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Wood Buffalo Environmental Association

ANNUAL REPORT – VOLUME 3

2023 SITE DOCUMENTS

March 2024

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association

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1. Introduction

1.1 Continuous Ambient Air Monitoring

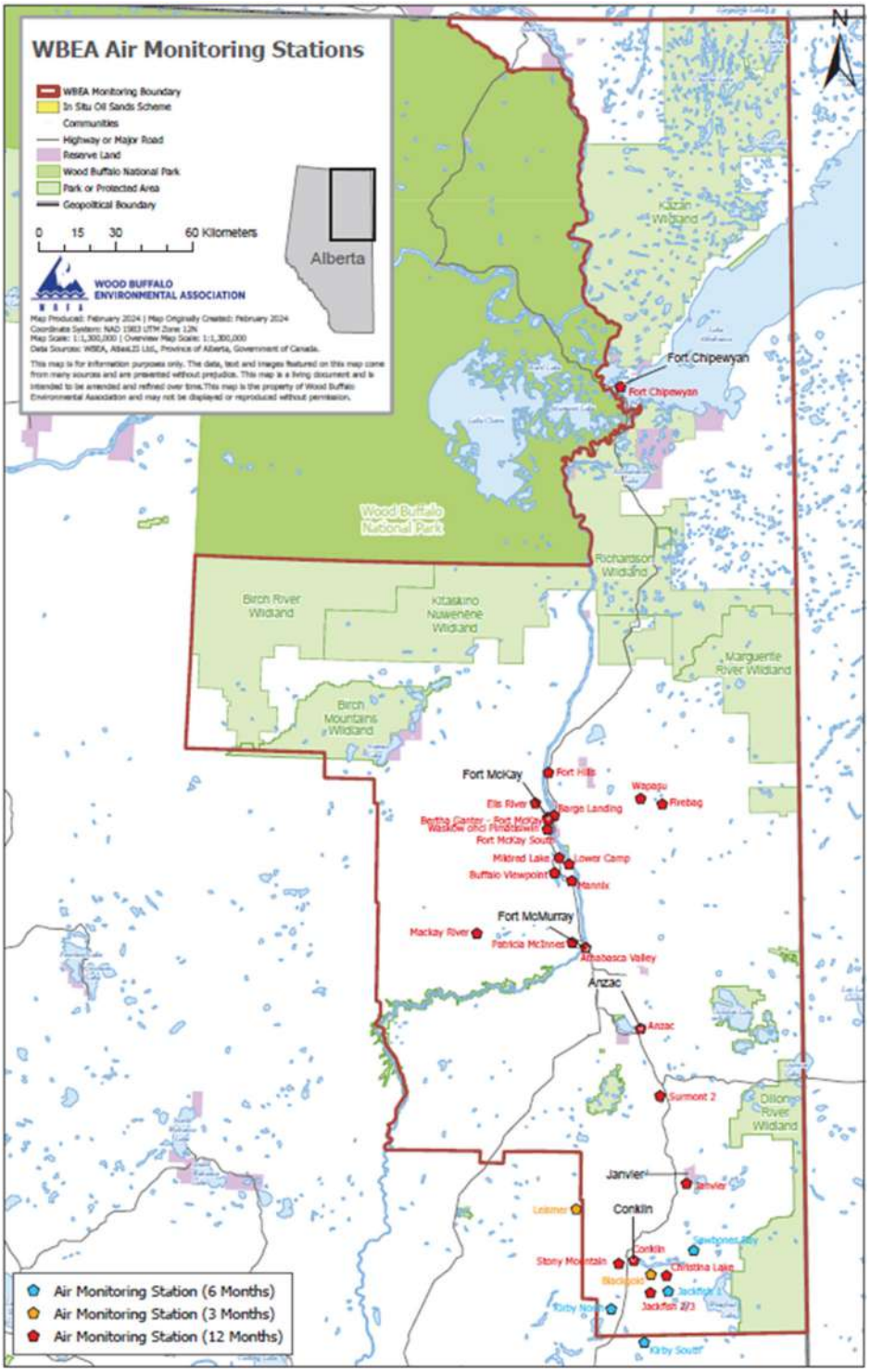
Continuous ambient air quality and meteorological data are collected under the Ambient Air Monitoring (AAM) group in WBEA. The WBEA currently conducts ambient air and meteorological monitoring at 30 locations. These locations include 24 permanent air monitoring stations that operate 12 months per year, 6 portable air monitoring stations that operate less than 12 months per year, and 2 meteorological towers. The continuously measured air quality parameters include sulphur dioxide (SO_2), hydrogen sulfide (H_2S), total reduced sulphur (TRS), ozone (O_3), total oxides of nitrogen (NO_X), nitric oxide (NO), nitrogen dioxide (NO_2), ammonia (NH_3), carbon monoxide (CO), carbon dioxide (CO_2,) particulate matter less than 2.5µm ($PM_{2.5}$), total hydrocarbon (THC), methane (CH4), and non-methane hydrocarbons (NMHC). All sites also measure ambient air temperature (AT), wind speed (WS), wind direction (WD), and relative humidity (RH). Selected sites measure barometric pressure (BP), global radiation (GR), precipitation (PC), leaf wetness (LW), and vertical wind speed (VWS). The ambient air monitoring parameters for each station are summarized in Table 1 and 2.

1.2 Time-Integrated Sampling

Since 1998 WBEA has maintained time-integrated sampling for particulate matter (PM2.5, PM10), elemental and organic carbon (PM2.5 EC/OC), volatile organic compounds (VOC) and polycyclic aromatic hydrocarbons (PAH), event-triggered volatile organic compounds (VOC), and event-triggered reduced sulphur compounds (RSC), total suspended particulate (TSP), and dustfall (DF) at permanent monitoring sites. The sampling for time-integrated monitoring has evolved with a better understanding of technology, analytical laboratory methods and sample deployment and collection method.

2. Air Monitoring Site Locations

The map in Figure below shows the locations of all WBEA continuous air quality monitoring. Continuous monitoring sites are in areas of development, primarily along the Athabasca River Valley and cover the region from Conklin to Fort Chipewyan.



Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Bertha Ganter – Fort McKay

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 01
Station name	Fort McKay – Bertha Ganter
Date station established	October 1997

Location

Station street address	NA
Legal land description	13-25-094-11 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57°11'21.94"North
Longitude	111°38'26.10"West
UTM East	461284
UTM North	6338654
Nearest community	Fort McKay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	NA
Approval number	NA
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3 – 805 Memorial Drive, Fort McMurray, AB
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Forest and Residential
	91 – 180 degrees	Residential and Water services
	181 – 270 degrees	Forest and Residential
	271 – 360 degrees	Forest and Residential
Site elevation (m) (above sea level)	270m	
Angle of elevation to nearby buildings	Greatest angle	N/A
	Building direction	None
Airflow restrictions	North	No
	East	No

	South	No
	West	No
Distance to nearest trees (m)	North	0m
	East	10m
	West	20m
	South	0m
Sample manifold	Type	All glass
	Inlet height above roof	1 meter
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	Attached to north side of the station

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Snow dump	100	Occasionally heavy truck and graders parked in the area.

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Gravel road	Low	50	Access road
Gravel road	Medium	200	Access road – Range road 110A

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNRL Albian Sands	Oil Sands Plant	10	North East
Syncrude Canada Ltd.	Oil Sands Plant	10	South East

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Environmental	43i	JC1501301448	2015	January, 1999
H_2S	Thermo Environmental	43iqTL	1200326167	2021	April, 2021
TRS	Thermo Environmental	43i-TLE	1218153461	2012	January, 2021
NOx/NO/NO_2	Thermo Environmental	42i	1218153357	2012	January, 2021
O_3	Teledyne/API	T400	1107	2017	January, 2021
NH_3	Teledyne/API	T201	475	2023	May, 2006
THC/CH_4/NMHC	Thermo Environmental	55i	1180320040	2022	January, 2021
CO	Teledyne/API	T300	3520	2019	April, 2019
CO_2	Teledyne/API	T360	442	2022	April, 2019
PM $_{2.5}$	Teledyne/API	T640	324	2018	January, 1999
Time-Integrated					
PM $_{2.5}$ EC/OC	Thermo Environmental	2000i	2000i 20222 1205	2018	-
PM $_{2.5}$ A	Thermo Environmental	2000i	2000i 20390 1308	2021	-
PM $_{10}$ A	Thermo Environmental	2000i	2000i 20457 1405	2018	-
PM $_{10}$ B	Thermo Environmental	2000i	2000I 20484 1408	2018	-
PM $_{2.5}$ B	Thermo Environmental	2000i	2000i 20487 1408	2018	-
PAH	Tisch	TE-1000	1001056	2015	-
PC	Yankee Environmental	TPC-3000	164	2018	-
PC	N-CON	ADS 00-120	60141	2018	-
VOC	Tisch	TE123	1028	2018	-
Triggered VOC	Global Analyzer Systems	G23MTS	2021-100	2022	-
Triggered RSC	Global Analyzer Systems	-	-	2022	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
WS	Met One	010C-1	P10041	Class 3	2015	January, 1999
WD	Met One	020C-1	R14655	Class 3	2022	January, 1999
AT/RH	Vaisala	HMP155	NA	Class 3	2015	January, 1999
AT/RH	Vaisala	HMP155	N0810526	Class 3	2022	January, 1999
GR	Eppley Radiometer	8-48	38279	NA	2015	January, 1999
PC	OTT	Pluvio 2	363525	Class 3	2019	January, 1999
LW	Campbells Scientific	LWS-L50	22121-30	NA	2023	February, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9036
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3565
Zero air generator	Zero Air Generator	Teledyne/API	701	4890
Shelter / Building	Air monitoring portable	ITB	10 x 20 skid	IBT-16-17048
HVAC	Heating and air conditioning system. Wall mount unit	BARD	2 ton	NA
Deck	Deck for sampling equipment	10 x 20	NA	NA
Deck	Deck for sampling equipment	15 x 30	NA	NA
Datalogger	Logger for Pluvio	Campbell Scientific	CR310	5016
Datalogger	Logger for camera and AE33	Campbell Scientific	CR1000	23051
N2 generator	N2 generator for the CO/CO2	Peak Scientific	NG5000A	722090034
NH3 Converter	External converter for the NH3 analyzer	Teledyne/API	T501	501
Thermal Oxidizer	TRS converter	CD Nova	CDN-101	470
H2S Converter	External converter for the H2S analyzer	Global Analyzer Systems	G150	2022-221
10m Tower	10m Tower	Aluma	T135	NA

