated NO2	ppb	2.0	0.1	A383512	0.9	A383520	0.4	0.1	A383520	0.6	0.1	A383520
Calculated O3	ppb	26.6	0.1	A383085	25.3	A383087	27.1	0.1	A383087	19.4	0.1	A383087
Calculated SO2	ppb	0.5	0.1	A379974	0.3	A379974	0.3	0.1	A379974			
RDL = Reportable Detection Limit												

Bureau Veritas ID		AHQ421			AHQ428	AHQ429	AHQ422			AHQ426		
Sampling Date		2021/08/31 19:23			2021/08/30 12:10	2021/08/31 14:14	2021/08/30 13:23			2021/08/30 14:14		
	UNITS	19 DUP	RDL	QC Batch	23 DUP	24 DUP	26 DUP	RDL	QC Batch	27 DUP	RDL	QC Batch
Passive Monitoring												
Calculated H2S	ppb									2.31	0.02	A387362
Calculated NO2	ppb	0.5	0.1	A383520								
Calculated O3	ppb	24.8	0.1	A383087								
Calculated SO2	ppb				0.2	0.3	0.7	0.1	A379974			
RDL = Reportable Detection Limit												

Bureau Veritas ID		AHQ501		
Sampling Date		2021/08/30 09:33		
	UNITS	29 DUP	RDL	QC Batch
Passive Monitoring				
Calculated H2S	ppb	0.25	0.02	A387362
RDL = Reportable Detection Limit				

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GENERAL COMMENTS

Results relate only to the items tested.

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Bureau Veritas Job #: C175927
Report Date: 2021/10/18

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: SEPTEMBER PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A379972	OZ	Spiked Blank	Calculated SO2			98	%	90 - 110
A379972	OZ	Method Blank	Calculated SO2		<0.1		ppb	
A379974	OZ	Spiked Blank	Calculated SO2			101	%	90 - 110
A379974	OZ	Method Blank	Calculated SO2		<0.1		ppb	
A383085	XSZ	Spiked Blank	Calculated O3			99	%	90 - 110
A383085	XSZ	Method Blank	Calculated O3		<0.1		ppb	
A383087	XSZ	Spiked Blank	Calculated O3			100	%	90 - 110
A383087	XSZ	Method Blank	Calculated O3		<0.1		ppb	
A383512	XSZ	Spiked Blank	Calculated NO2			105	%	90 - 110
A383512	XSZ	Method Blank	Calculated NO2		<0.1		ppb	
A383520	XSZ	Spiked Blank	Calculated NO2			104	%	90 - 110
A383520	XSZ	Method Blank	Calculated NO2		<0.1		ppb	
A387358	KDE	Spiked Blank	Calculated H2S			100	%	90 - 110
A387362	KDE	Spiked Blank	Calculated H2S			100	%	90 - 110

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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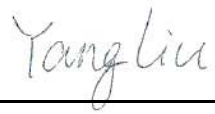
LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: SEPTEMBER PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Yang Liu, Analyst II

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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End of Report