

Site Documentation: Tamarack Continuous Monitoring Station

General Site Information

Item	Description
Site ID (ETS Station ID)	030 (01248)
Station Name	Tamarack Continuous Monitoring Station (TRS)
General Description	The TRS monitoring station is located in the in-situ thermal recovery area operated by Imperial Oil Resources (Cold Lake Operations)
Community	Riverhurst / LaCorey / Cold Lake
Station Address	N/A
Coordinates	54.604935° Lat, -110.452637° Long
Station Type	Industrial-regional
Area Land Use	Industry, in-situ oil sands production
Angle of elevation to nearby building in area	<15 degrees, trembling aspen
Airflow Restrictions (yes/no)	North: No East: No South: No West: No
Nearest Tree	Tree stands 500m surrounding the site. Muskeg and standing water within 1km.
Sample Manifold Type	Glass
Meteorological Tower Information	Height: 10 meters Type: Crank Position: Attached to north side of monitoring shelter
Station Install Date	Pre-2003: Prior to LICA's air monitoring activities (MKS was a former industry sampling site)
Station Origin	LICA owned and operated
Site Preparation	Grassy clearing

Site Influences

Localized Sources (within 20 meters of station)

Type	Distance	Description
Automobile	20 meters	Lease Road
Industrial	Immediate area	Well site infrastructure
Natural	Immediate area	Muskeg

Road Way Sources

Name	Type	Traffic Volume	Distance (m)	Description
Lease/Access Road	Lease Road	Unknown – Sporadic	20 meters	Gravel Road
Regional Highway 892	Township Road	Unknown – Minimal	2 km	Paved Highway

Major Point/Area Sources

Name	Type	Major Emissions	Distance (m)	Direction
Steam plant (Tamarack)	Industrial	NOx, HC, SO ₂ , H ₂ S	1.5 km	WSW
Steam plant (Leming)	Industrial	NOx, HC, SO ₂ , H ₂ S	1.7 km	ESE