Figure 1 – Area Topographic map showing AMS 01

Figure 2 – Aerial photo showing AMS 01

Figure 3 – Plan view sketch for AMS 01 site

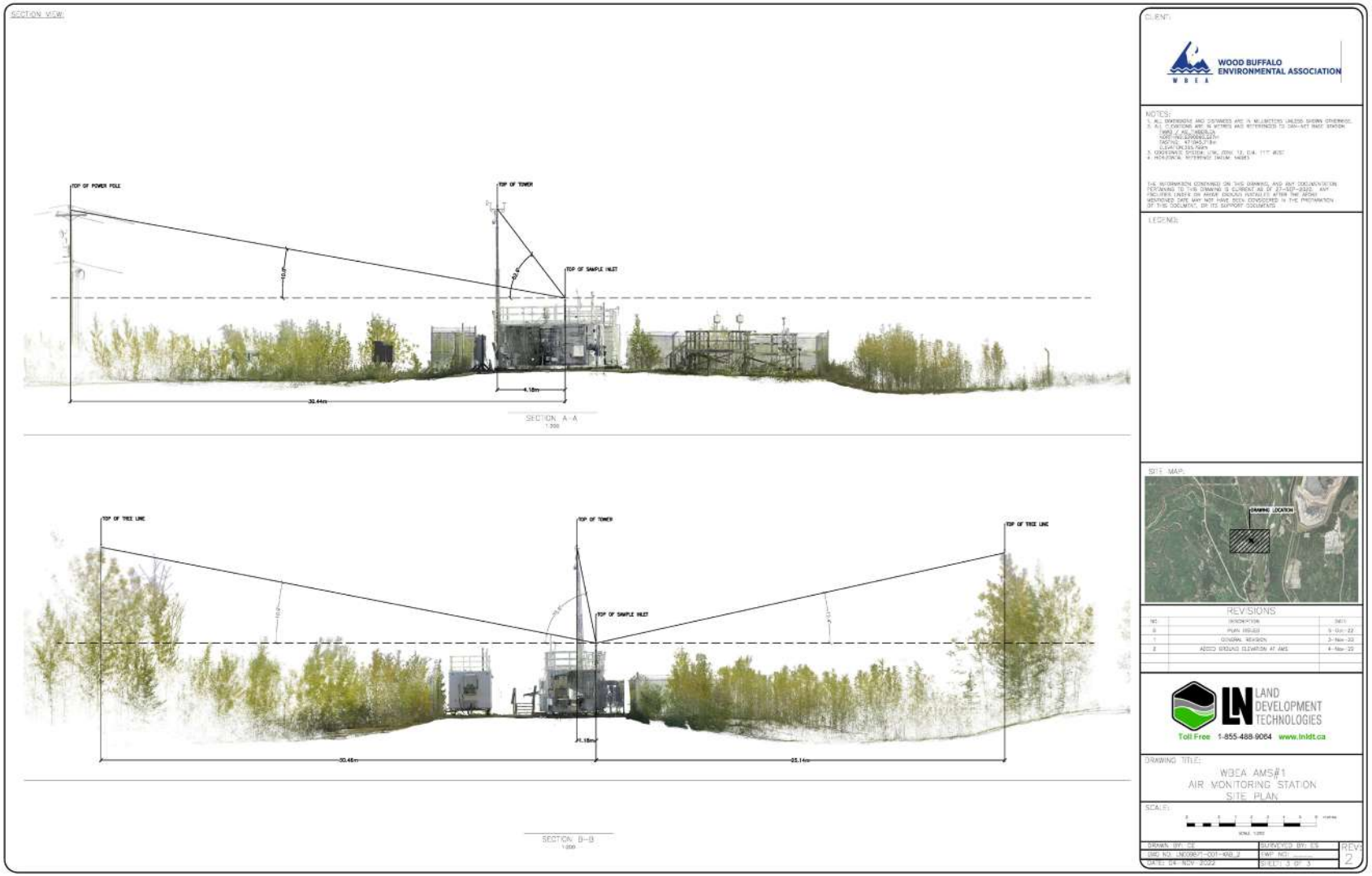

Figure 4 – Elevation view image for AMS 01 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5.0 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

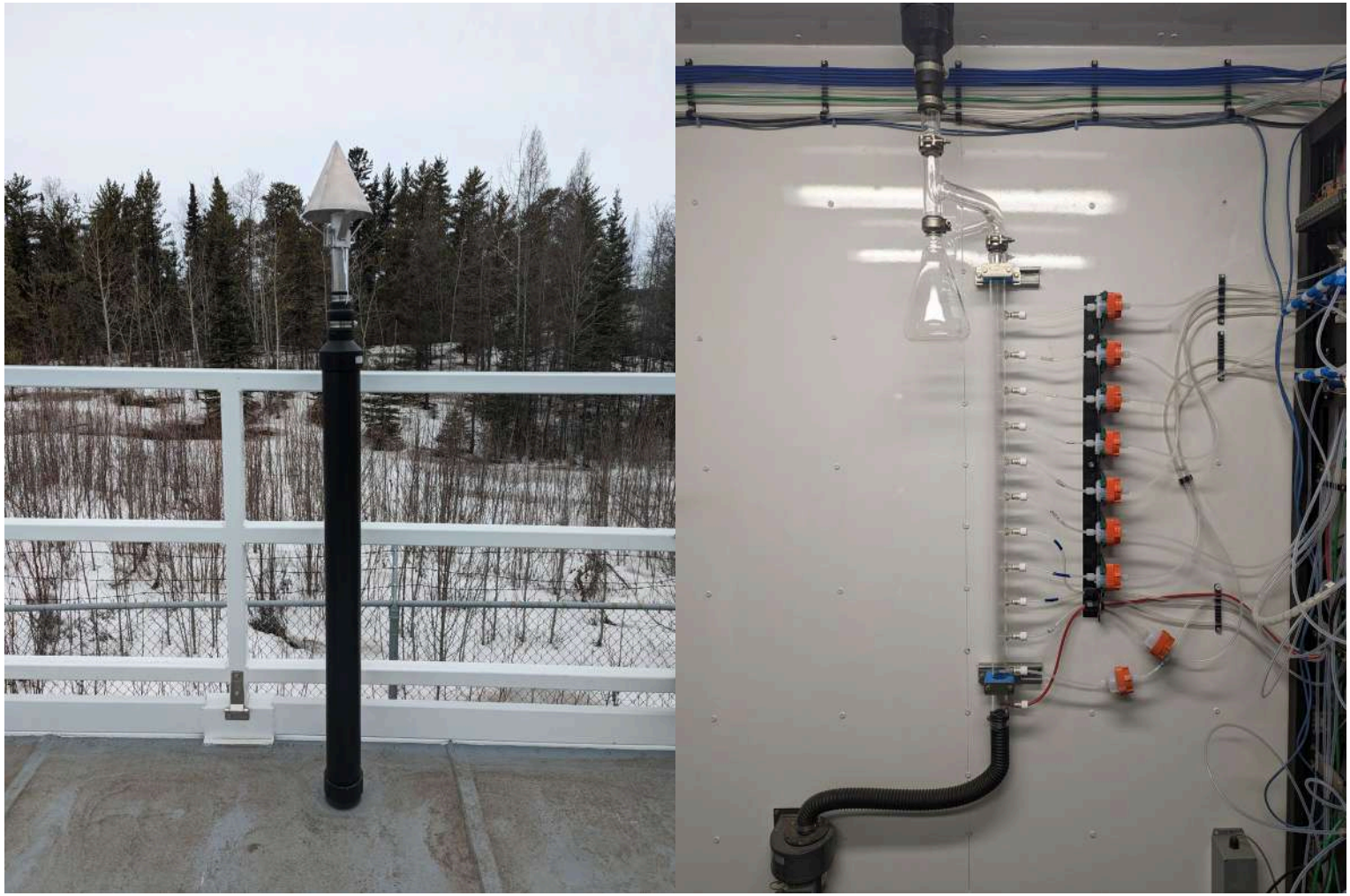

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of the instrument rack

Figure 13 –Photo of the front and the back of the instrument rack

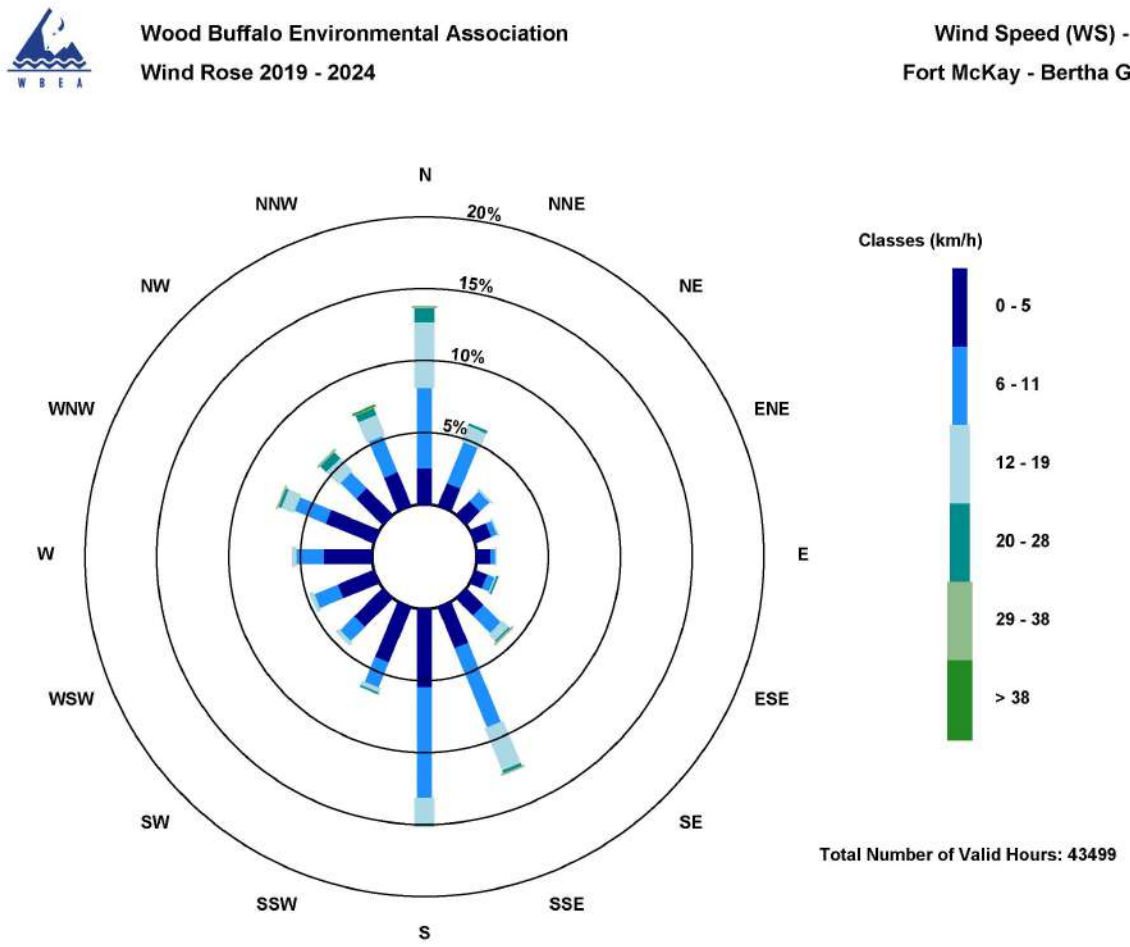

Figure 14 – Windrose (Five Year)

