Lakeland Industry & Community Association

JANUARY 2023

Monthly Ambient Air Quality Monitoring Integrated Sampling Report

LICA-202301-INTEGRATED

February 24, 2023

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Lakeland Industry & Community Association
5107 50 St
Bonnyville, AB, T9N 2J7
Phone #: 780-226-7068
E-mail: monitoring@lica.ca
www.lica.ca

February 24, 2023

Alberta Environment and Protected Areas (EPA)
11th Floor, Oxbridge Place
9820 106 Street
Edmonton, AB, T5K 2J6

RE: LICA –January 2023 Monthly Ambient Air Quality Monitoring Integrated Sampling Report

Enclosed is the January 2023 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 (VOCs), polycyclic aromatic hydrocarbons (PAHs), polycyclic aromatic compounds (PAHs), particulate matter ($PM_{2.5}$ and $PM_{2.5-10}$), ozone (O_3), hydrogen sulphide (H_2S), sulphur dioxide (SO_2), nitrogen dioxide (NO_2), ammonia (NH_3) and nitric acid (HNO_3).

The representative of the Person Responsible for this monitoring program is

LICA Airshed
Michael Bisaga, Monitoring Programs Manager
5107 50 Street
Bonnyville, AB, T9N 2J7
Phone #: 780-226-7068
E-mail: monitoring@lica.ca

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
42	Lac La Biche	54.76516	-111.971449

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
NMHC Canisters	Bureau Veritas	InnoTech Alberta Inc	LICA	Not Applicable

Monitoring Notes during the Month of January 2023

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).
  - The Xonteck VOC sampler, s/n: 6200, was found to be non-functional on January 16. The sampler was replaced by Xonteck VOC sampler, s/n: 6167, on the same day. A system verification was completed afterward.
  - Four samples were collected this month: on January 6, 18, 24 and 30. No samples were collected during the scheduled January 12 sample run due to a broken sampler.
- **Polycyclic Aromatic Hydrocarbons (PAHs)**
  - 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 January 6, 12, 18, 24 and 30.
- **Partisols**

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
- 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 January 6, 12, 18, 24 and 30.

- **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 December 29, 2022 and January 3, and were removed between January 29 and January 31.
  - A total of 13 duplicate samples were collected: 2 for H2S, 3 for SO2, 2 for NO2, 2 for O3, 2 for NMH3 and 2 for HNO3.
  - A total of 6 blank samples were collected: 3 for NMH3 and 3 for HNO3.
  - 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.
  - Station #32: The O3 sample was found missing during the sample exchange.

Lac La Biche Station

- **Non-methane Hydrocarbons (NMHC) Canisters**
  - The canister sampling program collects a 1-hour sample of air when the continuously measured non-methane hydrocarbon (NMHC) concentration reaches a specified trigger point. The current trigger point is 0.3 ppm, and is based on real-time monitoring data that are averaged over a 5-minute period.
  - One canister event was recorded this month, on January 5 at 07:55, at concentration of 0.37ppm.

Passive polycyclic aromatic compounds (PACs) Stations

- The PAC sampling program began in December 2019, and is designed to collect a 2-month integrated sample.
- The media for the January/February monitoring period were installed between December 29, 2022 and January 3, 2023. They are scheduled to be removed by the end of February.

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
587-225-2248
monitoring@lica.ca

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
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca

INTEGRATED SAMPLING RESULTS SUMMARY

COLD LAKE SOUTH STATION

- **VOCs analytical results**

Sample Date	2023-01-06	2023-01-12	2023-01-18	2023-01-24	2023-01-30
Canister ID	32241	28946	32263	28910	32229
Maximum Reading (ppbv)	1.3	NA	2.44	0.9	1.4
Parameter	Ethanol	NA	n-Butane	Ethanol	Acetone

Note: No sample was collected during the January 12 sample run due to a broken sampler.

- **PAHs analytical results**

Sample Date	2023-01-06		2023-01-12		2023-01-18		2023-01-24		2023-01-30	
PUF S/N	TE-12		TE-03		9802		TE-09		TE-06	
Volume (Vstd m^3)	330.39		330.43		330.39		330.42		330.40	
Maximum Reading	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3
	0.55	1.66	0.29	0.88	0.37	1.12	0.88	2.66	0.18	0.54
Parameter	Naphthalene		Phenanthrene		Phenanthrene		Naphthalene		Phenanthrene	

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

Sample Date	2023-01-06		2023-01-12		2023-01-18		2023-01-24		2023-01-30	
Filter #	C9694337		C9694339		C9694259		C9694257		C9694255	
Volume (Vstd m^3)	23.1		23.1		22.7		22.4		23.8	
Result	Result (mg)	Result (mg/m^3)	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	0.057	0.002	0.147	0.006	0.036	0.002	0.030	0.001	<0.004	0.000

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

Sample Date	2023-01-06		2023-01-12		2023-01-18		2023-01-24		2023-01-30	
Filter #	C9694338		C9694340		C9694260		C9694258		C9694256	
Volume (Vstd m^3)	2.57		2.57		2.53		2.49		2.65	
Result	Result (mg)	Result (mg/m^3)	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	<0.004	0.000	<0.004	0.000	<0.004	0.000	<0.004	0.000	<0.004	0.000

- **Passive analytical results**

	H_2S		NO_2		O_3		SO_2		NM3		HNO3	
	Unit (ppb)		Unit (ppb)		Unit (ppb)		Unit (ppb)		Unit (ppb)		Unit (ug/m3)	
Minimum	0.11	#18	1.5	#18	20.1	#23	0.3	#18	0.5	#16	0.11	#19
Maximum	0.32	#27	8.8	#28	45.6	#19	1.9	#27	1.8	#10	1.28	#23
Average	0.22	-	3.75	-	32.05	-	0.78	-	0.92	-	0.51	-

LAC LA BICHE STATION

- **NMHC canister sample analytical results**

Sample Date	2023-01-05
Canister ID	32261
Maximum Reading (ppbv)	1.0
Parameter	Ethanol

ANALYTICAL SAMPLING RESULTS

COLD LAKE SOUTH STATION

VOCS

Sample Date		2023-01-06	2023-01-12	2023-01-18	2023-01-24	2023-01-30
Canister ID		32241	28946	32263	28910	32229
Method		AC-058	AC-058	AC-058	AC-058	AC-058
Maximum Reading (ppbv)		1.3	NA	2.44	0.9	1.4
Parameter		Ethanol	NA	n-Butane	Ethanol	Acetone

Parameter	AAAQOs (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	RDL (ppbv)
1,1,1-Trichloroethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
1,1,2,2-Tetrachloroethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
1,1,2-Trichloroethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
1,1-Dichloroethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
1,1-Dichloroethylene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.04
1,2,3-Trimethylbenzene		< 0.05	NA	< 0.05	< 0.05	< 0.05	0.05
1,2,4-Trichlorobenzene		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.8
1,2,4-Trimethylbenzene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.05
1,2-Dibromoethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
1,2-Dichlorobenzene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.03
1,2-Dichloroethane		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
1,2-Dichloropropane		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
1,3,5-Trimethylbenzene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.02
1,3-Butadiene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.02
1,3-Dichlorobenzene		< 0.4	NA	< 0.4	< 0.4	< 0.4	0.3
1,4-Dichlorobenzene		< 0.4	NA	< 0.4	< 0.4	< 0.4	0.4
1,4-Dioxane		< 0.5	NA	< 0.5	< 0.5	< 0.5	0.4
1-Butene		< 0.06	NA	< 0.06	< 0.06	< 0.06	0.02
1-Hexene		< 0.07	NA	< 0.07	< 0.07	< 0.07	0.02
1-Pentene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
2,2,4-Trimethylpentane		0.05	NA	< 0.02	< 0.02	0.02	0.01
2,2-Dimethylbutane		< 0.02	NA	< 0.02	< 0.02	0.03	0.01
2,3,4-Trimethylpentane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.01
2,3-Dimethylbutane		< 0.09	NA	< 0.09	< 0.09	< 0.09	0.02
2,3-Dimethylpentane		0.05	NA	< 0.02	< 0.02	0.03	0.02
2,4-Dimethylpentane		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
2-Methylheptane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.01
2-Methylhexane		0.05	NA	< 0.03	< 0.03	0.03	0.01
2-Methylpentane		0.08	NA	0.07	0.04	0.06	0.01
3-Methylheptane		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.02
3-Methylhexane		0.05	NA	0.03	< 0.02	0.05	0.02
3-Methylpentane		0.08	NA	0.05	0.03	0.06	0.01
Acetone	2400	0.7	NA	1.7	0.8	1.4	0.4
Acrolein	1.9	< 0.3	NA	< 0.3	< 0.3	< 0.3	0.3
Benzene	9.0	0.14	NA	0.05	0.1	0.14	0.01
Benzyl chloride		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.4
Bromodichloromethane		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.02
Bromoform		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
Bromomethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.01
Carbon disulfide	10	< 0.02	NA	0.03	0.06	< 0.02	0.01
Carbon tetrachloride		0.06	NA	0.09	0.06	0.08	0.01
Chlorobenzene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
Chloroethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
Chloroform		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
Chloromethane		0.44	NA	0.8	0.56	0.70	0.02
cis-1,2-Dichloroethene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.01
cis-1,3-Dichloropropene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.04
cis-2-Butene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.02
cis-2-Pentene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
Cyclohexane		0.06	NA	< 0.04	< 0.04	0.10	0.02
Cyclopentane		0.03	NA	0.02	0.02	0.04	0.01
Dibromochloromethane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.01
Ethanol		1.3	NA	2.0	0.9	1.3	0.3
Ethyl acetate		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.4
Ethylbenzene	460	< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
Freon-11		0.19	NA	0.32	0.21	0.26	0.02
Freon-113		0.06	NA	0.09	0.06	0.07	0.01
Freon-114		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.02