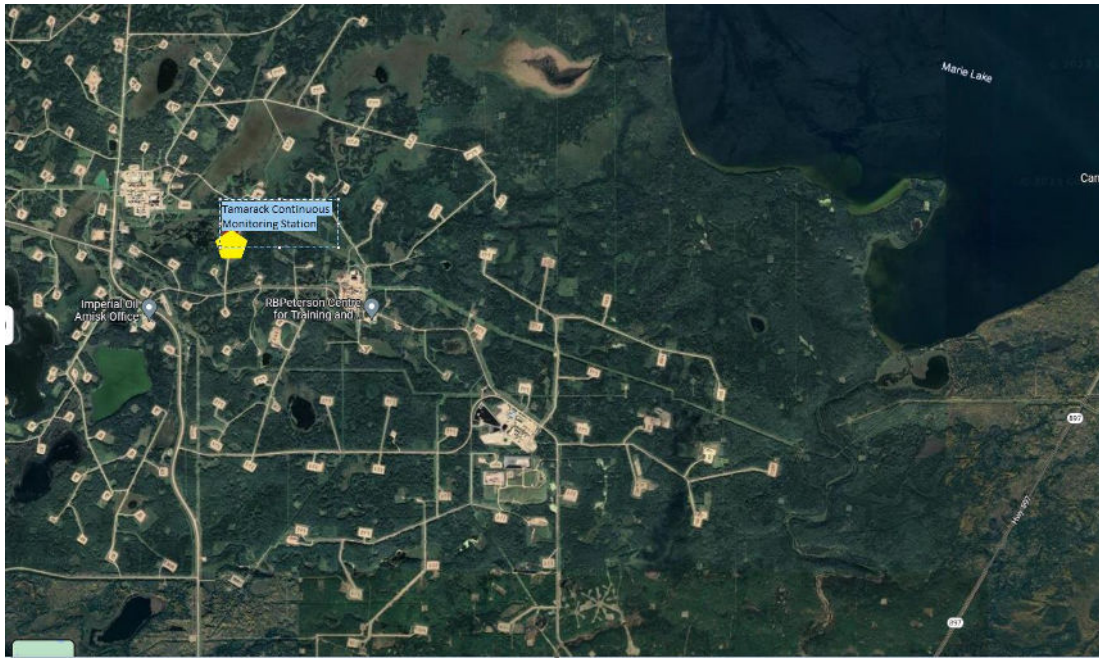


Figure 1: Satellite image