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Ambient Air Monitoring Station Site Documentation

Mildred Lake

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 02
Station name	Mildred Lake
Date station established	June 1st, 1979

Location

Station street address	Located at the south end of the Syncrude airstrip, 400m west of HWY 63
Legal land description	8-08-093-10 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.050006
Longitude	-111.564147
UTM East	465775
UTM North	6323094
Nearest community	Fort Mackay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Syncrude Canada Limited
Approval number	026-03-00
Contact Name	Nikola Stears
Address	Bag 4009, MD 4160, Fort McMurray, Alberta, T9H 3L1
Phone number	780-742-7281
Email address	nstears@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Airstrip
	91 – 180 degrees	Airstrip
	181 – 270 degrees	Forest
	271 – 360 degrees	Road
Site elevation (m) (above sea level)	314	
Angle of elevation to nearby buildings	Greatest angle	28 degrees
	Building direction	North
Airflow restrictions	North	Building

	East	None
	South	Trees
	West	Trees
Distance to nearest trees (m)	North	160
	East	> 1 Km
	West	40
	South	40
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	Attached

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Airstrip	20	Syncrude Airstrip
Trailer	15	Toilet facilities

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Access Road	Low	50	Paved secondary road for industrial access frequented by pick-up trucks, heavy equipment, and tractor trailers
Highway 63	Medium	300	Provincial highway frequented by tractor trailers, heavy equipment and light vehicles

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Syncrude	Oil Sands Plant	5	West
Suncor	Oil Sands Plant	20	South east

Station Equipment

Equipment Owner: Syncrude Canada Ltd.

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Environmental	43i	JC1404901075	2015	January, 1999
H_2S	Thermo Environmental	43iQ	12113311966	2022	January, 1999
THC/CH_4/NMHC	Thermo Environmental	55i	1180320038	2022	December, 2019

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	N2910507	Class 3	2019	February, 1999
WS	Met One	010C-1	E5130	Class 4	2018	January, 1999
WD	Met One	020C-1	B1462	Class 4	2018	January, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	8790
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	1185
Zero air generator	Zero Air Generator	Teledyne/API	701	4891
Shelter / Building	Air monitoring portable	C&V	8 x 16 trailer	S3381408
Mitsubishi Electric Mr Slim	Heating and air conditioning system. Wall mount unit	R410A	MUY-GE15NA	30025603T
H2S converter	Converter	Global Analyzer Systems	G150	2022-198