Cold Lake South Station - January 2023

Volatile Organic Compounds (VOCs) Results

Sample Date		2023-01-06	2023-01-12	2023-01-18	2023-01-24	2023-01-30
Canister ID		32241	28946	32263	28910	32229
Method		AC-058	AC-058	AC-058	AC-058	AC-058
Maximum Reading (ppbv)		1.3	NA	2.44	0.9	1.4
Parameter		Ethanol	NA	n-Butane	Ethanol	Acetone

Parameter	AAAQOs (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	RDL (ppbv)
Freon-12		0.49	NA	0.63	0.54	0.67	0.02
Hexachloro-1,3-butadiene		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.5
Isobutane		0.71	NA	1.67	0.36	0.68	0.02
Isopentane		0.47	NA	1.09	0.28	0.54	0.03
Isoprene		< 0.02	NA	0.03	< 0.02	< 0.02	0.01
Isopropyl alcohol		< 0.3	NA	< 0.3	< 0.3	0.60	0.4
Isopropylbenzene		< 0.04	NA	< 0.04	< 0.04	< 0.04	0.01
m,p-Xylene		0.05	NA	< 0.04	< 0.04	< 0.04	0.03
m-Diethylbenzene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.04
m-Ethyltoluene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.08
Methyl butyl ketone		< 0.4	NA	< 0.4	< 0.4	< 0.4	0.5
Methyl ethyl ketone		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.3
Methyl isobutyl ketone		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.4
Methyl methacrylate		< 0.08	NA	< 0.08	< 0.08	< 0.08	0.07
Methyl tert butyl ether		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.03
Methylcyclohexane		0.11	NA	0.04	0.05	0.11	0.01
Methylcyclopentane		0.1	NA	< 0.05	< 0.05	0.1	0.02
Methylene chloride		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.3
n-Butane		1.21	NA	2.44	0.6	0.88	0.03
n-Decane		< 0.06	NA	< 0.06	< 0.06	< 0.06	0.06
n-Dodecane		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.4
n-Heptane		0.05	NA	< 0.04	< 0.04	0.04	0.01
n-Hexane	5960	0.14	NA	0.11	0.05	0.10	0.01
n-Nonane		< 0.04	NA	< 0.04	< 0.04	< 0.04	0.01
n-Octane		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
n-Pentane		0.37	NA	0.63	0.22	0.30	0.1
n-Propylbenzene		< 0.06	NA	< 0.06	< 0.06	< 0.06	0.05
n-Undecane		< 0.5	NA	< 0.5	< 0.5	< 0.5	0.5
Naphthalene		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.5
o-Ethyltoluene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.01
o-Xylene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
p-Diethylbenzene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.04
p-Ethyltoluene		< 0.04	NA	< 0.04	< 0.04	< 0.04	0.07
Styrene	52.0	< 0.04	NA	< 0.04	< 0.04	< 0.04	0.04
Tetrachloroethylene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.04
Tetrahydrofuran		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.4
Toluene	499	0.15	NA	< 0.03	0.05	0.06	0.01
trans-1,2-Dichloroethylene		< 0.06	NA	< 0.06	< 0.06	< 0.06	0.01
trans-1,3-Dichloropropylene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.04
trans-2-Butene		< 0.03	NA	< 0.03	< 0.03	< 0.03	0.01
trans-2-Pentene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02
Trichloroethylene		< 0.02	NA	< 0.02	< 0.02	< 0.02	0.04
Vinyl acetate		< 0.3	NA	< 0.3	< 0.3	< 0.3	0.4
Vinyl chloride	51	< 0.02	NA	< 0.02	< 0.02	< 0.02	0.02

*** No sample was collected on the January 12 sample run due to a broken sampler.**

PAHS

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - January 2023

Polycyclic Aromatic Hydrocarbons (PAHs) Results

Sample Date	2023-01-06		2023-01-12		2023-01-18		2023-01-24		2023-01-30	
PUF S/N	TE-12		TE-03		9802		TE-09		TE-06	
Volume (Vstd m^3)	330.39		330.43		330.39		330.42		330.40	
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
	0.55	1.66	0.29	0.88	0.37	1.12	0.88	2.66	0.18	0.54
Parameter	Naphthalene		Phenanthrene		Phenanthrene		Naphthalene		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	0.32	0.97	0.14	0.42	0.08	0.24	0.36	1.09	0.08	0.24	0.01
2-Methylnaphthalene	0.45	1.36	0.19	0.58	0.10	0.30	0.46	1.39	0.11	0.33	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	0.15	0.45	0.05	0.15	0.04	0.12	0.08	0.24	0.03	0.09	0.01
Acenaphthylene	0.05	0.15	< 0.01	0.00	0.01	0.03	0.03	0.09	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	0.03	0.09	< 0.01	0.00	0.01	0.03	0.01	0.03	0.01	0.03	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	0.03	0.01	0.03	< 0.01	0.00	0.01
Benzo(b,j,k)fluoranthene	0.03	0.09	< 0.01	0.00	0.05	0.15	0.05	0.15	< 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	0.03	0.02	0.06	< 0.01	0.00	0.01
Benzo(ghi)perylene	< 0.01	0.00	< 0.01	0.00	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.01
Chrysene	< 0.01	0.00	< 0.01	0.00	0.02	0.06	0.02	0.06	< 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	0.02	0.06	< 0.01	0.00	< 0.01	0.00	0.01
Fluoranthene	0.13	0.39	0.06	0.18	0.11	0.33	0.08	0.24	0.05	0.15	0.01
Fluorene	0.27	0.82	0.23	0.70	0.26	0.79	0.20	0.61	0.12	0.36	0.01
Indeno(1,2,3-cd)pyrene	0.01	0.03	< 0.01	0.00	0.02	0.06	0.02	0.06	< 0.01	0.00	0.01
Naphthalene	0.55	1.66	0.21	0.64	0.15	0.45	0.88	2.66	0.12	0.36	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	0.53	1.60	0.29	0.88	0.37	1.12	0.25	0.76	0.18	0.54	0.01
Pyrene	0.07	0.21	< 0.01	0.00	0.04	0.12	0.03	0.09	0.01	0.03	0.01
Retene	0.06	0.18	0.09	0.27	0.09	0.27	0.08	0.24	0.04	0.12	0.01

PARTISOLS

Partisol Results - $PM_{2.5}$

Sample Date		2023-01-06		2023-01-12		2023-01-18		2023-01-24		2023-01-30		
Filter #		C9694337		C9694339		C9694259		C9694257		C9694255		
Volume (Vstd m^3)		23.1		23.1		22.7		22.4		23.8		
Method		AC-029		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)**	**Result (mg)**	**Result (mg/m^3)**	**RDL (mg)**
Particulate Matter	0.029	**0.057**	**0.002**	**0.147**	**0.006**	**0.036**	**0.002**	**0.030**	**0.001**	**<0.004**	**0.000**	0.004
PM2.5 Mass in ug/m3			**2.468**		**6.364**		**1.586**		**1.339**		**0.168**	
RDL in ug/m3			**0.173**		**0.173**		**0.176**		**0.179**		**0.168**	

Sample Date	2023-01-06		2023-01-12		2023-01-18		2023-01-24		2023-01-30		
Filter #	C9694338		C9694340		C9694260		C9694258		C9694256		
Volume (Vstd m^3)	2.57		2.57		2.53		2.49		2.65		
Method	AC-029		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)	Result (mg)	Result (mg/m^3)	RDL (mg)
PM2.5-10 Mass	<0.004	0.000	<0.004	0.000	<0.004	0.000	<0.004	0.000	<0.004	0.000	0.004

PM2.5-10 Mass in ug/m3	1.556	1.556	1.581	1.606	1.509
RDL in ug/m3	1.556	1.556	1.581	1.606	1.509

PASSIVE SAMPLES

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

January 2023

Passive Results

		H_2S		NO_2		O_3		SO_2		NMH3		HNO3	
	Unit	**ppb**		**ppb**		**ppb**		**ppb**		**ppb**		**ug/m3**	
	Minimum (ppb)	0.11	#18	1.5	#18	20.1	#23	0.3	#18	0.5	#16	0.11	#19
	Maximum (ppb)	0.32	#27	8.8	#28	45.6	#19	1.9	#27	1.8	#10	1.28	#23
	Average (ppb)	0.22	-	3.75	-	32.05	-	0.78	-	0.92	-	0.51	-
No.	**Station**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**
3	Therien	0.21		3.6		39.5		0.6		1.3		0.22	
4	Flat Lake	-		2.7		45.5		1.1		1.1		0.99	
5	Lake Eliza	0.22		2.6	2.8	31.8	44.5	1.0		1.1		0.73	
6	Telegraph Creek	-		6.0	7.0	34.1	34.9	0.9		0.8		0.62	
8	Muriel-Kehewin	-		2.3		36.6		0.7		0.8		0.20	
9	Dupre	-		3.5		28.6		0.5		1.2		0.79	
10	La Corey	0.14		8.1		26.0		0.4		1.8		0.81	
11	Wolf Lake	0.15		2.6		26.0		0.6		1.8		0.41	
12	Foster Creek	0.13		1.6		34.4		0.7		0.6		0.11	
13	Primrose	0.15		2.0		21.2		0.8		0.7		0.24	
14	Tamarack	0.30		4.0		29.8		1.8		0.8		0.28	
15	Ardmore	-		4.0		30.7		0.5		0.8		0.28	
16	Frog Lake	0.18		2.9		33.4		0.7		0.5		0.16	
17	Clear Range	0.26		2.7		40.5		1.3		0.9		0.39	
18	Fishing Lake	0.11		1.5		28.9		0.3		0.9		0.27	
19	Beaverdam	-		2.3		45.6		0.7	0.6	0.7	1.2	0.11	0.61
22	Cold Lake South (1)	0.28		4.3		28.1		0.5	0.5	0.9	0.9	0.72	1.25
23	Medley-Martineau	-		1.8		20.1		0.3	0.3	0.6		1.28	
24	Fort George	0.27		4.9		34.8		0.9		1.0		0.29	
25	Burnt Lake	Missing 1		-		-		Missing 1		-		-	
26	Mahihkan	0.18	0.18	-		-		0.7		0.5		0.74	
27	Mahkeses	0.32	0.30	-		-		1.9		0.7		0.50	
28	Town of Bonnyville	0.29		8.8		29.5		0.9		0.7		0.82	
29	Cold Lake South (2)	0.28		4.7		33.1		0.5		0.5		0.32	
32	St. Lina	0.23		2.7		Missing 2		0.8		0.9		0.67	
42	Lac La Biche	0.21		6.7		26.8		0.4		1.5		0.92	
BLANK -1		-		-		-		-		0.3		0.45	
BLANK -2		-		-		-		-		0.5		0.30	
BLANK -3		-		-		-		-		0.7		0.42	
Reportable Detection Limit (RDL)		**0.02**		**0.1**		**0.1**		**0.1**		**0.1**		**0.04**	

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.