showing TRS location

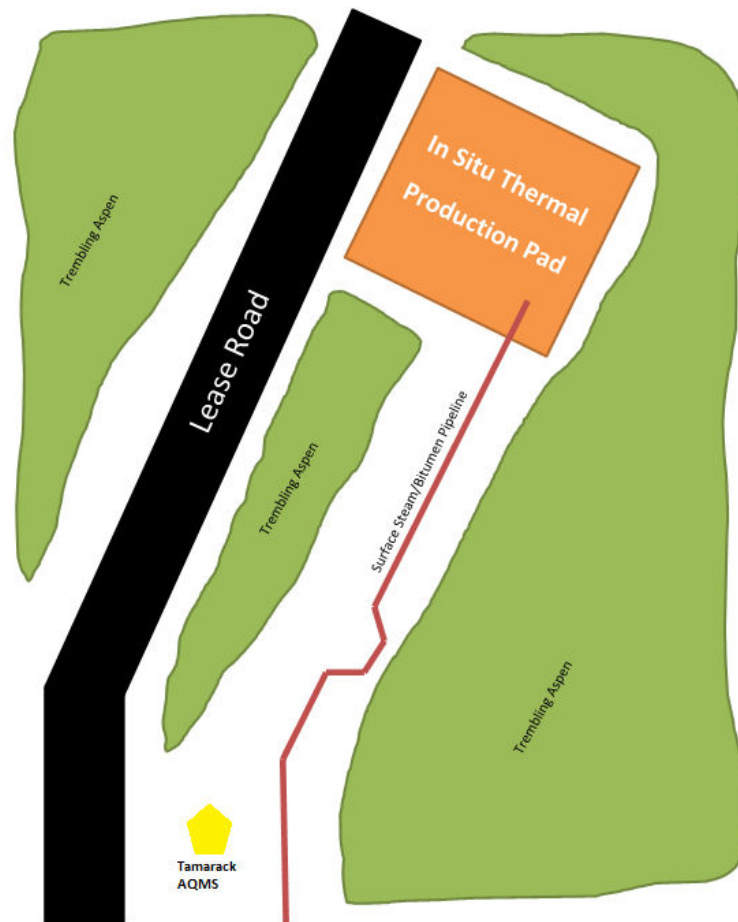