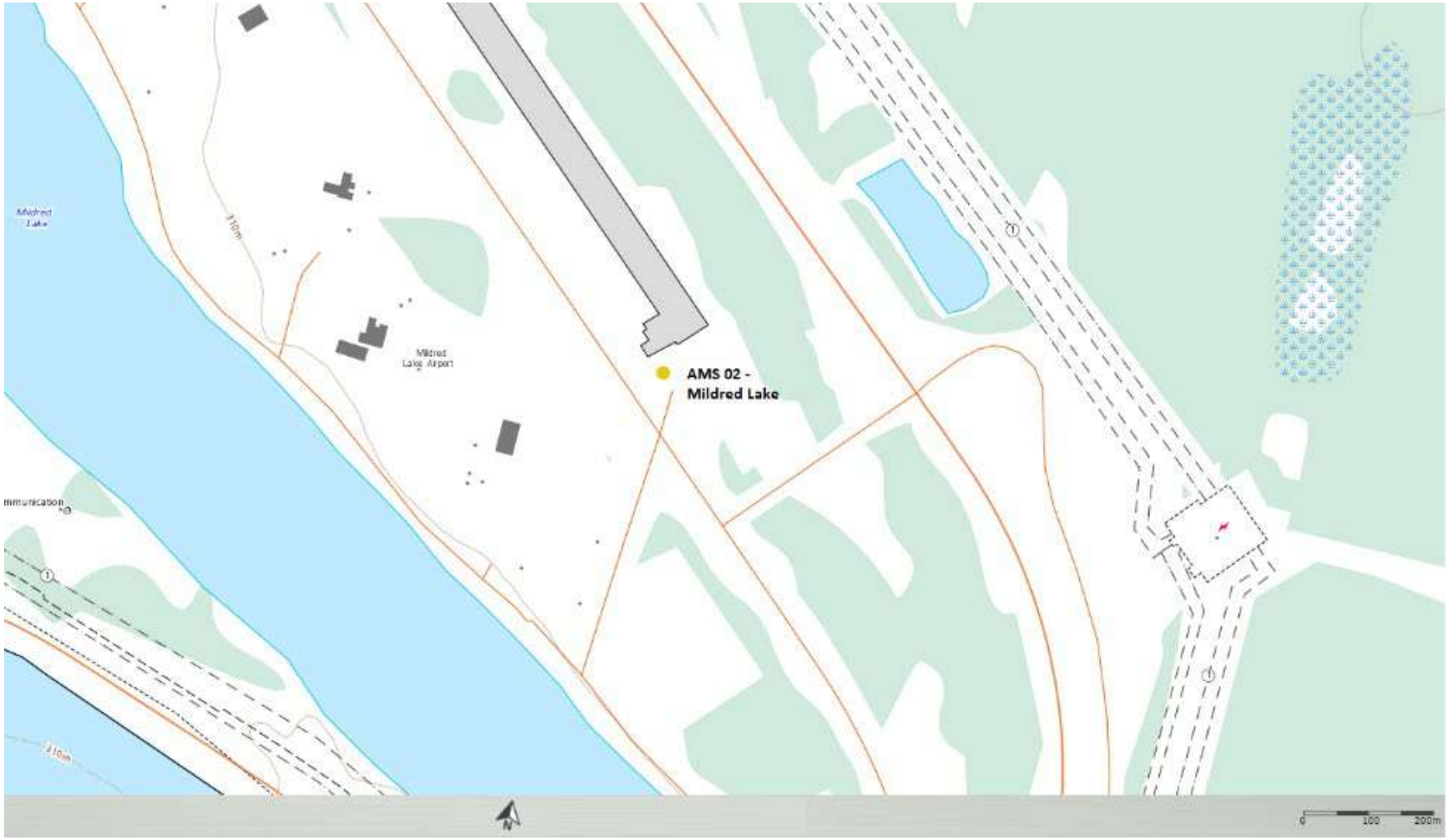

Figure 1 – Area topographic map showing AMS 02

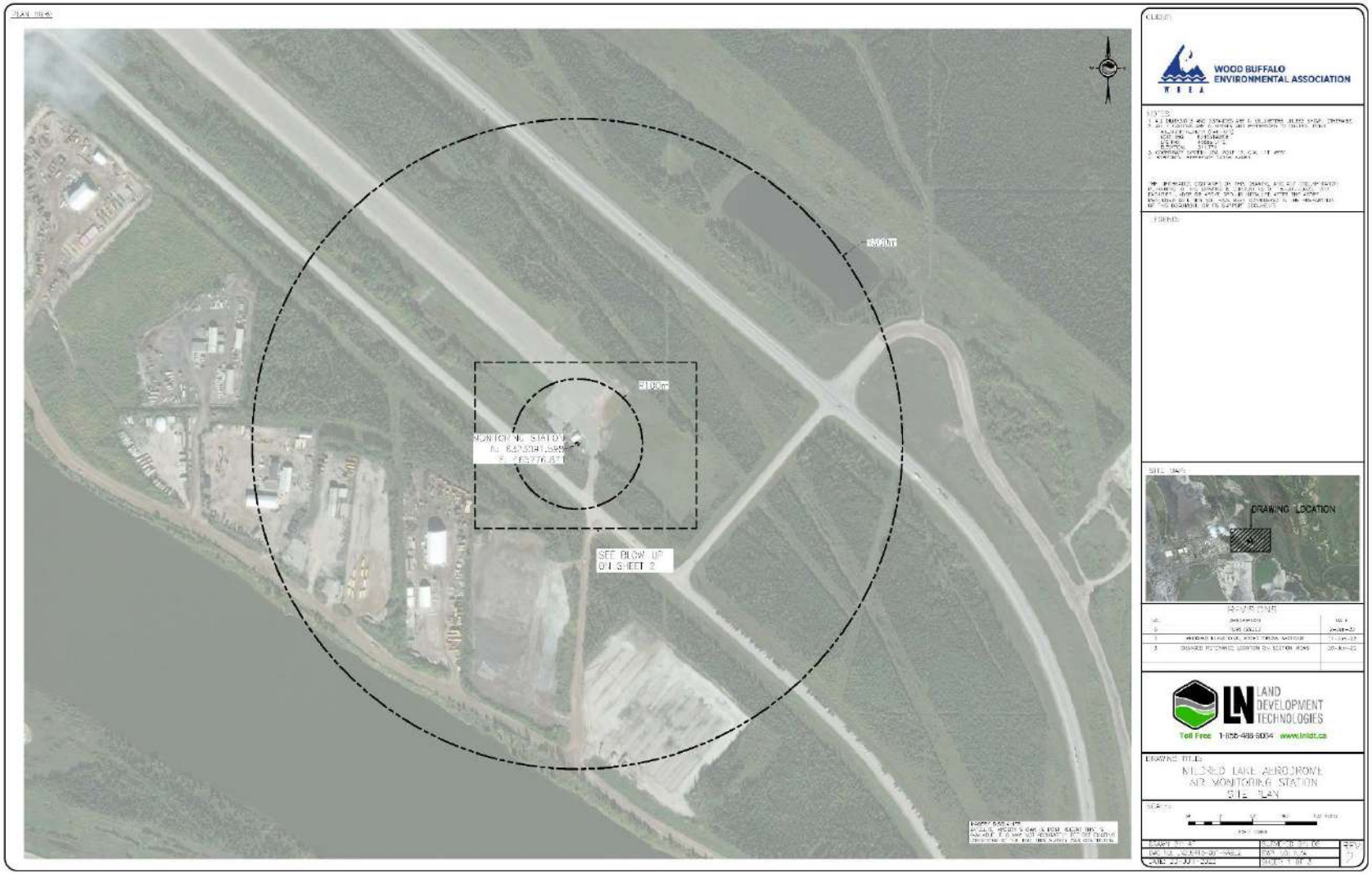

Figure 2 – Aerial image showing AMS 02

Figure 3 – Plan view image for AMS 02 site

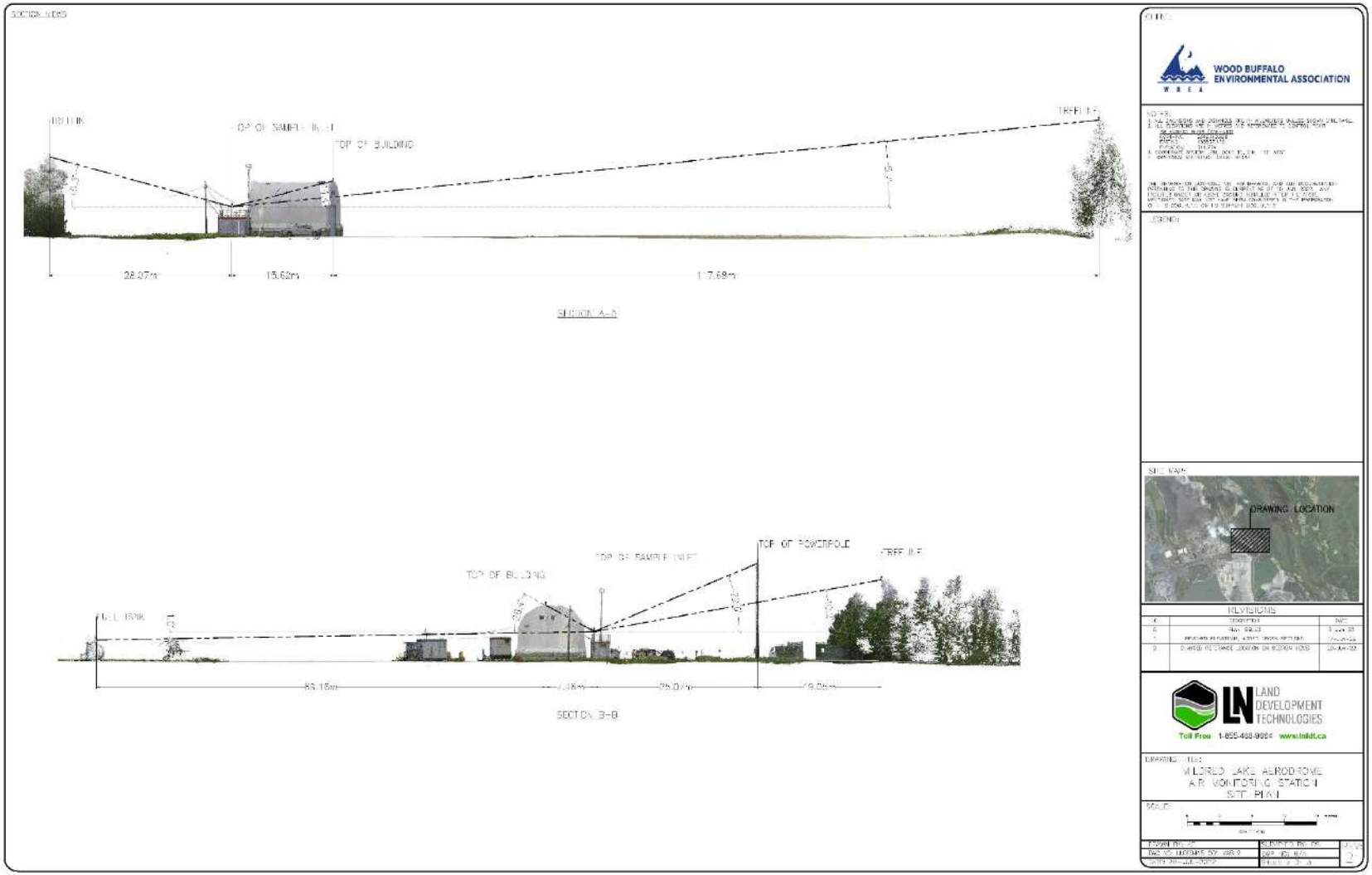

Figure 4 – Elevation view image for AMS 02 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

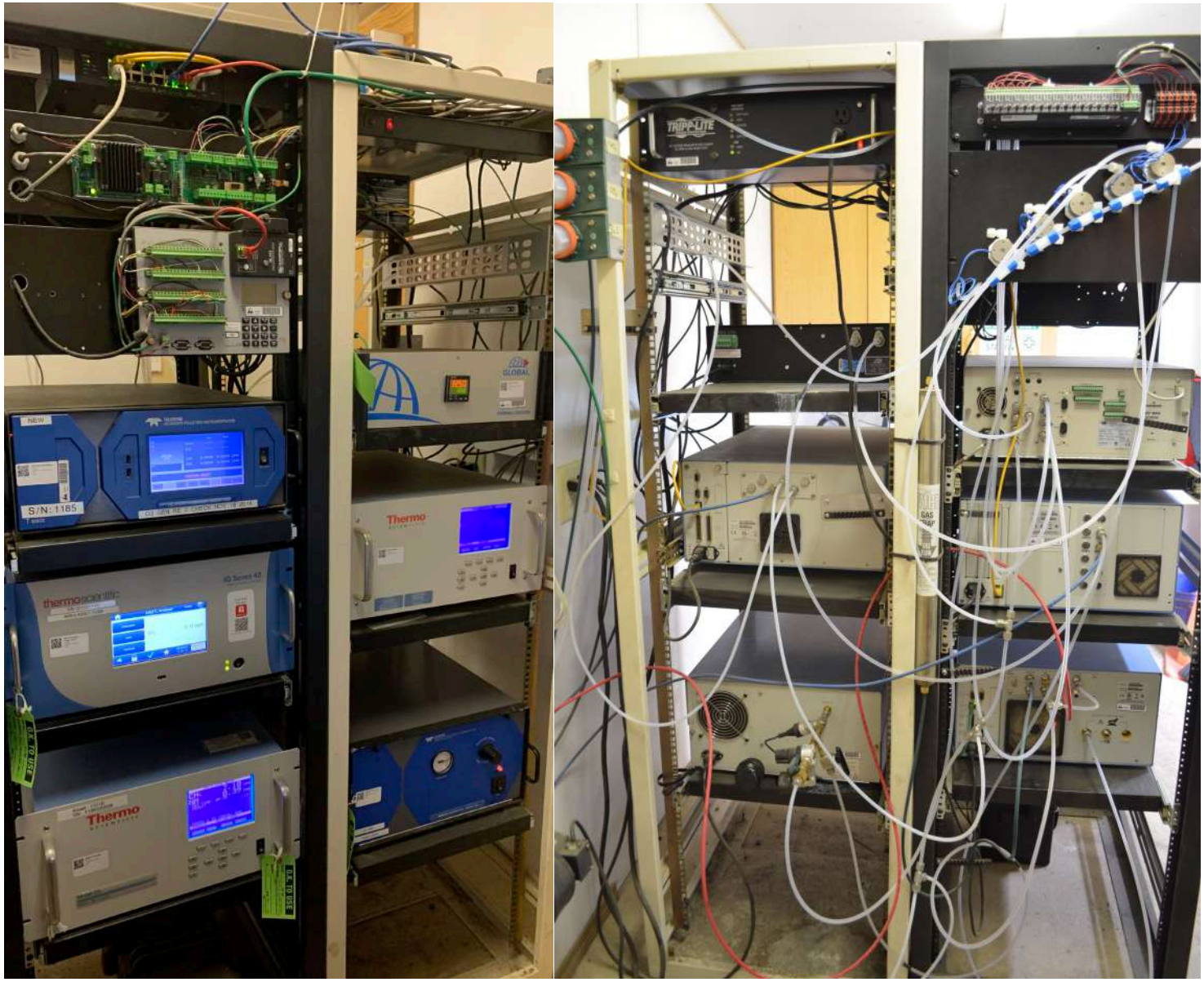

Figure 12 –Photo of the front and the back of instrument rack

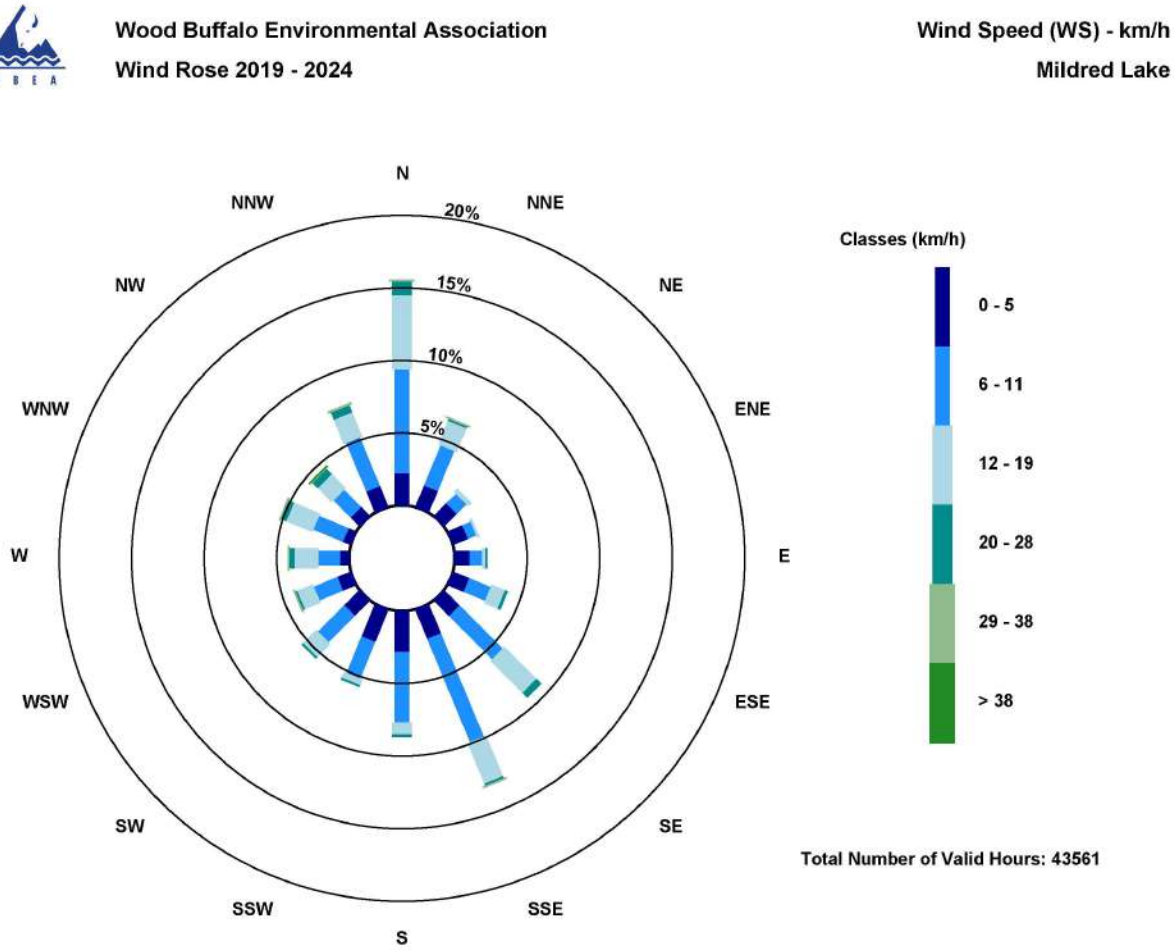

Figure 13 – Windrose (five year)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Lower Camp Meteorological Tower