4 Missing 2: The sample was found missing during sample exchange.

LAC LA BICHE STATION

NMHC CANISTER SAMPLES

Lac La Biche Site - January 2023

Volatile Organic Compounds (VOCs) Results

Sample Date/Time		**2023-01-05**
Canister Triggered Conc.		**0.37 ppm**
Canister ID		**32261**
Method		**AC-058**
Maximum Reading		**1.0**
Parameter		**Ethanol**

Parameter	AAAQOs	Result (ppbv)	RDL (ppbv)
1,1,1-Trichloroethane		< 0.03	0.02
1,1,2,2-Tetrachloroethane		< 0.03	0.02
1,1,2-Trichloroethane		< 0.03	0.02
1,1-Dichloroethane		< 0.03	0.02
1,1-Dichloroethylene		< 0.03	0.04
1,2,3-Trimethylbenzene		< 0.07	0.05
1,2,4-Trichlorobenzene		< 0.4	0.8
1,2,4-Trimethylbenzene		< 0.04	0.05
1,2-Dibromoethane		< 0.03	0.02
1,2-Dichlorobenzene		< 0.04	0.03
1,2-Dichloroethane		< 0.04	0.01
1,2-Dichloropropane		< 0.04	0.01
1,3,5-Trimethylbenzene		< 0.04	0.02
1,3-Butadiene		< 0.04	0.02
1,3-Dichlorobenzene		< 0.6	0.3
1,4-Dichlorobenzene		< 0.6	0.4
1,4-Dioxane		< 0.7	0.4
1-Butene		< 0.09	0.02
1-Hexene		< 0.10	0.02
1-Pentene		< 0.04	0.01
2,2,4-Trimethylpentane		0.04	0.01
2,2-Dimethylbutane		< 0.03	0.01
2,3,4-Trimethylpentane		< 0.03	0.01
2,3-Dimethylbutane		< 0.13	0.02
2,3-Dimethylpentane		0.05	0.02
2,4-Dimethylpentane		< 0.04	0.01
2-Methylheptane		< 0.03	0.01
2-Methylhexane		0.05	0.01
2-Methylpentane		0.07	0.01
3-Methylheptane		< 0.04	0.02
3-Methylhexane		0.04	0.02
3-Methylpentane		0.07	0.01
Acetone	2400	0.8	0.4
Acrolein	1.9	< 0.4	0.3
Benzene	9.0	0.11	0.01
Benzyl chloride		< 0.4	0.4
Bromodichloromethane		< 0.04	0.02
Bromoform		< 0.03	0.02
Bromomethane		< 0.03	0.01
Carbon disulfide	10	< 0.03	0.01
Carbon tetrachloride		0.06	0.01
Chlorobenzene		< 0.03	0.02
Chloroethane		< 0.03	0.02
Chloroform		< 0.03	0.02
Chloromethane		0.46	0.02
cis-1,2-Dichloroethene		< 0.03	0.01
cis-1,3-Dichloropropene		< 0.04	0.04
cis-2-Butene		< 0.04	0.02
cis-2-Pentene		< 0.03	0.02
Cyclohexane		0.08	0.02
Cyclopentane		< 0.03	0.01
Dibromochloromethane		< 0.03	0.01
Ethanol		1.0	0.3
Ethyl acetate		< 0.4	0.4
Ethylbenzene	460	< 0.04	0.01
Freon-11		0.19	0.02
Freon-113		0.06	0.01

Sample Date/Time		**2023-01-05**
Canister Triggered Conc.		**0.37 ppm**
Canister ID		**32261**
Method		**AC-058**
Maximum Reading		**1.0**
Parameter		**Ethanol**

Parameter	AAAQOs	Result (ppbv)	RDL (ppbv)
Freon-114		< 0.04	0.02
Freon-12		0.52	0.02
Hexachloro-1,3-butadiene		< 0.4	0.5
Isobutane		0.61	0.02
Isopentane		0.35	0.03
Isoprene		< 0.03	0.01
Isopropyl alcohol		< 0.4	0.4
Isopropylbenzene		< 0.06	0.01
m,p-Xylene		< 0.06	0.03
m-Diethylbenzene		< 0.03	0.04
m-Ethyltoluene		< 0.04	0.08
Methyl butyl ketone		< 0.6	0.5
Methyl ethyl ketone		< 0.4	0.3
Methyl isobutyl ketone		< 0.4	0.4
Methyl methacrylate		< 0.11	0.07
Methyl tert butyl ether		< 0.04	0.03
Methylcyclohexane		0.13	0.01
Methylcyclopentane		0.1	0.02
Methylene chloride		< 0.4	0.3
n-Butane		0.93	0.03
n-Decane		< 0.09	0.06
n-Dodecane		< 0.4	0.4
n-Heptane		< 0.06	0.01
n-Hexane	5960	0.12	0.01
n-Nonane		< 0.06	0.01
n-Octane		< 0.03	0.02
n-Pentane		0.26	0.1
n-Propylbenzene		< 0.09	0.05
n-Undecane		< 0.7	0.5
Naphthalene		< 0.4	0.5
o-Ethyltoluene		< 0.03	0.01
o-Xylene		< 0.04	0.01
p-Diethylbenzene		< 0.03	0.04
p-Ethyltoluene		< 0.06	0.07
Styrene	52.0	< 0.06	0.04
Tetrachloroethylene		< 0.03	0.04
Tetrahydrofuran		< 0.4	0.4
Toluene	499	0.11	0.01
trans-1,2-Dichloroethylene		< 0.09	0.01
trans-1,3-Dichloropropylene		< 0.03	0.04
trans-2-Butene		< 0.04	0.01
trans-2-Pentene		< 0.03	0.02
Trichloroethylene		< 0.03	0.04
Vinyl acetate		< 0.4	0.4
Vinyl chloride	51	< 0.03	0.02

EQUIPMENT AUDIT / CALIBRATION RECORDS

XONTECK VERIFICATION/CALIBRATION

Date:	January 16, 2023	**Last Cal. Date:**	January 16, 2023
Company/Airshed:	LICA	**Start Time 24 hr. (mst):**	17:02
Station Name:	Cold Lake South	**End Time 24 hr. (mst):**	18:44
Sampler s/n:	6167	**Performed By:**	Alex Yakupov
Purpose:	Troubleshooting	**Reviewer:**	Chris Wesson

XONTECK MAINTENANCE

Item:	Most Recent Date Completed:
1. Replace sample line and fittings from sampler to canister every 6 months.	January 16, 2023
2. Purge line from manifold--> sampler with zero air every 6 months.	January 16, 2023
3. Sample system cleaning every 2 years.	n/a
4. Perform 12 hour leak check procedure every 6 months.	January 16, 2023

COMMENTS:

A leak check was completed using a VOC canister. Leak check starts at 17:36, ends at 18:36. No leaks were detected over one hour. A spare sampler #6167 was installed to replace the sampler #6200

End of Report

Lakeland Industry & Community Association

JANUARY 2023

Ambient Air Monitoring

Certified Laboratory Analysis Report

LAB-LICA-202301

Operation and Maintenance:
Bureau Veritas Canada

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

February 24, 2023

Table of Contents

Cold Lake South Station

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

Sample ID: 23010101-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Jan 06, 2023

RECEIVED
JAN 13 2023

Bureau Veritas

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

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	32241
Station ID:	LICA 01	**Installation Date/Time (mst):**	Jan 04, 2023 @ 19:29
Sample ID:	LICA/VOC/CLS/Jan 06, 2023	**Removal Date/Time (mst):**	Jan 09, 2023 @ 19:04

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
January 6, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	19.6

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)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23010101-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Jan 06, 2023

RECEIVED
JAN 13 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-12
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Jan 04, 2023 @ 19:30
Field Sample ID:	LICA/PUF/CLS/Jan 06, 2023	**Removal Date/Time:**	Jan 09, 2023 @ 19:06

Sample Data Collection Information

Sample Date:	6-Jan-23	**Average Pressure (mmHg)**	710
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-9.8
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.39

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
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32241

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: SEP 15 2022

Evacuated: NOV 10 2022 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Jan 06, 2023

Sampled By: Alex Vakupov

Starting Vacuum: -27.1 "Hg

End Pressure: +19.6 "Hg/ psig KG

InnoTech ALBERTA

Canister ID: TE12

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: PUF LICA/PUF/CLS/Jan 06, 2023

Sampled By: Alex Vakupa

Starting Vacuum: _____ "Hg

End Vacuum: _____ "Hg/ psig

Sample ID: 23010101-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Jan 06, 2023