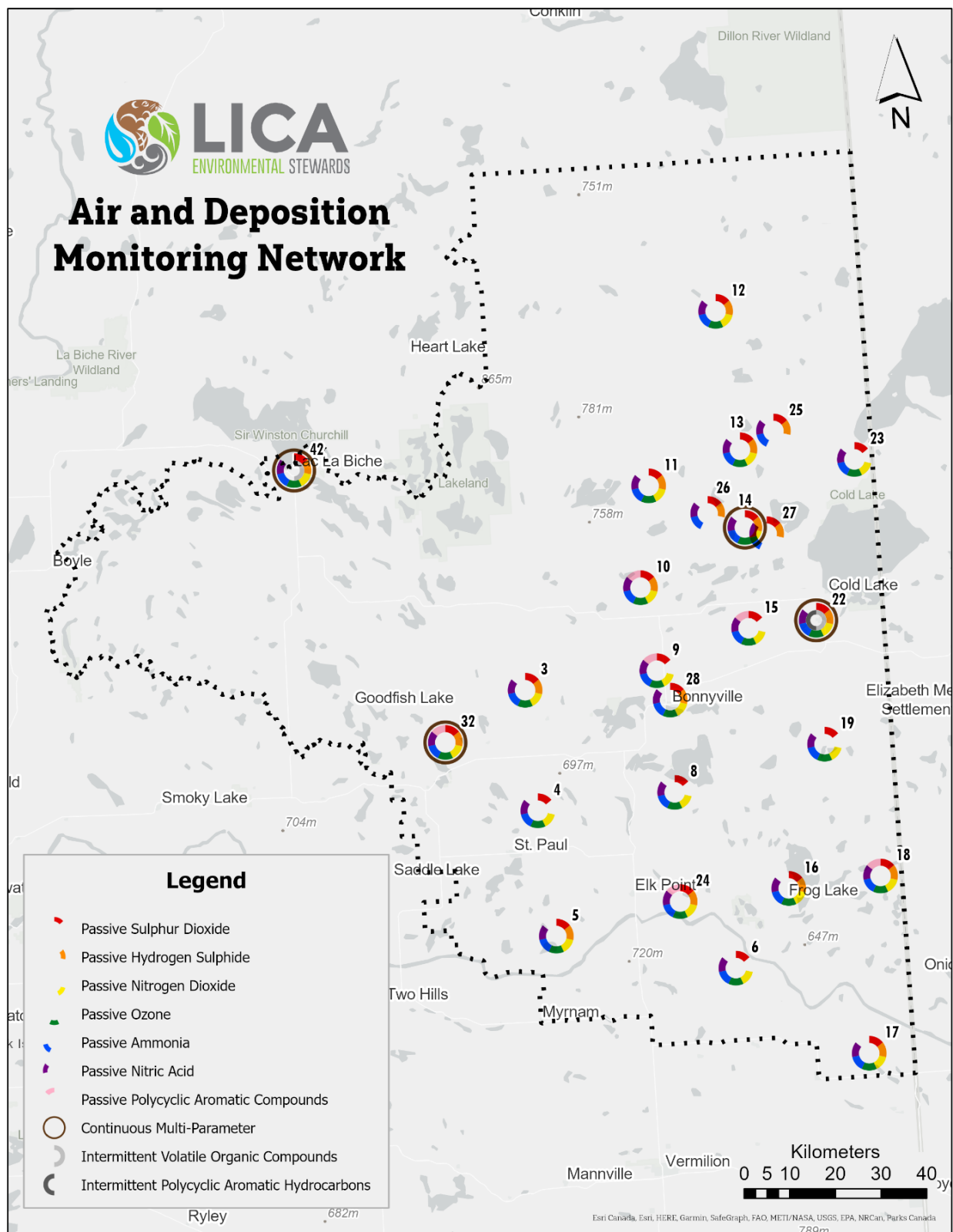
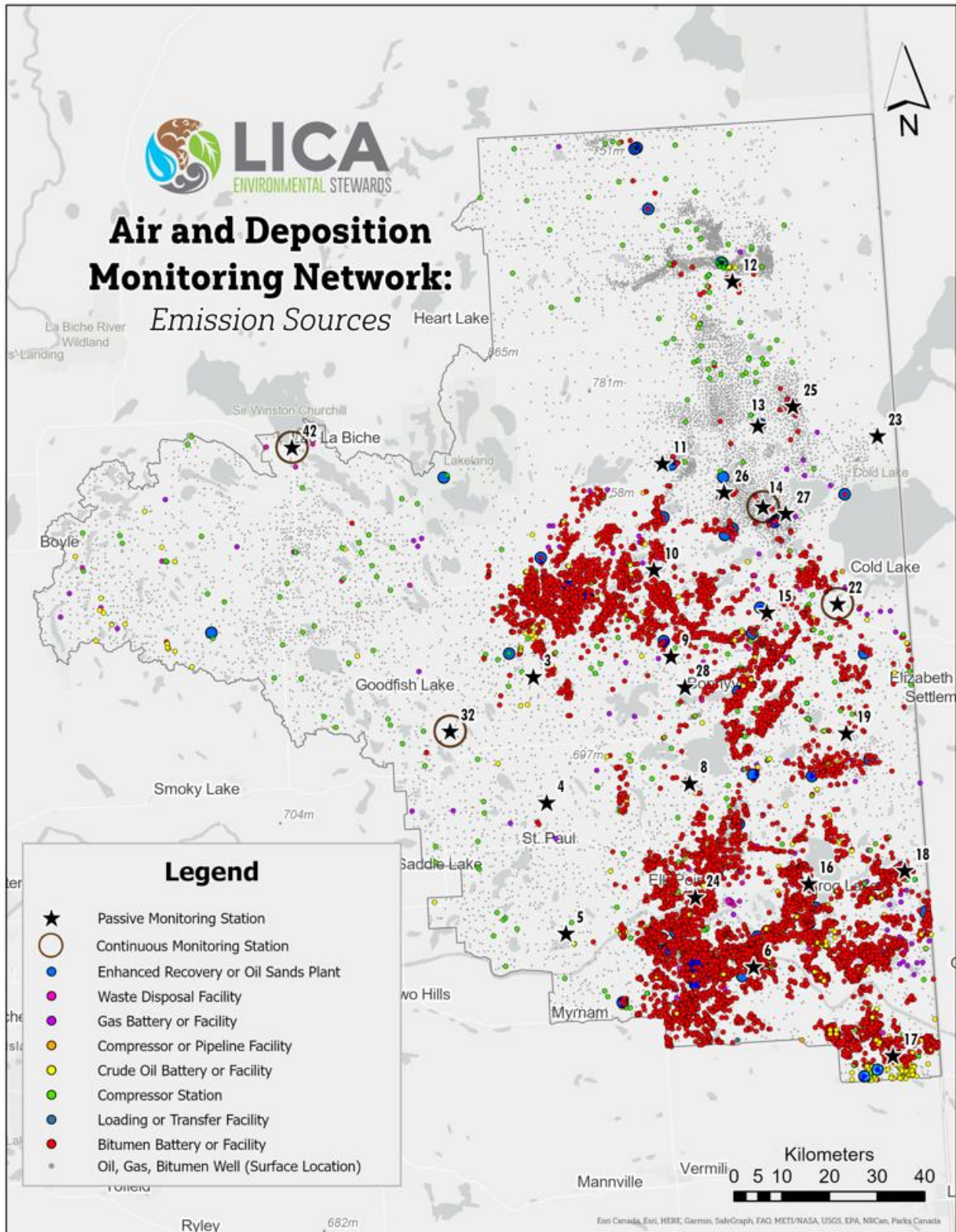