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 03
Station name	Lower Camp Meteorological Tower
Date station established	Original site 1975, new tower erected in 2022

Location

Station street address	Located by the Athabasca River Valley at about 115 meters NW of the Syncrude pump house
Legal land description	4-02-093-10 W4
Airshed Zone	WBEA
Latitude	57.0321738
Longitude	-111.506355
UTM East	469266.90
UTM North	6321111.10
Nearest community	Fort McMurray
Community population	66,573
Census Year	2016

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	NA
Approval number	NA
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3-805 Memorial Drive, Fort McMurray, Alberta
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Athabasca River and forest
	91 – 180 degrees	Athabasca River and forest
	181 – 270 degrees	Suncor Base Plant
	271 – 360 degrees	Syncrude plant and operations
Site elevation (m) (above sea level)	239 metres	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	N/A
Airflow restrictions	North	No

	East	No
	South	No
	West	No
Distance to nearest trees (m)	North	100
	East	100
	West	NA
	South	NA
Sample manifold	Type	N/A
	Inlet height above roof	N/A
Wind Sensors	Type	Ultrasonic
	Height above ground (m)	20, 45, 100, 163 metres
	Distance from station (m)	Mounted on tower

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Laydown	79.21m W	Equipment Laydown
Water Pond	136.8m SW	Reservoir
Athabasca River	33.8m E	River
Solar Farm	220m NW	Solar Farm
Pumping Station	114m SE	Syncrude Water Pump Station

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Gravel road	Low	20	Road access to lay down and pumping station

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Suncor Energy	Oil refinery	2	South West
Syncrude	Oil refinery/open mining	3	West
Suncor Energy	Open mining operations	4	South East

Station Equipment

Equipment Owner: WBEA

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
20 Metre WS/WD	RM Young	81000	3079	3	2022	January, 1999
45 Metre WS/WD	RM Young	81000	1266	3	2022	March, 1999
100 Metre WS/WD	RM Young	81000	1352	3	2022	April, 1999
163 Metre WS/WD	RM Young	81000	1261	3	2022	March 1, 1999
20 Metre AT/RH	Vaisala	HMP155	J5140010	3	2022	February, 1999
45 Metre AT/RH	Vaisala	HMP155	G4330052	3	2022	January, 1999
100 Metre AT/RH	Vaisala	HMP155	J3310032	3	2022	January, 1999
163 Metre AT/RH	Vaisala	HMP155	F5010005	3	2022	January, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	5728

Figure 1 – Area topographic map showing AMS 03

Figure 2 – Aerial photo showing AMS 03

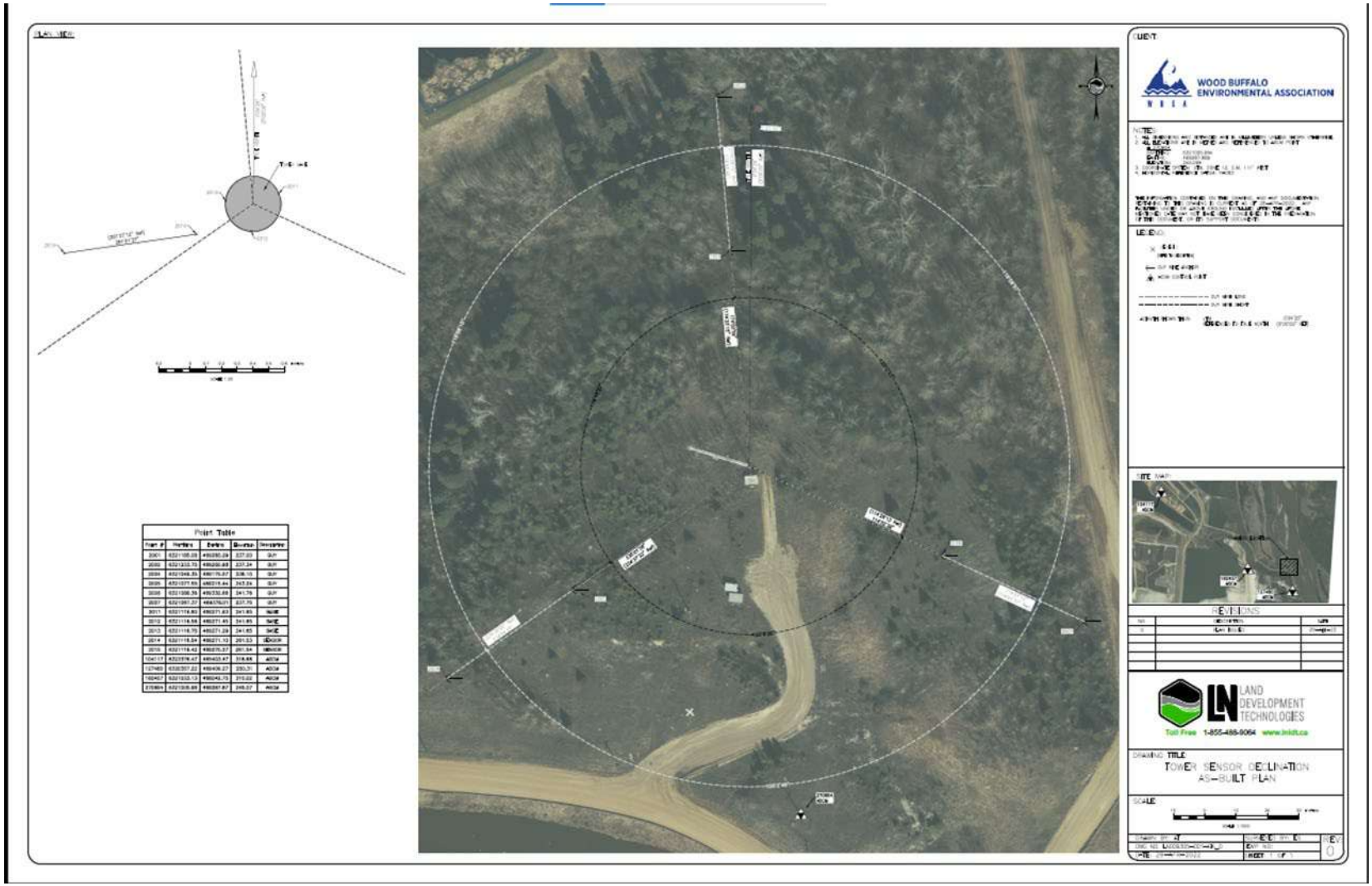

Figure 3 – Plan view image for AMS 03 site

The elevation image is currently not available.

Figure 4 – Elevation view image for AMS 03 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

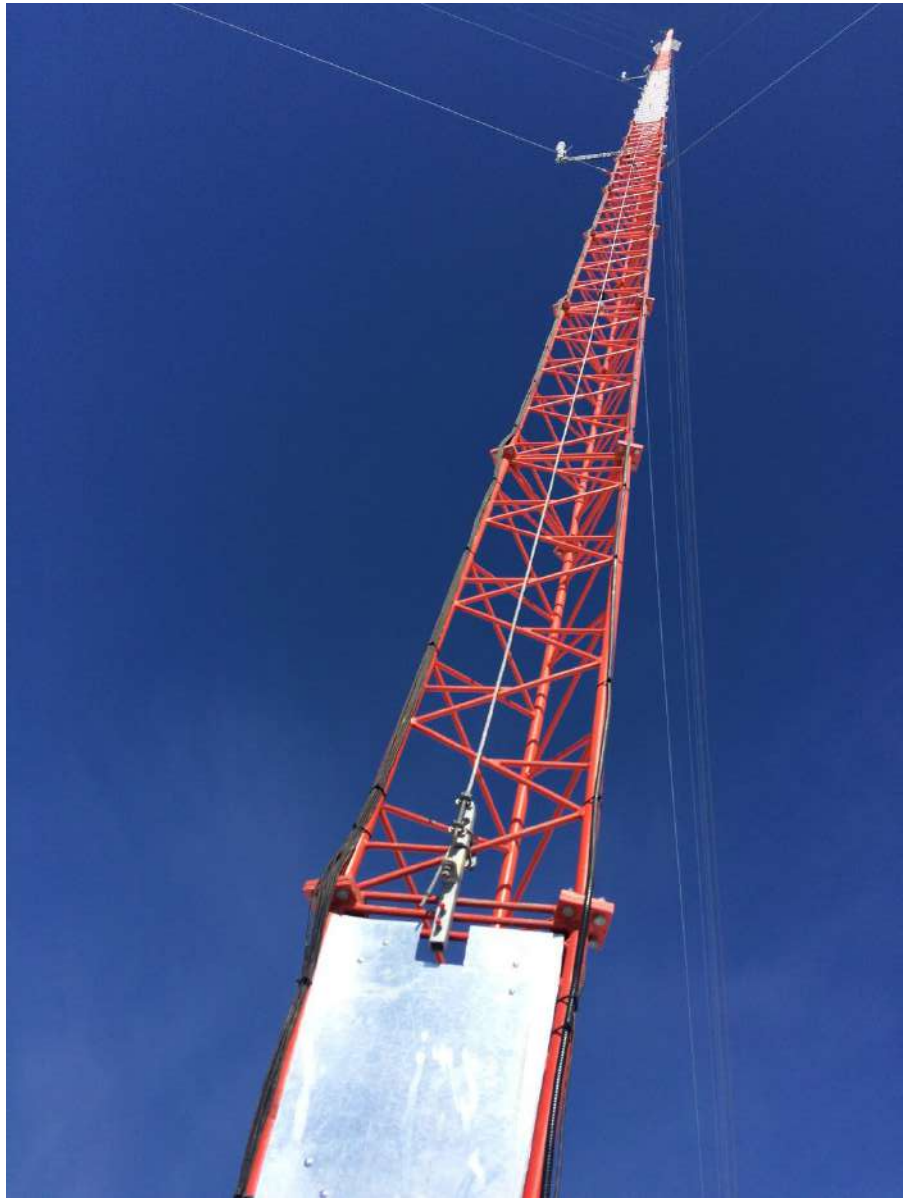

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station.