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Jan 06, 2023
Matrix: Air Filter
CANISTER ID: TE-12
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 06-Jan-23 0:00
DATE RECEIVED: 13-Jan-23
REPORT CREATED: 14-Feb-23
REPORT NUMBER: 23010101
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-002	1-Methylnaphthalene		0.32	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	2-Methylnaphthalene		0.45	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Acenaphthene		0.15	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Acenaphthylene		0.05	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Anthracene		0.03	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Benzo(b,j,k)fluoranthene		0.03	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Jan 06, 2023	TE-12	Air Filter	06-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010101 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Fluoranthene		0.13	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Fluorene		0.27	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Indeno(1,2,3-cd)pyrene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Naphthalene		0.55	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Phenanthrene		0.53	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Pyrene		0.07	ug/Filter	0.01	AC-066	09-Feb-23
23010101-002	Retene		0.06	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 06, 2023	32241	Ambient Air	06-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010101 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Jan-23
23010101-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010101-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010101-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Jan-23
23010101-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010101-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Jan-23
23010101-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	2,2,4-Trimethylpentane	I	0.05	ppbv	0.02	AC-058	13-Jan-23
23010101-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Jan-23
23010101-001	2,3-Dimethylpentane	I	0.05	ppbv	0.02	AC-058	13-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 06, 2023	32241	Ambient Air	06-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010101 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	2-Methylhexane	I	0.05	ppbv	0.03	AC-058	13-Jan-23
23010101-001	2-Methylpentane	I	0.08	ppbv	0.02	AC-058	13-Jan-23
23010101-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	3-Methylhexane	I	0.05	ppbv	0.02	AC-058	13-Jan-23
23010101-001	3-Methylpentane	I	0.08	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Acetone		0.7	ppbv	0.4	AC-058	13-Jan-23
23010101-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Benzene	I	0.14	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Carbon tetrachloride	I	0.06	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Chloromethane		0.44	ppbv	0.04	AC-058	13-Jan-23
23010101-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Cyclohexane	I	0.06	ppbv	0.04	AC-058	13-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 06, 2023	32241	Ambient Air	06-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010101 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-001	Cyclopentane	I	0.03	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Ethanol		1.3	ppbv	0.5	AC-058	13-Jan-23
23010101-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Freon-11		0.19	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Freon-113	I	0.06	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Freon-12		0.49	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Isobutane		0.71	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Isopentane		0.47	ppbv	0.04	AC-058	13-Jan-23
23010101-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010101-001	m,p-Xylene	I	0.05	ppbv	0.04	AC-058	13-Jan-23
23010101-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010101-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	13-Jan-23
23010101-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	Methylcyclohexane		0.11	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Methylcyclopentane	I	0.10	ppbv	0.05	AC-058	13-Jan-23

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 06, 2023	32241	Ambient Air	06-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010101 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	n-Butane		1.21	ppbv	0.02	AC-058	13-Jan-23
23010101-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010101-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	n-Heptane	I	0.05	ppbv	0.04	AC-058	13-Jan-23
23010101-001	n-Hexane	I	0.14	ppbv	0.03	AC-058	13-Jan-23
23010101-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	n-Pentane		0.37	ppbv	0.04	AC-058	13-Jan-23
23010101-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010101-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Jan-23
23010101-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010101-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010101-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010101-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Toluene	I	0.15	ppbv	0.03	AC-058	13-Jan-23
23010101-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010101-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010101-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23
23010101-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 06, 2023	32241	Ambient Air	06-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010101 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010101-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jan-23
23010101-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010101	01	14-Feb-23	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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

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: 23010160-001 Priority: Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Jan 12, 2023

RECEIVED
JAN 2 0 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-03
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Jan 09, 2023 @ 19:17
Field Sample ID:	LICA/PUF/CLS/Jan 12, 2023	**Removal Date/Time:**	Jan 16, 2023 @ 19:21

Sample Data Collection Information

Sample Date:	12-Jan-23	**Average Pressure (mmHg)**	716
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-8.1
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.43

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
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

Sample ID: 23010160-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Jan 12, 2023

RECEIVED
JAN 20 2023

Bureau Veritas

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

Client:	LICA	**Sampler S/N:**	6200
Location:	Cold Lake South	**Canister ID:**	28946
Station ID:	LICA 01	**Installation Date/Time (mst):**	Jan 09, 2023 @ 19:15
Sample ID:	LICA/VOC/CLS/Jan 12, 2023	**Removal Date/Time (mst):**	Jan 16, 2023 @ 18:58

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
January 12, 2023	0:00	9:21	9

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	n/a

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
0.00	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)			

Comments: NO analysis required. This sample was not completed because the sampler broke.

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

InnoTech ALBERTA

Canister ID: TE08

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: PUF LICA/PUF/CLS/Jan 12, 2023

Sampled By: Alex Yakupec

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

Sample ID: 23010160-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Jan 12, 2023

InnoTech ALBERTA

Canister ID: 28946

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: SEP 16 2022

Evacuated: NOV 10 2022 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: n/a no analysis required

Sampled By: Sample is incomplete

Starting Vacuum:	End Vacuum:
-27.1 "Hg	0.0 "Hg/psig

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Jan 12, 2023
Matrix: Air Filter
CANISTER ID: TE-03
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 12-Jan-23 0:00
DATE RECEIVED: 20-Jan-23
REPORT CREATED: 14-Feb-23
REPORT NUMBER: 23010160
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010160-001	1-Methylnaphthalene		0.14	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	2-Methylnaphthalene		0.19	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Acenaphthene		0.05	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Jan 12, 2023	TE-03	Air Filter	12-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010160 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010160-001	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Fluoranthene		0.06	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Fluorene		0.23	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Naphthalene		0.21	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Phenanthrene		0.29	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010160-001	Retene		0.09	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010160	01	14-Feb-23	Report created

Methods

Method	Description
AC-066	Polycyclic Aromatic Hydrocarbons from Air

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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

23010160

No air canister sample this time due to equipment malfunction

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: 23010179-001 Priority: Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Jan 18, 2023

RECEIVED
JAN 24 2023

Bureau Veritas

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

Client:	LICA	Sampler S/N:	6167
Location:	Cold Lake South	Canister ID:	32263
Station ID:	LICA 01	Installation Date/Time (mst):	Jan 16, 2023 @ 19:25
Sample ID:	LICA/VOC/CLS/Jan 18, 2023	Removal Date/Time (mst):	Jan 20, 2023 @ 12:45

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
January 18, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	19.3

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

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)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23010179-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Jan 18, 2023

RECEIVED
JAN 24 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	9802
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Jan 16, 2023 @ 19:27
Field Sample ID:	LICA/PUF/CLS/Jan 18, 2023	**Removal Date/Time:**	Jan 20, 2023 @ 12:47

Sample Data Collection Information

Sample Date:	18-Jan-23	**Average Pressure (mmHg)**	710
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-6.6
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.39

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
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32263

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: NOV 0 8 2022

Evacuated: DEC 1 9 2022 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Jan 18, 2023

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: KG +19.3 "Hg/psig

InnoTech ALBERTA

Canister ID: 9802

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/Jan 18, 2023

Sampled By: Alex Yakupov

Starting Vacuum: _____ "Hg

End Pressure: _____ "Hg/psig

Sample ID: 23010179-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Jan 18, 2023

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Jan 18, 2023
Matrix: Air Filter
CANISTER ID: 9802
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 18-Jan-23 0:00
DATE RECEIVED: 24-Jan-23
REPORT CREATED: 14-Feb-23
REPORT NUMBER: 23010179
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-002	1-Methylnaphthalene		0.08	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	2-Methylnaphthalene		0.10	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Acenaphthene		0.04	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Anthracene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Benzo(a)pyrene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Benzo(b,j,k)fluoranthene		0.05	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Benzo(e)pyrene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Benzo(ghi)perylene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Chrysene		0.02	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Jan 18, 2023	9802	Air Filter	18-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010179 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Dibenzo(ah)anthracene		0.02	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Fluoranthene		0.11	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Fluorene		0.26	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Indeno(1,2,3-cd)pyrene		0.02	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Naphthalene		0.15	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Phenanthrene		0.37	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Pyrene		0.04	ug/Filter	0.01	AC-066	09-Feb-23
23010179-002	Retene		0.09	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 18, 2023	32263	Ambient Air	18-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010179 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	26-Jan-23
23010179-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	26-Jan-23
23010179-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	26-Jan-23
23010179-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	26-Jan-23
23010179-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	26-Jan-23
23010179-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	26-Jan-23
23010179-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	26-Jan-23
23010179-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 18, 2023	32263	Ambient Air	18-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010179 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	2-Methylpentane	I	0.07	ppbv	0.02	AC-058	26-Jan-23
23010179-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	3-Methylhexane	I	0.03	ppbv	0.02	AC-058	26-Jan-23
23010179-001	3-Methylpentane	I	0.05	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Acetone		1.7	ppbv	0.4	AC-058	26-Jan-23
23010179-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Benzene	I	0.05	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Carbon disulfide	I	0.03	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Carbon tetrachloride	I	0.09	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Chloromethane		0.80	ppbv	0.04	AC-058	26-Jan-23
23010179-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Cyclohexane	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 18, 2023	32263	Ambient Air	18-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010179 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-001	Cyclopentane	I	0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Ethanol		2.0	ppbv	0.5	AC-058	26-Jan-23
23010179-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Freon-11		0.32	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Freon-113	I	0.09	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Freon-12		0.63	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Isobutane		1.67	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Isopentane		1.09	ppbv	0.04	AC-058	26-Jan-23
23010179-001	Isoprene	I	0.03	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23
23010179-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23
23010179-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	26-Jan-23
23010179-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	26-Jan-23
23010179-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	Methylcyclohexane	I	0.04	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Methylcyclopentane	K, T, U	< 0.05	ppbv	0.05	AC-058	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 18, 2023	32263	Ambient Air	18-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010179 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	n-Butane		2.44	ppbv	0.02	AC-058	26-Jan-23
23010179-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	26-Jan-23
23010179-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23
23010179-001	n-Hexane	I	0.11	ppbv	0.03	AC-058	26-Jan-23
23010179-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	n-Pentane		0.63	ppbv	0.04	AC-058	26-Jan-23
23010179-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	26-Jan-23
23010179-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	26-Jan-23
23010179-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23
23010179-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23
23010179-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	26-Jan-23
23010179-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	26-Jan-23
23010179-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	26-Jan-23
23010179-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23
23010179-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 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
LICA/VOC/CLS/Jan 18, 2023	32263	Ambient Air	18-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010179 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010179-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	26-Jan-23
23010179-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