Figure 2: Schematic showing TRS and surrounding features

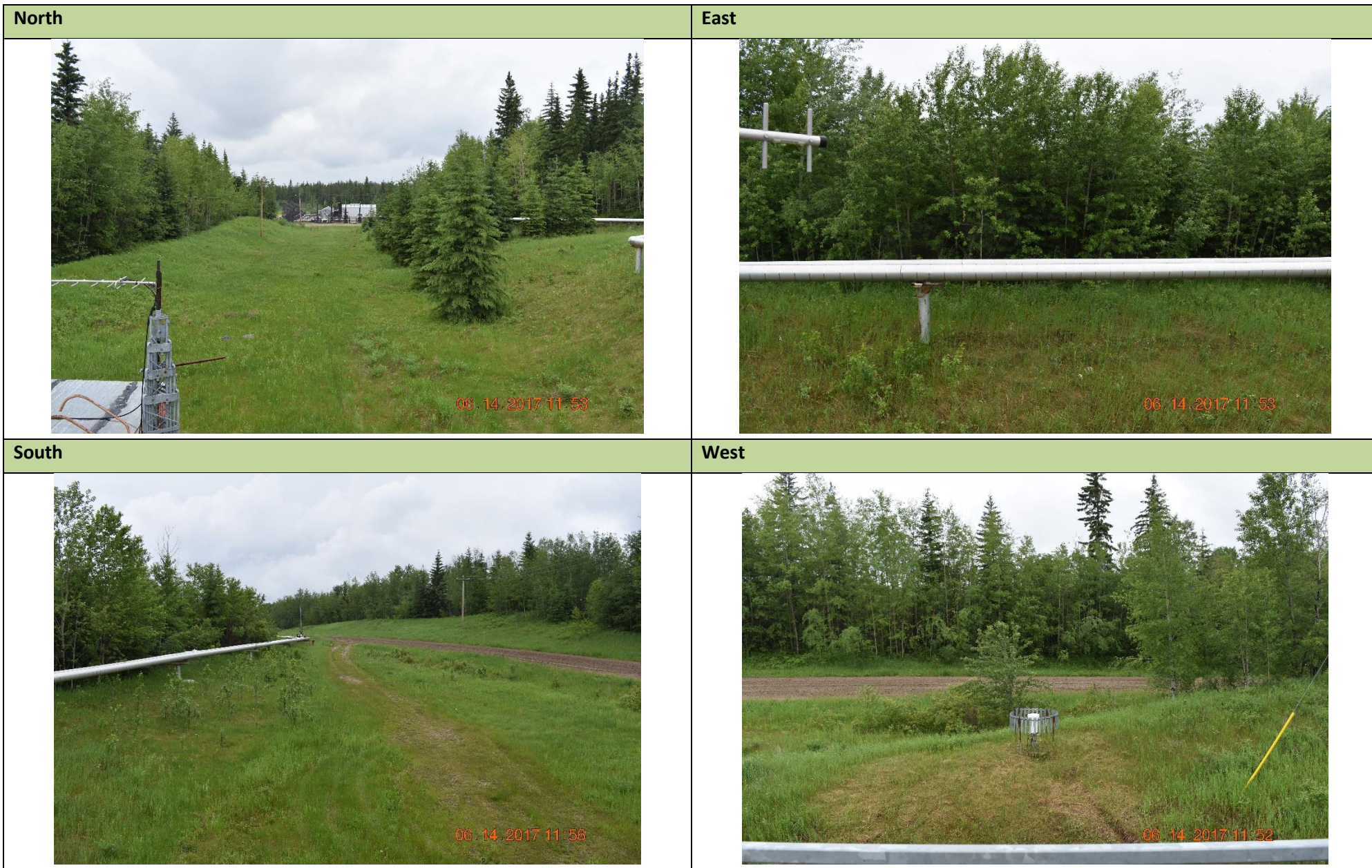
LICA Network Map



LICA Network Map – Emission Sources



Site Photographs – Cardinal Directions

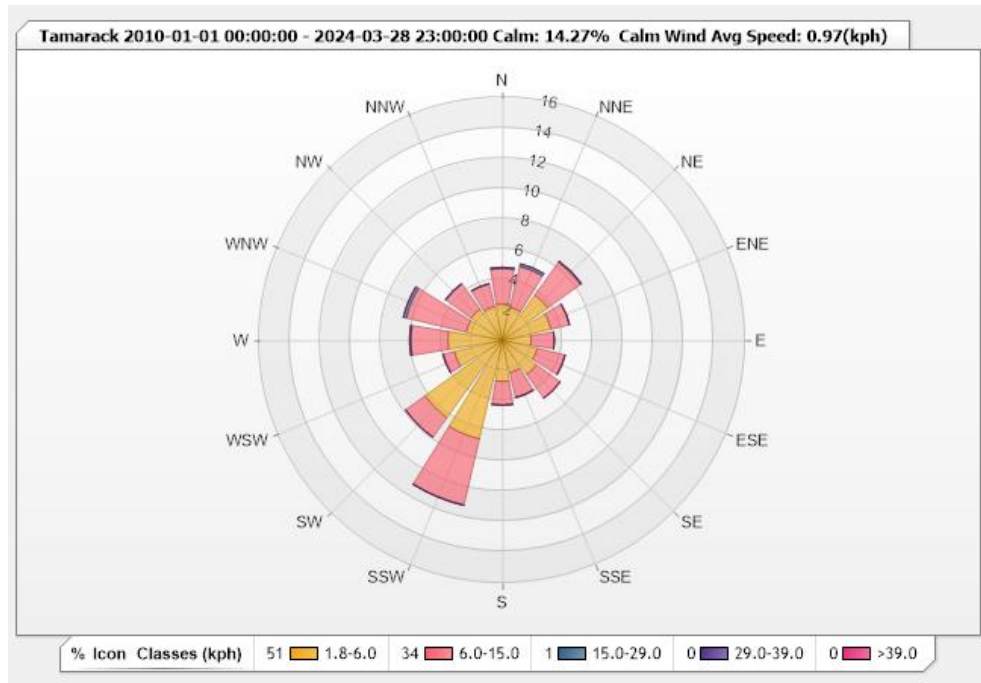