Figure 10 – Curb shot of the monitoring station

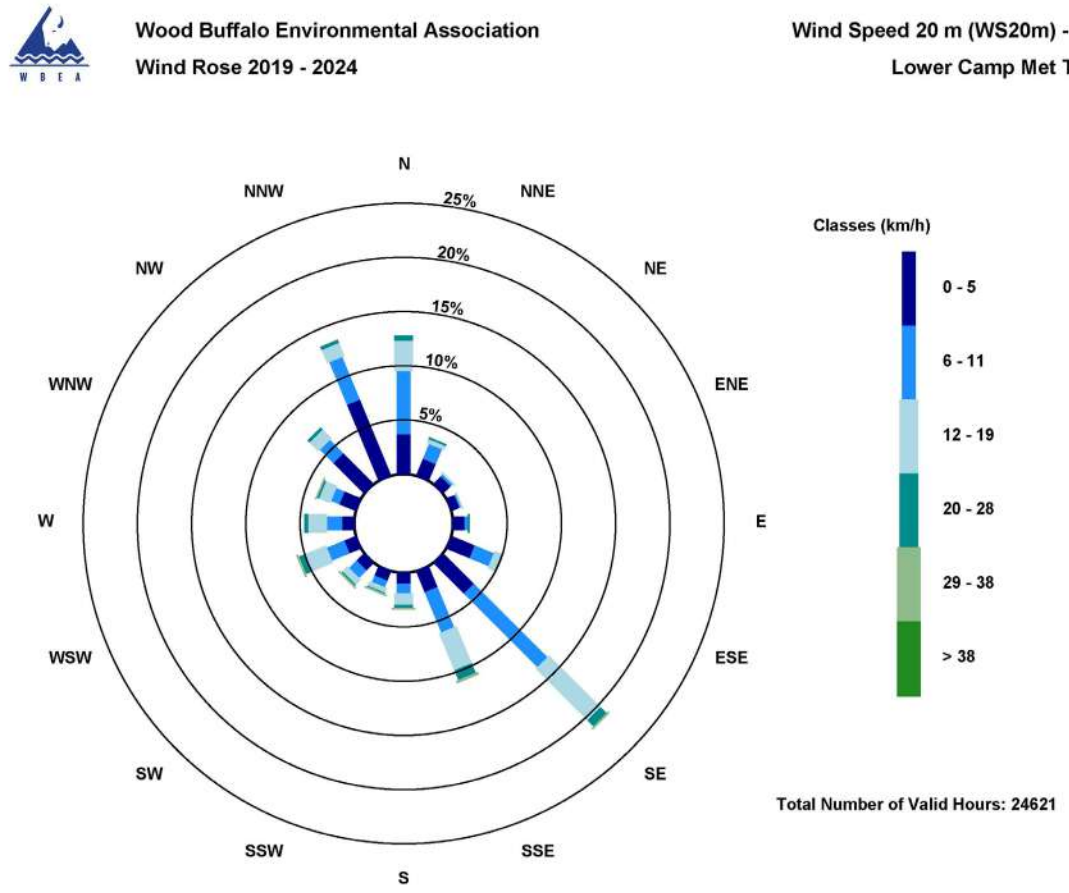

Figure 11 – Windrose – 20 Metre Level (2019-2024)

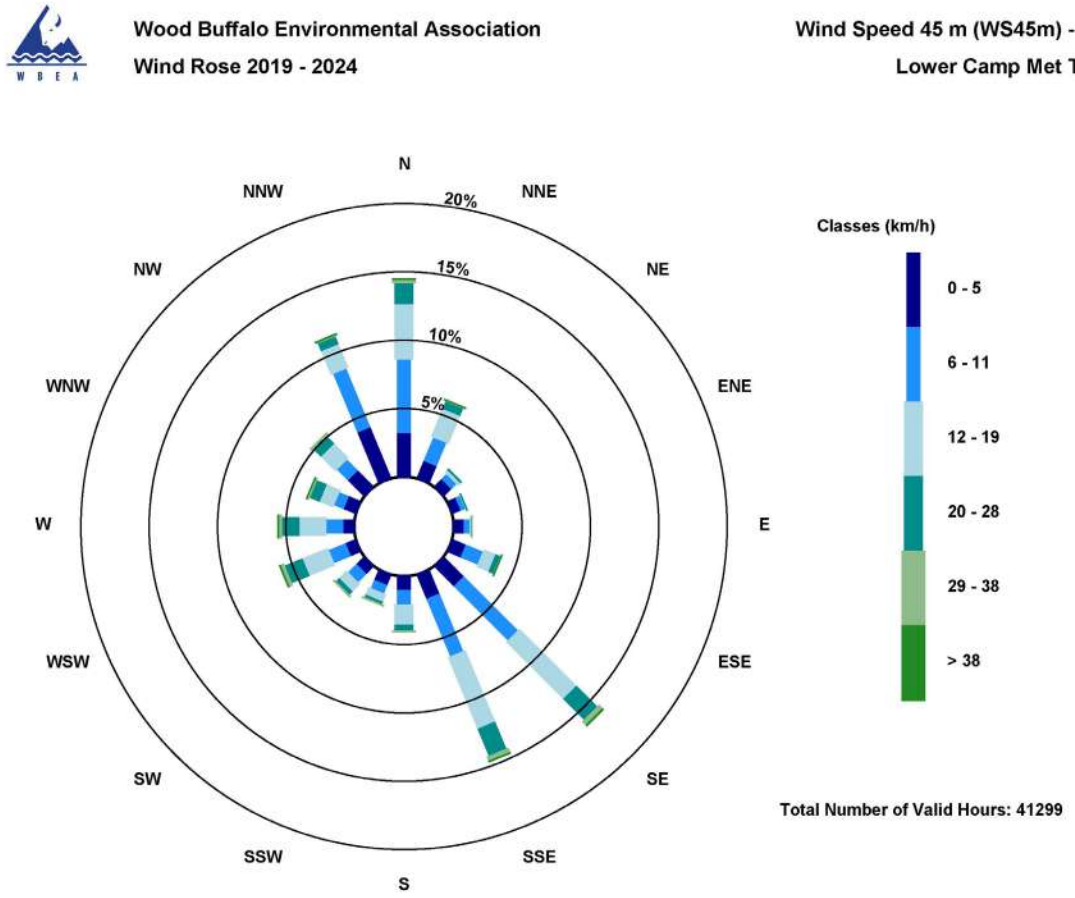

Figure 12 – Windrose – 45 Metre Level (2019-2024)

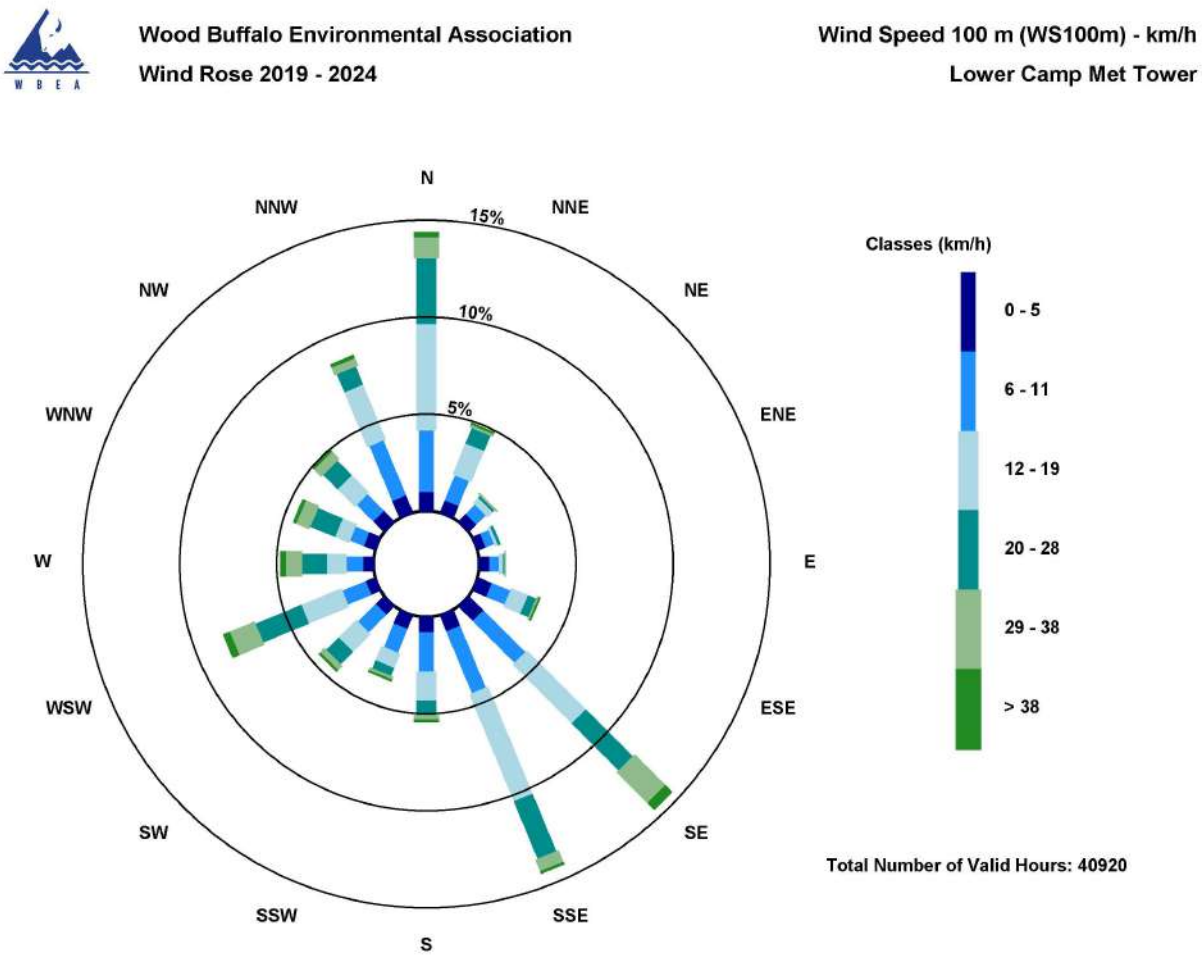

Figure 13 – Windrose – 100 Metre Level (2019-2024)