Revision History

Order ID	Ver	Date	Reason
23010179	01	14-Feb-23	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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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: 23010219-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Jan 24, 2023

RECEIVED
JAN 27 2023

Bureau Veritas

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

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	28910
Station ID:	LICA 01	**Installation Date/Time (mst):**	Jan 20, 2023 @ 12:55
Sample ID:	LICA/VOC/CLS/Jan 24, 2023	**Removal Date/Time (mst):**	Jan 25, 2023 @ 15:15

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
January 24, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	18.0

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

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)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Aiex Yakupov

Sample ID: 23010219-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Jan 24, 2023

RECEIVED
JAN 27 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-09
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Jan 20, 2023 @ 12:57
Field Sample ID:	LICA/PUF/CLS/Jan 24, 2023	**Removal Date/Time:**	Jan 25, 2023 @ 15:17

Sample Data Collection Information

Sample Date:	24-Jan-23	**Average Pressure (mmHg)**	712
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-1.2
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.42

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
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 28910

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: 1324 on: NOV 21 2022

Evacuated: DEC 19 2022 Recertified:

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Jan 24, 202

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: KG +18.0 "Hg/psig

InnoTech ALBERTA

Canister ID: TE-09

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/Jan, -24 2023

Sampled By: Alex Yakupov

Starting Vacuum: "Hg

End Pressure: "Hg/ psig

Sample ID: 23010219-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Jan 24, 2023

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Jan 24, 2023
Matrix: Air Filter
CANISTER ID: TE-09
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 24-Jan-23 0:00
DATE RECEIVED: 27-Jan-23
REPORT CREATED: 23-Feb-23
REPORT NUMBER: 23010219
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-002	1-Methylnaphthalene		0.36	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	2-Methylnaphthalene		0.46	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Acenaphthene		0.08	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Acenaphthylene		0.03	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Anthracene		0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Benzo(a)pyrene		0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Benzo(b,j,k)fluoranthene		0.05	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Benzo(e)pyrene		0.02	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Chrysene		0.02	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Jan 24, 2023	TE-09	Air Filter	24-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010219 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Fluoranthene		0.08	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Fluorene		0.20	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Indeno(1,2,3-cd)pyrene		0.02	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Naphthalene		0.88	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Phenanthrene		0.25	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Pyrene		0.03	ug/Filter	0.01	AC-066	10-Feb-23
23010219-002	Retene		0.08	ug/Filter	0.01	AC-066	10-Feb-23

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 24, 2023	28910	Ambient Air	24-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010219 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Feb-23
23010219-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Feb-23
23010219-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Feb-23
23010219-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Feb-23
23010219-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Feb-23
23010219-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Feb-23
23010219-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	14-Feb-23
23010219-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 24, 2023	28910	Ambient Air	24-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010219 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	2-Methylpentane	I	0.04	ppbv	0.02	AC-058	14-Feb-23
23010219-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	3-Methylpentane	I	0.03	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Acetone		0.8	ppbv	0.4	AC-058	14-Feb-23
23010219-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Benzene	I	0.10	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Carbon disulfide	I	0.06	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Carbon tetrachloride	I	0.06	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Chloromethane		0.56	ppbv	0.04	AC-058	14-Feb-23
23010219-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Cyclohexane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 24, 2023	28910	Ambient Air	24-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010219 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-001	Cyclopentane	I	0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Ethanol	I	0.9	ppbv	0.5	AC-058	14-Feb-23
23010219-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Freon-11		0.21	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Freon-113	I	0.06	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Freon-12		0.54	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Isobutane		0.36	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Isopentane		0.28	ppbv	0.04	AC-058	14-Feb-23
23010219-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23
23010219-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23
23010219-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Feb-23
23010219-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Feb-23
23010219-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	Methylcyclohexane	I	0.05	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Methylcyclopentane	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 24, 2023	28910	Ambient Air	24-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010219 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	n-Butane		0.60	ppbv	0.02	AC-058	14-Feb-23
23010219-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Feb-23
23010219-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23
23010219-001	n-Hexane	I	0.05	ppbv	0.03	AC-058	14-Feb-23
23010219-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	n-Pentane		0.22	ppbv	0.04	AC-058	14-Feb-23
23010219-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Feb-23
23010219-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Feb-23
23010219-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23
23010219-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23
23010219-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Feb-23
23010219-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Toluene	I	0.05	ppbv	0.03	AC-058	14-Feb-23
23010219-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Feb-23
23010219-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Feb-23
23010219-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23
23010219-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 24, 2023	28910	Ambient Air	24-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23010219 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010219-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Feb-23
23010219-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010219	01	23-Feb-23	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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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Canada T9C 1T4
(780) 632-8211

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: 23020037-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Jan 30, 2023

RECEIVED
FEB 07 2023

Bureau Veritas

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

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	32229
Station ID:	LICA 01	**Installation Date/Time (mst):**	Jan 25, 2023 @ 15:26
Sample ID:	LICA/VOC/CLS/Jan 30, 2023	**Removal Date/Time (mst):**	Feb 02, 2023 @ 18:01

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
January 30, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	18.2

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

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)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23020037-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Jan 30, 2023

RECEIVED
FEB 07 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-06
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Jan 25, 2023 @ 15:28
Field Sample ID:	LICA/PUF/CLS/Jan 30, 2023	**Removal Date/Time:**	Feb 02, 2023 @ 18:04

Sample Data Collection Information

Sample Date:	30-Jan-23	**Average Pressure (mmHg)**	717
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-16.1
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.4

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
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32229

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: NOV 2 4 2022

Evacuated: NOV 3 0 2022 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Jan 30, 2023

Sampled By: Alex Yakupov

Starting Vacuum:	End Vacuum:
-27.1 "Hg	~~+18.2~~ "Hg/psig

KG

PUF - TE-06

ID: LICA/PUF/CLS/Jan 30, 2023

A. Yakupov

Sample ID: 23020037-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Jan 30, 2023

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Jan 30, 2023
Matrix: Air Filter
CANISTER ID: TE-06
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 30-Jan-23 0:00
DATE RECEIVED: 07-Feb-23
REPORT CREATED: 23-Feb-23
REPORT NUMBER: 23020037
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-002	1-Methylnaphthalene		0.08	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	2-Methylnaphthalene		0.11	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Acenaphthene		0.03	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Anthracene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Jan 30, 2023	TE-06	Air Filter	30-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23020037 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Fluoranthene		0.05	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Fluorene		0.12	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Naphthalene		0.12	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Phenanthrene		0.18	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Pyrene		0.01	ug/Filter	0.01	AC-066	09-Feb-23
23020037-002	Retene		0.04	ug/Filter	0.01	AC-066	09-Feb-23

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(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 30, 2023	32229	Ambient Air	30-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23020037 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Feb-23
23020037-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Feb-23
23020037-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Feb-23
23020037-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Feb-23
23020037-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Feb-23
23020037-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	10-Feb-23
23020037-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	2,2,4-Trimethylpentane	I	0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	2,2-Dimethylbutane	I	0.03	ppbv	0.02	AC-058	10-Feb-23
23020037-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	10-Feb-23
23020037-001	2,3-Dimethylpentane	I	0.03	ppbv	0.02	AC-058	10-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 30, 2023	32229	Ambient Air	30-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23020037 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	2-Methylhexane	I	0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	2-Methylpentane	I	0.06	ppbv	0.02	AC-058	10-Feb-23
23020037-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	3-Methylhexane	I	0.05	ppbv	0.02	AC-058	10-Feb-23
23020037-001	3-Methylpentane	I	0.06	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Acetone		1.4	ppbv	0.4	AC-058	10-Feb-23
23020037-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Benzene	I	0.14	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Carbon tetrachloride	I	0.08	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Chloromethane		0.70	ppbv	0.04	AC-058	10-Feb-23
23020037-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Cyclohexane	I	0.10	ppbv	0.04	AC-058	10-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 30, 2023	32229	Ambient Air	30-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23020037 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-001	Cyclopentane	I	0.04	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Ethanol		1.3	ppbv	0.5	AC-058	10-Feb-23
23020037-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Freon-11		0.26	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Freon-113	I	0.07	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Freon-12		0.67	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Isobutane		0.68	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Isopentane		0.54	ppbv	0.04	AC-058	10-Feb-23
23020037-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Isopropyl alcohol		0.6	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Feb-23
23020037-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Feb-23
23020037-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Feb-23
23020037-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	10-Feb-23
23020037-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	Methylcyclohexane		0.11	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Methylcyclopentane		0.12	ppbv	0.05	AC-058	10-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Jan 30, 2023	32229	Ambient Air	30-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23020037 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	n-Butane		0.88	ppbv	0.02	AC-058	10-Feb-23
23020037-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Feb-23
23020037-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	n-Heptane	I	0.04	ppbv	0.04	AC-058	10-Feb-23
23020037-001	n-Hexane	I	0.10	ppbv	0.03	AC-058	10-Feb-23
23020037-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	n-Pentane		0.30	ppbv	0.04	AC-058	10-Feb-23
23020037-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Feb-23
23020037-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Feb-23
23020037-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Feb-23
23020037-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Feb-23
23020037-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Feb-23
23020037-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Toluene	I	0.06	ppbv	0.03	AC-058	10-Feb-23
23020037-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Feb-23
23020037-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Feb-23
23020037-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23
23020037-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 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
LICA/VOC/CLS/Jan 30, 2023	32229	Ambient Air	30-Jan-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23020037 **REPORT CREATED:** 23-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020037-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Feb-23
23020037-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