Site Photographs – Monitoring Station

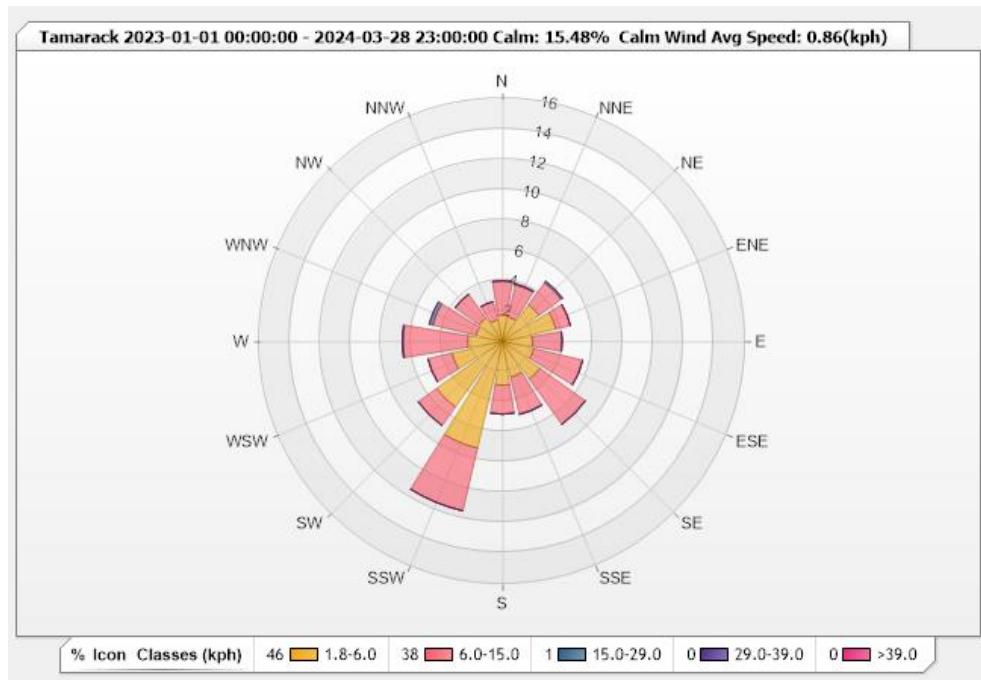
Exterior	Interior (Instrument Rack)	Interior (Back of Instrument Rack)
		
Interior (gas cylinders)	Interior (modem and communications)	Interior (gas cylinders)
		