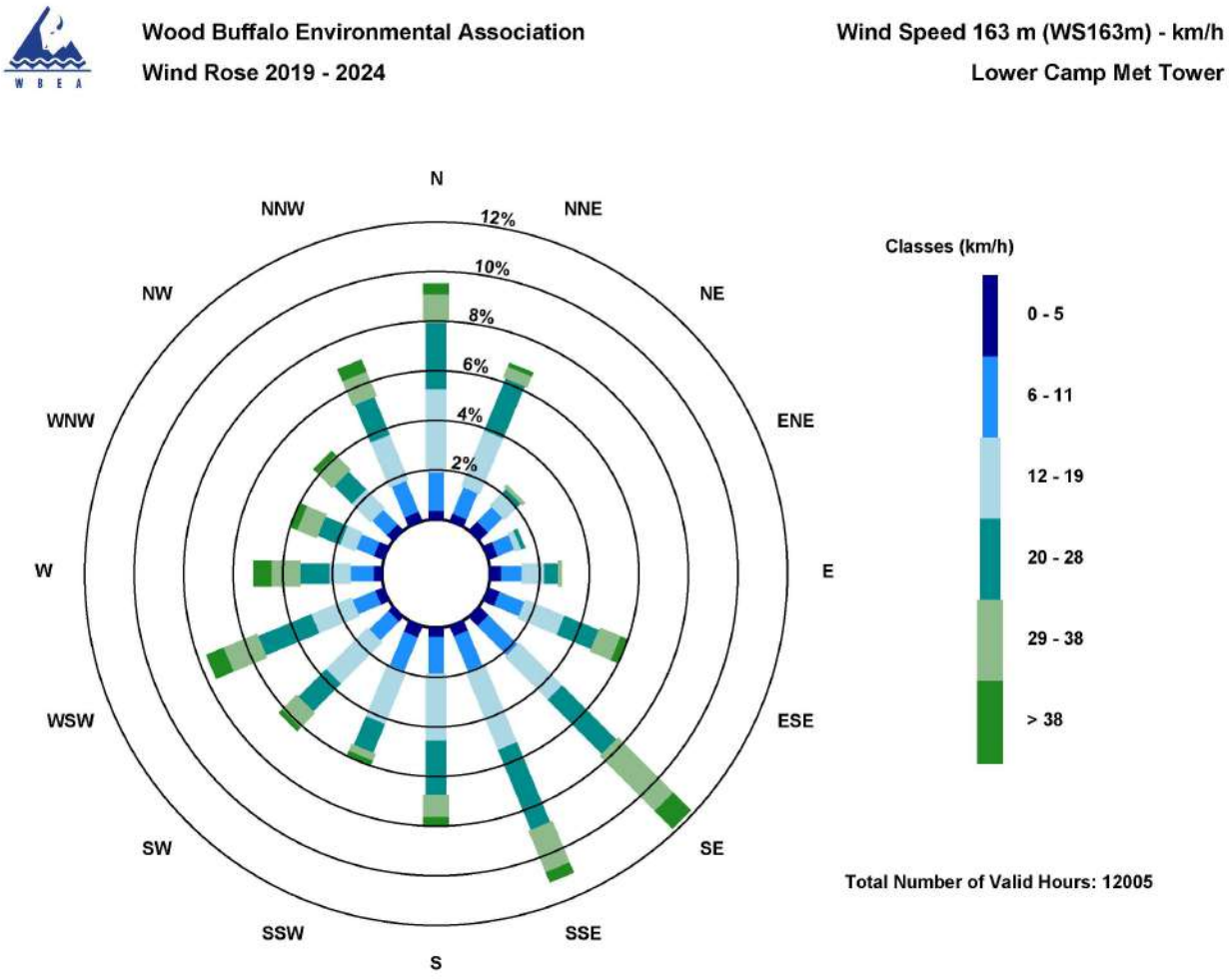

Figure 14 – Windrose – 163 Metre Level (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Buffalo Viewpoint

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 04
Station name	Buffalo View Point
Date station established	1979

Location

Station street address	NA
Legal land description	9-19-092-10 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56°59’46.17”N
Longitude	111°35’38.22”W
UTM East	471845.718
UTM North	6290060.627
Nearest community	Fort McKay
Community population	742
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Syncrude Canada Ltd
Approval number	026-03-00
Contact Name	Nikola Stears
Address	Bag 4009, MD 4160, Fort McMurray, Alberta, T9H 3L1
Phone number	780-742-7281
Email address	nstears@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Oil Sands Plant
	91 – 180 degrees	Forest
	181 – 270 degrees	Forest
	271 – 360 degrees	Oil Sands Plant
Site elevation (m) (above sea level)	365.799 m	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	Attached to North end of Monitoring Shelter

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt	Very Low	2m North	Access Road to AMS 4
Dirt	Medium	147m North	Road used to Access North American/Syncrude Site
Highway	High	758m East	Paved Highway used by the public

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass Direction from site
Syncrude	Oilsands Plant	5.12	North
Suncor	Oilsands Plant	7.8	Southeast
Syncrude	Buffalo Farm	0.32	Northwest
Syncrude	Tailings Pond	0.8	Northeast

Station Equipment

Equipment Owner:

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43i	JC1327200932	2017	January, 1999
H_2S	Thermo Scientific	43i-LTE	108841400	2023	January, 1999
$NOx/NO/NO_2$	Teledyne	T200	721	2017	August, 2017
$THC/CH_4/NMHC$	Thermo Scientific	55i	1426262594	2022	January, 1999
O_3	Teledyne	T400	2961	2017	August, 2017
$PM_{2.5}$	Teledyne	T640	321	2019	August, 2017

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G4340043	3	2017	February, 1999
WS	Met One	010C-1	Y3176	4	2017	January, 1999
WD	Met One	020C-1	U11346	4	2017	January, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2635
Datalogger	Datalogger	Campbell Scientific	CR1000	10414
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3808
Zero air generator	Zero Air Generator	Teledyne/API	T701H	362
Shelter / Building	Air monitoring portable	National Trailer	8 x 16 trailer	NA
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	
Tower	10m Tower	Aluma Tower Company	T-135	AT62235-10-R11
H2S Converter	Thermal Oxidizer	Global Analyzer System	G150	2022-200