Revision History

Order ID	Ver	Date	Reason
23020037	01	23-Feb-23	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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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: 23010100-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694337

I 2000i-D Sample Data Sheet

RECEIVED
JAN 13 2023

Date Sampled:	6-Jan-23
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)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C9694337	C9694338
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-11	
Pressure	710	
Std Volume (Instrument)	23.1	2.57

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 4-Jan-23

Removed by (Sign/Date) Alex Yakupov Date: 9-Jan-23

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: 23010100-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694337

RECEIVED
JAN 13 2023

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: November 7/22

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	C9694337 → C9694338

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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C9694337	Air Filter

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

DATE SAMPLED: 06-Jan-23 0:00 **DATE RECEIVED:** 13-Jan-23
REPORT CREATED: 24-Jan-23 **REPORT NUMBER:** 23010100
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010100-001	Particulate Weight		0.057	mg	0.004	AC-029	18-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: January 24, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C9694338		Air Filter	06-Jan-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23010100 **REPORT CREATED:** 24-Jan-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010100-002	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	18-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 24, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010100	01	24-Jan-23	Report created

Methods

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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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

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

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: 23010162-001 Priority: Normal

Partisol 2000i-D Sample Da

Customer ID: LICA
Cust Samp ID: C9694339

Date Sampled:	12-Jan-23
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 #:	C9694339	C9694340
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-9	
Pressure	716	
Std Volume (Instrument)	23.1	2.57

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 9-Jan-23

Removed by (Sign/Date) Alex Yakupov Date: 16-Jan-23

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: 23010162-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694339

RECEIVED
JAN 20 2023

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: November 7/22

Project: LICA/Bureau Veritas Labs

Prepared by: S Mulenke

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C9694339 → C9694340

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

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C9694339	Air Filter

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

DATE SAMPLED: 12-Jan-23 0:00
DATE RECEIVED: 20-Jan-23
REPORT CREATED: 24-Jan-23
REPORT NUMBER: 23010162
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010162-001	Particulate Weight		0.147	mg	0.004	AC-029	23-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: January 24, 2023

Inquiries: (780) 632 8403 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
C9694340		Air Filter	12-Jan-23 0:00

DESCRIPTION: Cold Lake South - PM 10 - Coarse

REPORT NUMBER: 23010162 **REPORT CREATED:** 24-Jan-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010162-002	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	23-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 24, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010162	01	24-Jan-23	Report created

Methods

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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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

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: 23010178-001 Priority: Normal

Customer ID: LICA
Cust Samp ID: C9694259

RECEIVED
JAN 24 2023

000i-D Sample Data Sheet

Date Sampled:	18-Jan-23
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)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C9694259	C9694260
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-7.5	
Pressure	710	
Std Volume (Instrument)	22.7	2.53

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 16-Jan-23

Removed by (Sign/Date) Alex Yakupov Date: 20-Jan-23

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: 23010178-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694260

RECEIVED
JAN 24 2023

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: November 23/22

Project: LICA/Bureau Veritas Labs

Prepared by: [signature]

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C9694259 → C9694260

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

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C9694259	Air Filter

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

DATE SAMPLED: 18-Jan-23 0:00
DATE RECEIVED: 24-Jan-23
REPORT CREATED: 08-Feb-23
REPORT NUMBER: 23010178
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010178-001	Particulate Weight		0.036	mg	0.004	AC-029	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 8, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C9694260		Air Filter	18-Jan-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23010178 **REPORT CREATED:** 08-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010178-002	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	26-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 8, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010178	01	08-Feb-23	Report created

Methods

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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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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Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

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: 23010218-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694257

2000i-D Sample Data Sheet

RECEIVED
JAN 27 2023

Date Sampled:	24-Jan-23
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)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C9694257	C9694258
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-2	
Pressure	711	
Std Volume (Instrument)	22.4	2.49

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 20-Jan-23

Removed by (Sign/Date) Alex Yakupov Date: 25-Jan-23

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: 23010218-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694258

RECEIVED
JAN 27 2023

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: November 23/22

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	C9694257 → C9694258

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

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C9694257	Air Filter

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

DATE SAMPLED: 24-Jan-23 0:00
DATE RECEIVED: 27-Jan-23
REPORT CREATED: 08-Feb-23
REPORT NUMBER: 23010218
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010218-001	Particulate Weight		0.030	mg	0.004	AC-029	31-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 8, 2023
Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca//

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C9694258		Air Filter	24-Jan-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23010218 **REPORT CREATED:** 08-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010218-002	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	31-Jan-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 8, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23010218	01	08-Feb-23	Report created

Methods

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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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

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: 23020036-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694255

I 2000i-D Sample Data Sheet

Date Sampled:	30-Jan-23
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)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C9694255	C9694256
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-17	
Pressure	716	
Std Volume (Instrument)	23.8	2.65

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date):	Alex Yakupov	Date:	25-Jan-23
Removed by (Sign/Date)	Alex Yakupov	Date:	2-Feb-23

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: 23020036-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C9694256

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: November 23/22

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	C9694255 → C9694256

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

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C9694255	Air Filter

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

DATE SAMPLED: 30-Jan-23 0:00
DATE RECEIVED: 07-Feb-23
REPORT CREATED: 14-Feb-23
REPORT NUMBER: 23020036
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020036-001	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	13-Feb-23

Report certified by: Andrea Conner, Admin Assistant
On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: February 14, 2023
Inquiries: (780) 632 8403
E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca//

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C9694256		Air Filter	30-Jan-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23020036 **REPORT CREATED:** 14-Feb-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23020036-002	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	13-Feb-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: February 14, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23020036	01	14-Feb-23	Report created

Methods

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

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
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AC-049	pH (Meter Method)
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AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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

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, Jan 2023 sample period

ID	SAMPLER						START		END		NOTES
							DATE	TIME	DATE	TIME	
3	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	19:35	Jan 29	18:24	
4	---	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	14:25	Jan 30	12:18	
5	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 31	15:24	Jan 30	13:40	
6	---	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	17:23	Jan 30	16:02	
8	---	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	18:20	Jan 30	19:01	
9	---	SO_2	NO_2	O_3	HNO3	NH3	Jan 3	21:38	Jan 29	17:30	
10	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Jan 3	20:40	Jan 31	19:40	
11	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Jan 3	20:00	Jan 31	18:45	
12	H2S	SO2	NO2	O3	HNO3	NH3	Jan 3	18:41	Jan 30	17:26	
13	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	15:25	Jan 29	16:00	
14	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	13:40	Jan 29	14:44	water isotope sample taken
15	---	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	10:44	Jan 29	09:16	
16	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Jan 3	11:25	Jan 30	10:55	
17	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	19:50	Jan 30	18:24	
18	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	13:02	Jan 30	17:00	
19	---	SO_2	NO_2	O_3	HNO3	NH3	Jan 3	10:15	Jan 31	10:01	
22	H_2S	SO_2	NO_2	O_3	HNO3	NH3	09:35 ↔ Dec 29		Jan 29	10:22	
23	---	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	11:34	Jan 29	12:15	
24	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 30	16:25	Jan 30	15:00	
25	H2S	SO2	---	---							
26	H_2S	SO_2	---	---	HNO3	NH3	Dec 29	14:14	Jan 29	15:07	
27	H_2S	SO_2	---	---	HNO3	NH3	Dec 29	12:58	Jan 29	13:43	
28	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	21:05	Jan 30	10:14	
29	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	09:54	Jan 29	10:39	
32	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Dec 29	17:55	Jan 29	20:06	O_3 is missing
42	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Jan 3	15:50	Jan 31	14:22	
							DUPLICATES				
5	---	---	NO_2	O_3	---	---	Dec 30	15:24	Jan 30	13:40	
6	---	---	NO_2	O_3	---	---	Dec 30	17:23	Jan 30	16:02	
19	---	SO2	---	---	HNO3	NH3	Jan 3	10:15	Jan 31	10:01	
22	---	SO2	---	---	HNO3	NH3	09:35 ↔ Dec 29		Jan 29	10:22	
23	---	SO2	---	---	---	---	Dec 29	11:34	Jan 29	12:15	
26	H2S	---	---	---	---	---	Dec 29	14:14	Jan 29	15:07	
27	H_2S	---	---	---	---	---	Dec 29	12:58	Jan 29	13:43	

ROSANNA LUONA 2023/2/7 12:30

NO2 = 26 SO2 = 30 H2S = 21

Your Project #: JANUARY 2023 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: 2023/02/16
Report #: R3300463
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C308737
Received: 2023/02/07, 12:30

Sample Matrix: Air
Samples Received: 62

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
H2S Passive Analysis	20	2023/02/13	2023/02/15	PTC SOP-00150	Passive H2S in ATM
HNO3 by Passive Sampler	30	2023/02/08	2023/02/14	PTC SOP-00288	Passive HNO3 in ATM
NH3 by Passive Sampler	30	2023/02/08	2023/02/15	PTC SOP-00157	ASTM D6919
NO2 Passive Analysis	25	2023/02/08	2023/02/15	PTC SOP-00148	Passive NO2 in ATM
O3 Passive Analysis	25	2023/02/08	2023/02/15	PTC SOP-00197	EPA 300 R2.1
SO2 Passive Analysis	28	2023/02/08	2023/02/15	PTC SOP-00149	Passive SO2 in ATM

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

Belma Elefante
Customer Service Associate
16 Feb 2023 08:48:14

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

==========

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

Bureau Veritas Job #: C308737
Report Date: 2023/02/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: JANUARY 2023 PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BLL003			BLL004			BLL005		
Sampling Date		2022/12/29 19:35			2022/12/30 14:05			2022/12/30 15:24		
	UNITS	3	RDL	QC Batch	4	RDL	QC Batch	5	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.21	0.02	A880468				0.22	0.02	A880468
Calculated NO2	ppb	3.6	0.1	A877512	2.7	0.1	A877512	2.6	0.1	A877512
Calculated O3	ppb	39.5	0.1	A877506	45.5	0.1	A877506	31.8	0.1	A877506
Calculated SO2	ppb	0.6	0.1	A876123	1.1	0.1	A876123	1.0	0.1	A876123
RDL = Reportable Detection Limit										