Wind Rose Diagram

Wind Speed / Direction Frequency Distribution



Data range: January 1, 2010 – March 28, 2024



Data range: January 1, 2023 – March 28, 2024

Equipment Inventory

Parameter	Make/Model	Serial Number	Sampling Height (m)	Equipment Owner
Analytical Systems				
Hydrogen Sulphide	Thermo / 450i	CM17360005	4	LICA
Sulphur Dioxide	Thermo / 43i-TLE	1180930031	4	LICA
Oxides of Nitrogen	Thermo / 42i	1180930028	4	LICA
Hydrocarbons	Thermo / 55i	1505664392	4	LICA
Ozone	Thermo / 49i	1002240371	4	LICA
Particulate Matter 2.5	Thermo / Sharp 5030	CM-2209	4	LICA
Meteorological Systems				
Wind Speed	RM Young 05305VK	161465	10	LICA
Wind Direction	RM Young 05305VK	161465	10	LICA
Ambient Temperature	Campbell Scientific 070 / HC2A-S3	20433166	3	LICA
Precipitation	MetOne 387	C13580	ground level	LICA
Barometric Pressure	MetOne / Part 090D	F4497	3	LICA
Relative Humidity	Campbell Scientific 070 / HC2A-S3	20433166	3	LICA
Support Systems				
Datalogger	Ultimate IPC-510	KMA3518743	N/A	LICA
Trailer Temperature	R&R 61	N/A	N/A	LICA
National Trailer	10 x 16 Custom	N/A	N/A	LICA
Air Conditioning & Heating	Bard WA121- A05EPXXXJ	158N082573047-01	N/A	LICA
Zero Air Generator	Teledyne M701	1107	N/A	LICA
Hydrogen Generator	AMA HG300	210567072	N/A	LICA

Owner/Approval Holder

Item	Description
Name of owner/approval holder	LICA
Address	5107W-50th Street P.O. Box 8237 Bonnyville, AB Canada T9N 2J5
Contact name	Mike Bisaga
Phone number	(780) 266-7068
Email address	mbisaga@otonabee.ca
Approval number	N/A

Operator

Item	Description
Name of operating agency	Bureau Veritas Canada
Address	#1 2080 39th Ave NE
	Calgary, AB T2E 6P7
Contact name	Alexander Yakupov
Title	Field technician, Emission Services
Phone number	(780) 545-9363
Email address	Alexander.yakupov@bvlabs.com
Contact name	Chris Wesson
Title	Senior Project Manager, Emission Services / Oil & Gas Division
Phone number	(780) 446-2724
Email address	Christopher.wesson@bvlabs.com

Revisions

Revision No.	Review Only	Date	Reason for Revision	Prepared By	Completed By
0		October 2009	Original Issue	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
1		July 2010	Updated wind rose, added 'Review Only' column	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
1	X	July 2011	N/A	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
1	X	July 2012	N/A	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
2		July 2013	Update trailer equipment list (THC), wind rose diagram	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
3		September 2013	Update instrument rack photo (new configuration)	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
4		October 2015	Updated interior photos, updated SN for NOx, wind rose	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
5		July 2017	Updated equipment list, wind rose diagram and exterior photos Added Owner/Operator info	M. Bisaga, Airshed Program Manager	M. Bisaga, Airshed Program Manager
6		May 2018	Added LICA Network Map on Page 5, updated wind rose diagram	L. Lin, Data & reporting Specialist	L. Lin, Data & reporting Specialist
7		January 2019	Updated equipment list and serial number	L. Lin, Data & reporting Specialist	L. Lin, Data & reporting Specialist
8		February 2019	Updated datalogger model and serial number	L. Lin, Data & reporting Specialist	L. Lin, Data & reporting Specialist
9		March 2020	Updated trailer equipment list, serial numbers, operator contact info and wind rose diagrams	L. Lin, Data & Reporting Specialist	L. Lin, Data & Reporting Specialist
10		January 2021	Updated trailer equipment list, serial numbers and wind rose diagrams	L. Lin, Data & Reporting Specialist	L. Lin, Data & Reporting Specialist
11		March 2022	Updated trailer equipment list, serial numbers, network map and wind rose diagrams	L. Lin, Data & Reporting Specialist	L. Lin, Data & Reporting Specialist
12		March 2023	Updated station photos, trailer equipment list, serial numbers, network map and wind rose diagrams	L. Lin, Data & Reporting Specialist	M. Bisaga, Airshed Program Manager
13		March 2024	Updated trailer equipment list, serial numbers and wind rose diagrams	L. Lin, Data & Reporting Specialist	M. Bisaga, Airshed Program Manager