Bureau Veritas ID		BLL006	BLL007	BLL008			BLL009	BLL010	BLL011		
Sampling Date		2022/12/30 17:23	2022/12/30 18:20	2023/01/03 21:38			2023/01/03 20:40	2023/01/03 20:00	2023/01/03 18:41		
	UNITS	6	8	9	RDL	QC Batch	10	11	12	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb						0.14	0.15	0.13	0.02	A880468
Calculated NO2	ppb	6.0	2.3	3.5	0.1	A877512	8.1	2.6	1.6	0.1	A877512
Calculated O3	ppb	34.1	36.6	28.6	0.1	A877506	26.0	26.0	34.4	0.1	A877506
Calculated SO2	ppb	0.9	0.7	0.5	0.1	A876123	0.4	0.6	0.7	0.1	A876123
RDL = Reportable Detection Limit											

Bureau Veritas ID		BLL012	BLL013			BLL014			BLL015		
Sampling Date		2022/12/29 15:25	2022/12/29 13:40			2022/12/30 10:44			2023/01/03 11:25		
	UNITS	13	14	RDL	QC Batch	15	RDL	QC Batch	16	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb	0.15	0.30	0.02	A880468				0.18	0.02	A880468
Calculated NO2	ppb	2.0	4.0	0.1	A877512	4.0	0.1	A877512	2.9	0.1	A877512
Calculated O3	ppb	21.2	29.8	0.1	A877506	30.7	0.1	A877506	33.4	0.1	A877506
Calculated SO2	ppb	0.8	1.8	0.1	A876123	0.5	0.1	A876123	0.7	0.1	A876123
RDL = Reportable Detection Limit											

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

Bureau Veritas Job #: C308737
Report Date: 2023/02/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: JANUARY 2023 PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BLL016	BLL017			BLL018			BLL019		
Sampling Date		2022/12/30 19:50	2022/12/30 13:02			2023/01/03 10:15			2022/12/29 09:35		
	UNITS	17	18	RDL	QC Batch	19	RDL	QC Batch	22	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb	0.26	0.11	0.02	A880468				0.28	0.02	A880468
Calculated NO2	ppb	2.7	1.5	0.1	A877512	2.3	0.1	A877512	4.3	0.1	A877512
Calculated O3	ppb	40.5	28.9	0.1	A877506	45.6	0.1	A877506	28.1	0.1	A877506
Calculated SO2	ppb	1.3	0.3	0.1	A876123	0.7	0.1	A876123	0.5	0.1	A876123
RDL = Reportable Detection Limit											

Bureau Veritas ID		BLL020			BLL021			BLL022		BLL023		
Sampling Date		2022/12/29 11:34			2022/12/30 16:25			2022/12/29 14:14		2022/12/29 12:58		
	UNITS	23	RDL	QC Batch	24	RDL	QC Batch	26	QC Batch	27	RDL	QC Batch
Passive Monitoring												
Calculated H2S	ppb				0.27	0.02	A880468	0.18	A880468	0.32	0.02	A880468
Calculated NO2	ppb	1.8	0.1	A877512	4.9	0.1	A877512					
Calculated O3	ppb	20.1	0.1	A877506	34.8	0.1	A877506					
Calculated SO2	ppb	0.3	0.1	A876123	0.9	0.1	A876123	0.7	A876123	1.9	0.1	A876137
RDL = Reportable Detection Limit												

Bureau Veritas ID		BLL024		BLL025	BLL026	BLL027			BLL032		
Sampling Date		2022/12/29 21:05		2022/12/29 08:54	2022/12/29 17:55	2023/01/03 15:50			2023/01/03 10:15		
	UNITS	28	QC Batch	29	32	42	RDL	QC Batch	19 DUP	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb	0.29	A880468	0.28	0.23	0.21	0.02	A880468			
Calculated NO2	ppb	8.8	A877512	4.7	2.7	6.7	0.1	A877519			
Calculated O3	ppb	29.5	A877506	33.1	MISSING	26.8	0.1	A877508			
Calculated SO2	ppb	0.9	A876137	0.5	0.8	0.4	0.1	A876137	0.6	0.1	A876137
RDL = Reportable Detection Limit											

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

Bureau Veritas Job #: C308737
Report Date: 2023/02/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: JANUARY 2023 PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BLL034	BLL036			BLL037	BLL038			BLL039		
Sampling Date		2022/12/29 09:35	2022/12/29 11:34			2022/12/30 15:24	2022/12/30 17:23			2022/12/29 14:14		
	UNITS	22 DUP	23 DUP	RDL	QC Batch	5 DUP	6 DUP	RDL	QC Batch	26 DUP	RDL	QC Batch
Passive Monitoring												
Calculated H2S	ppb									0.18	0.02	A880468
Calculated NO2	ppb					2.8	7.0	0.1	A877519			
Calculated O3	ppb					44.5	34.9	0.1	A877508			
Calculated SO2	ppb	0.5	0.3	0.1	A876137							
RDL = Reportable Detection Limit												

Bureau Veritas ID		BLL040			BLL041	BLL042	BLL043	BLL045		
Sampling Date		2022/12/29 12:58			2022/12/29 19:35	2022/12/30 14:05	2022/12/30 15:24	2022/12/30 17:23		
	UNITS	27 DUP	RDL	QC Batch	3-NH3 HNO3	4-NH3 HNO3	5-NH3 HNO3	6-NH3 HNO3	RDL	QC Batch
Passive Monitoring										
Ammonia by Passive Sampler	ppb				1.3	1.1	1.1	0.8	0.1	A876478
Calculated H2S	ppb	0.30	0.02	A880468						
HNO3 by Passive Sampler	ug/m3				0.22	0.99	0.73	0.62	0.04	A876168
RDL = Reportable Detection Limit										

Bureau Veritas ID		BLL046	BLL047	BLL048	BLL049	BLL050	BLL051		
Sampling Date		2022/12/30 18:20	2023/01/03 21:38	2023/01/03 20:40	2023/01/03 20:00	2023/01/03 18:41	2022/12/29 15:25		
	UNITS	8-NH3 HNO3	9-NH3 HNO3	10-NH3 HNO3	11-NH3 HNO3	12-NH3 HNO3	13-NH3 HNO3	RDL	QC Batch
Passive Monitoring									
Ammonia by Passive Sampler	ppb	0.8	1.2	1.8	1.8	0.6	0.7	0.1	A876478
HNO3 by Passive Sampler	ug/m3	0.20	0.79	0.81	0.41	0.11	0.24	0.04	A876168
RDL = Reportable Detection Limit									

Bureau Veritas ID		BLL052	BLL053	BLL054	BLL055	BLL056	BLL057		
Sampling Date		2022/12/29 13:50	2022/12/30 10:44	2023/01/03 11:25	2022/12/30 19:50	2022/12/30 13:02	2023/01/03 10:15		
	UNITS	14-NH3 HNO3	15-NH3 HNO3	16-NH3 HNO3	17-NH3 HNO3	18-NH3 HNO3	19-NH3 HNO3	RDL	QC Batch
Passive Monitoring									
Ammonia by Passive Sampler	ppb	0.8	0.8	0.5	0.9	0.9	0.7	0.1	A876478
HNO3 by Passive Sampler	ug/m3	0.28	0.28	0.16	0.39	0.27	0.11	0.04	A876168
RDL = Reportable Detection Limit									

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

Bureau Veritas Job #: C308737
Report Date: 2023/02/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: JANUARY 2023 PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BLL058	BLL059	BLL060		BLL061	BLL062		
Sampling Date		2022/12/29 09:35	2022/12/29 11:34	2022/12/30 16:25		2022/12/29 14:14	2022/12/29 12:58		
	UNITS	22-NH3 HNO3	23-NH3 HNO3	24-NH3 HNO3	QC Batch	26-NH3 HNO3	27-NH3 HNO3	RDL	QC Batch
Passive Monitoring									
Ammonia by Passive Sampler	ppb	0.9	0.6	1.0	A876478	0.5	0.7	0.1	A876483
HNO3 by Passive Sampler	ug/m3	0.72	1.28	0.29	A876169	0.74	0.50	0.04	A876169
RDL = Reportable Detection Limit									

Bureau Veritas ID		BLL063	BLL064	BLL065	BLL066	BLL067		
Sampling Date		2022/12/29 21:05	2022/12/29 08:54	2022/12/29 17:55	2023/01/03 15:50	2023/01/03 10:15		
	UNITS	28-NH3 HNO3	29-NH3 HNO3	32-NH3 HNO3	42-NH3 HNO3	19-NH3 HNO3 DUP	RDL	QC Batch
Passive Monitoring								
Ammonia by Passive Sampler	ppb	0.7	0.5	0.9	1.5	1.2	0.1	A876483
HNO3 by Passive Sampler	ug/m3	0.82	0.32	0.67	0.92	0.61	0.04	A876169
RDL = Reportable Detection Limit								

Bureau Veritas ID		BLL068	BLL069	BLL070	BLL071		
Sampling Date		2022/12/29 09:35					
	UNITS	22-NH3 HNO3 DUP	BLANK 1-NH3 HNO3	BLANK 2-NH3 HNO3	BLANK 3-NH3 HNO3	RDL	QC Batch
Passive Monitoring							
Ammonia by Passive Sampler	ppb	0.9	0.3	0.5	0.7	0.1	A876483
HNO3 by Passive Sampler	ug/m3	1.25	0.45	0.30	0.42	0.04	A876169
RDL = Reportable Detection Limit							

GENERAL COMMENTS

Sample BLL069 [BLANK 1-NH3 HNO3] : Default exposure time(720 hrs) is used for NH3 and HNO# blank calculation. --YL6 20230213

Sample BLL070 [BLANK 2-NH3 HNO3] : Default exposure time(720 hrs) is used for NH3 and HNO# blank calculation. --YL6 20230213

Sample BLL071 [BLANK 3-NH3 HNO3] : Default exposure time(720 hrs) is used for NH3 and HNO# blank calculation. --YL6 20230213v

Results relate only to the items tested.

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

Bureau Veritas Job #: C308737
Report Date: 2023/02/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: JANUARY 2023 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
A876123	OZ	Spiked Blank	Calculated SO2			101	%	90 - 110
A876123	OZ	Method Blank	Calculated SO2		<0.1		ppb	
A876137	OZ	Spiked Blank	Calculated SO2			98	%	90 - 110
A876137	OZ	Method Blank	Calculated SO2		<0.1		ppb	
A876168	OZ	Method Blank	HNO3 by Passive Sampler		<0.04		ug/m3	
A876169	OZ	Method Blank	HNO3 by Passive Sampler		<0.04		ug/m3	
A876478	YL6	Spiked Blank	Ammonia by Passive Sampler			98	%	90 - 110
A876478	YL6	Method Blank	Ammonia by Passive Sampler		<0.1		ppb	
A876483	YL6	Spiked Blank	Ammonia by Passive Sampler			99	%	90 - 110
A876483	YL6	Method Blank	Ammonia by Passive Sampler		<0.1		ppb	
A877506	SDK	Spiked Blank	Calculated O3			108	%	90 - 110
A877506	SDK	Method Blank	Calculated O3		<0.1		ppb	
A877508	SDK	Spiked Blank	Calculated O3			100	%	90 - 110
A877508	SDK	Method Blank	Calculated O3		<0.1		ppb	
A877512	SDK	Spiked Blank	Calculated NO2			98	%	90 - 110
A877512	SDK	Method Blank	Calculated NO2		<0.1		ppb	
A877519	SDK	Spiked Blank	Calculated NO2			99	%	90 - 110
A877519	SDK	Method Blank	Calculated NO2		<0.1		ppb	
A880468	YYA	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.

Bureau Veritas Job #: C308737
Report Date: 2023/02/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: JANUARY 2023 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:

Carmen Toker, CT, Manager Air Laboratory Services

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

Lac La Biche Station

Non- Methane Hydrocarbons (NMHCs) Canister Samples

Sample ID: 23010099-001 Priority: Normal

Customer ID: LICA
Cust Samp ID: LICA/NMHC/LLB/Jan 5, 2023

RECEIVED
AIR ECD-01320/2
JAN 13 2023

Maxxam

VOC Sample Collection Data Sheet

Client: LICA
Location: LLB
Station ID: LICA
Field Sample ID: LICA/NMHC/LLB/Jan 5 2023

Sampler S/N: n/a
Canister ID: ~~31320~~ 32261
Canister Installation Date/Time: ~~Sep~~ 5 Oct 5, 2022 / 17:45
Canister Removal Date/Time: A.Y. Jan 9, 2023 / 12:30

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Jan 5, 2023	07:55	n/a	n/a

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
n/a	n/a	n/a

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Vacuum (inHg)
~~-27.3~~ A.Y. -27.1	

Canister valve open prior to sampling?: (YES) / NO

Canister valve closed prior to disconnection?: (YES) / NO

Comments: NMHC canister

Technician Signature: Alex Yakupov Date: Oct 5, 2022
Alex Yakupov Jan 9, 2022

InnoTech ALBERTA

Canister ID: 32261

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: SEP 2 0 2022

Evacuated: _____ Recertified: OCT 19 2022

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/NMHC/LLB/Jan 5 2023

Sampled By: Alex Yakupzak

Starting Vacuum: -27.1 "Hg

End Pressure: 0.0 -3 KG "Hg/psig

Sample ID: 23010099-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/NMHC/LLB/Jan 5, 2023

InnoTech ALBERTA
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: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/NMHC/LLB/Jan 5, 2023
Matrix: Ambient Air
CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - Fine - PM 2.5
DATE SAMPLED: 05-Jan-23 7:55
DATE RECEIVED: 13-Jan-23
REPORT CREATED: 18-Jan-23
REPORT NUMBER: 23010099
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010099-001	1,1,1-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	1,1,2-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	1,1-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	1,1-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	1,2,3-Trimethylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Jan-23
23010099-001	1,2,4-Trichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	1,2,4-Trimethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	1,2-Dibromoethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	1,2-Dichloroethane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	1,2-Dichloropropane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	1,3,5-Trimethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	1,3-Butadiene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	1,3-Dichlorobenzene	K, T, U	< 0.6	ppbv	0.6	AC-058	13-Jan-23
23010099-001	1,4-Dichlorobenzene	K, T, U	< 0.6	ppbv	0.6	AC-058	13-Jan-23
23010099-001	1,4-Dioxane	K, T, U	< 0.7	ppbv	0.7	AC-058	13-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: January 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/NMHC/LLB/Jan 5, 2023		Ambient Air	05-Jan-23 7:55

DESCRIPTION: Cold Lake South - Fine - PM 2.5

REPORT NUMBER: 23010099 **REPORT CREATED:** 18-Jan-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010099-001	1-Butene/Isobutylene	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Jan-23
23010099-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.10	ppbv	0.10	AC-058	13-Jan-23
23010099-001	1-Pentene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	2,2,4-Trimethylpentane	I	0.04	ppbv	0.03	AC-058	13-Jan-23
23010099-001	2,2-Dimethylbutane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	2,3-Dimethylbutane	K, T, U	< 0.13	ppbv	0.13	AC-058	13-Jan-23
23010099-001	2,3-Dimethylpentane	I	0.05	ppbv	0.03	AC-058	13-Jan-23
23010099-001	2,4-Dimethylpentane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	2-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	2-Methylhexane	I	0.05	ppbv	0.04	AC-058	13-Jan-23
23010099-001	2-Methylpentane	I	0.07	ppbv	0.03	AC-058	13-Jan-23
23010099-001	3-Methylheptane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	3-Methylhexane	I	0.04	ppbv	0.03	AC-058	13-Jan-23
23010099-001	3-Methylpentane	I	0.07	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Acetone		0.8	ppbv	0.6	AC-058	13-Jan-23
23010099-001	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Benzene	I	0.11	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Bromodichloromethane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Bromoform	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Bromomethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Carbon disulfide	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Carbon tetrachloride	I	0.06	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Chlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23

Report certified by: Rebecca Dasilva, Account Coordinator On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/NMHC/LLB/Jan 5, 2023		Ambient Air	05-Jan-23 7:55

DESCRIPTION: Cold Lake South - Fine - PM 2.5

REPORT NUMBER: 23010099 **REPORT CREATED:** 18-Jan-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010099-001	Chloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Chloroform	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Chloromethane		0.46	ppbv	0.06	AC-058	13-Jan-23
23010099-001	cis-1,2-Dichloroethene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	cis-2-Butene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Cyclohexane	I	0.08	ppbv	0.06	AC-058	13-Jan-23
23010099-001	Cyclopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Dibromochloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Ethanol	I	1.0	ppbv	0.7	AC-058	13-Jan-23
23010099-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Ethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Freon-11		0.19	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Freon-113	I	0.06	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Freon-114	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Freon-12		0.52	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Hexachloro-1,3-butadiene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Isobutane		0.61	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Isopentane		0.35	ppbv	0.06	AC-058	13-Jan-23
23010099-001	Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Isopropylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010099-001	m,p-Xylene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010099-001	m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23

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InnoTech ALBERTA
PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/NMHC/LLB/Jan 5, 2023		Ambient Air	05-Jan-23 7:55

DESCRIPTION: Cold Lake South - Fine - PM 2.5

REPORT NUMBER: 23010099 **REPORT CREATED:** 18-Jan-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010099-001	m-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Methyl butyl ketone	K, T, U	< 0.6	ppbv	0.6	AC-058	13-Jan-23
23010099-001	Methyl ethyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Methyl methacrylate	K, T, U	< 0.11	ppbv	0.11	AC-058	13-Jan-23
23010099-001	Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	Methylcyclohexane	I	0.13	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Methylcyclopentane	I	0.10	ppbv	0.07	AC-058	13-Jan-23
23010099-001	Methylene chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	n-Butane		0.93	ppbv	0.03	AC-058	13-Jan-23
23010099-001	n-Decane	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Jan-23
23010099-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	n-Heptane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010099-001	n-Hexane	I	0.12	ppbv	0.04	AC-058	13-Jan-23
23010099-001	n-Octane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	n-Pentane		0.26	ppbv	0.06	AC-058	13-Jan-23
23010099-001	n-Propylbenzene	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Jan-23
23010099-001	n-Undecane	K, T, U	< 0.7	ppbv	0.7	AC-058	13-Jan-23
23010099-001	Naphthalene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	n-Nonane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010099-001	o-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	o-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	p-Ethyltoluene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23
23010099-001	Styrene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jan-23

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/NMHC/LLB/Jan 5, 2023		Ambient Air	05-Jan-23 7:55

DESCRIPTION: Cold Lake South - Fine - PM 2.5

REPORT NUMBER: 23010099 **REPORT CREATED:** 18-Jan-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23010099-001	Tetrachloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Toluene	I	0.11	ppbv	0.04	AC-058	13-Jan-23
23010099-001	trans-1,2-Dichloroethylene	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Jan-23
23010099-001	trans-1,3-Dichloropropylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	trans-2-Butene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jan-23
23010099-001	trans-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Trichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23
23010099-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jan-23
23010099-001	Vinyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jan-23

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InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202301

Revision History

Order ID	Ver	Date	Reason
23010099	01	18-Jan-23	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in 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

23010099

NMHC Canister

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.

End of Report