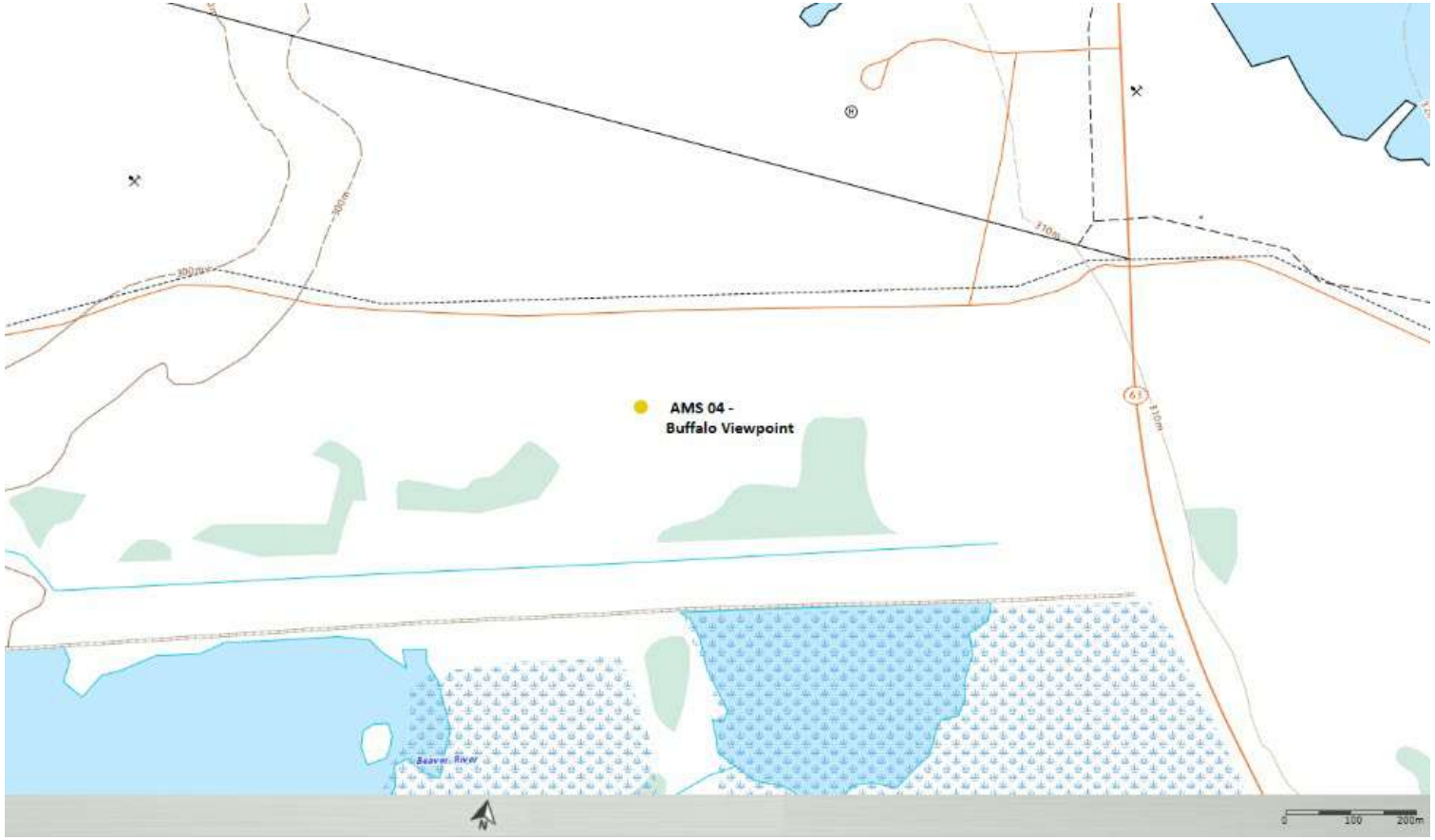

Figure 1 – Area topographic map showing AMS 04

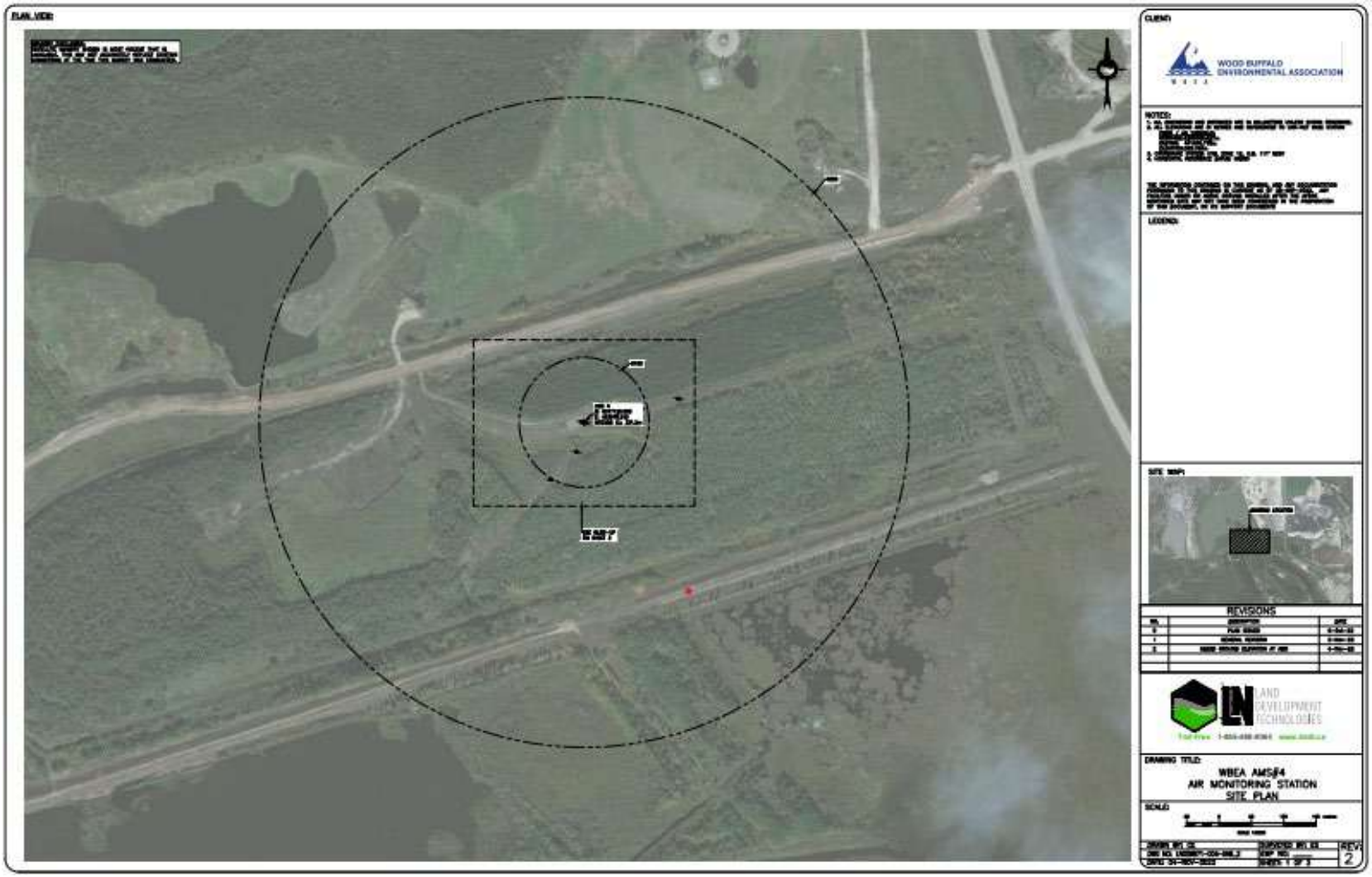

Figure 2 – Aerial image showing AMS 04

Figure 3 – Plan view image for AMS 04 site

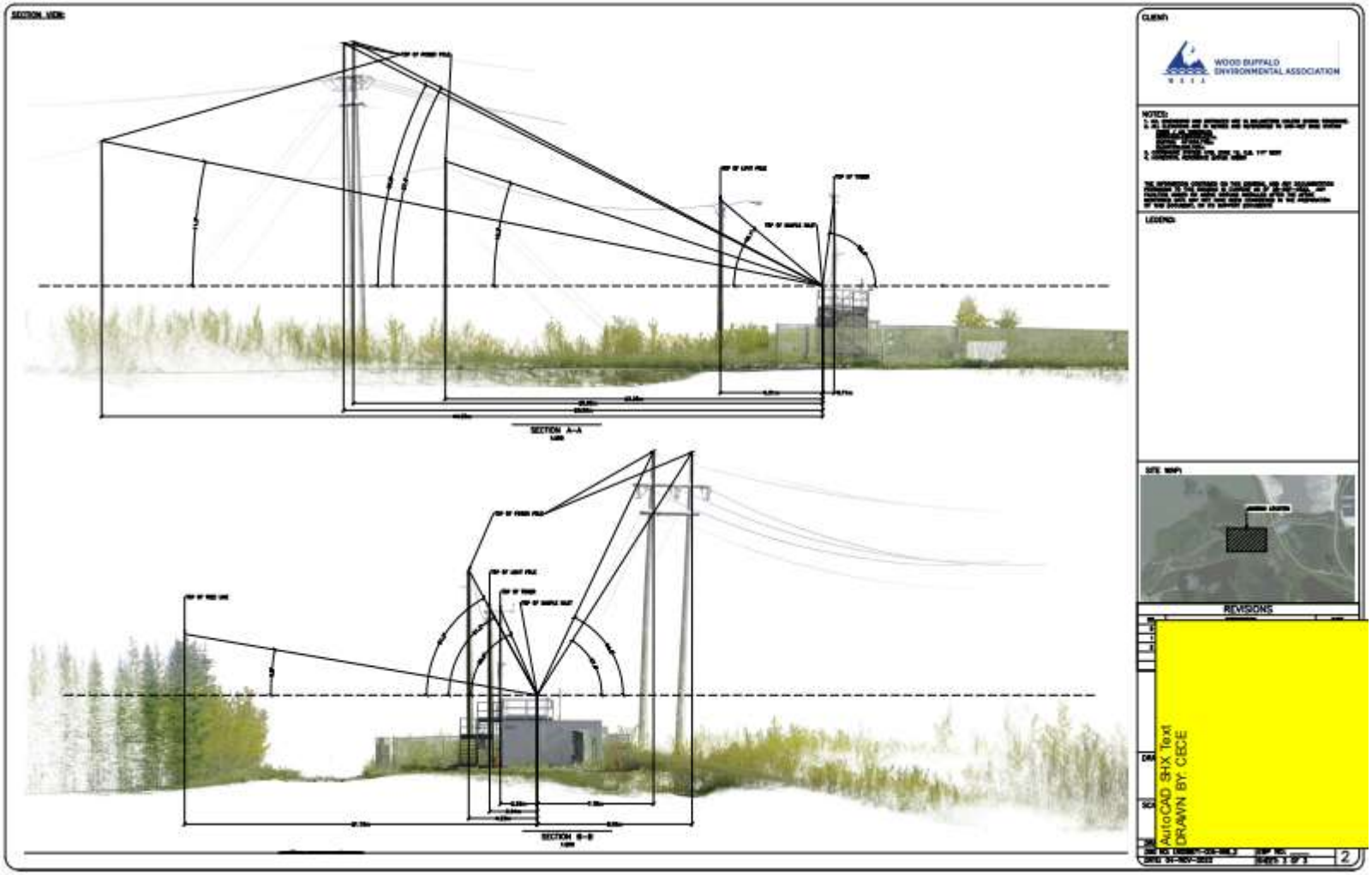

Figure 4 – Elevation view image for AMS 04 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

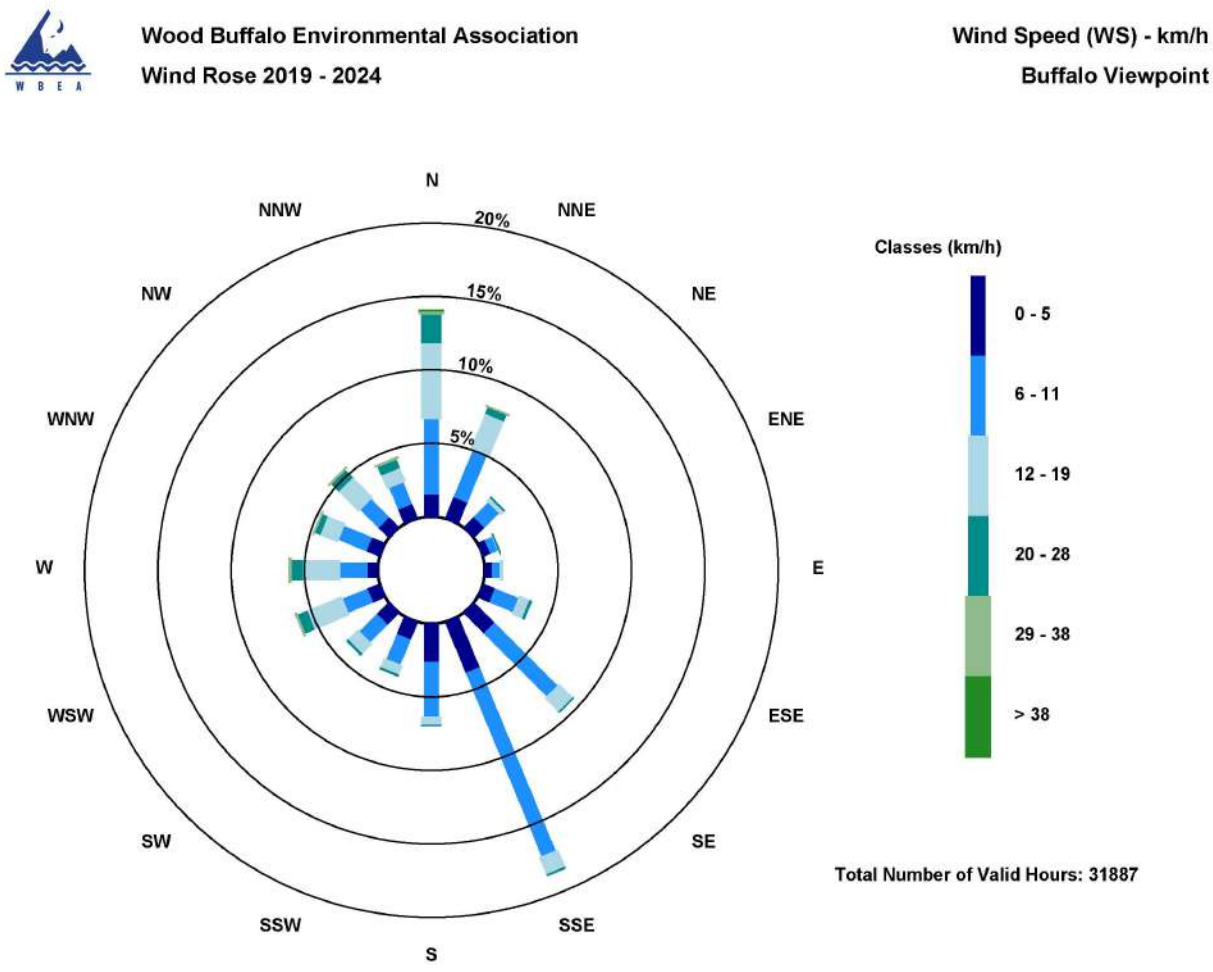

Figure 13 – Windrose (2019-2024)

W B E A

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Mannix

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 05
Station name	Mannix
Date station established	1975

Location

Station street address	On the west side of Range Road 101, approximately 700 meters south of the Base Plant Road intersection
Legal land description	
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56.967964
Longitude	-111.482100
UTM East	470688
UTM North	6313923
Nearest community	Fort McMurray
Community population	76006
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Suncor Energy Inc.
Approval number	094-03-00
Contact Name	Natasha Bouliane
Address	Base Plant Rd, Wood Buffalo, AB
Phone number	780-743-7780 (business hours); 780-762-4200 (non-business hours)
Email address	nabouliane@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Gravel parking lot, Suncor base plant road.
	91 – 180 degrees	Gravel parking lot, Suncor base plant road.
	181 – 270 degrees	Wooded area.
	271 – 360 degrees	150m met tower, electronics stations.

Site elevation (m) (above sea level)	332	
Angle of elevation to nearby buildings	Greatest angle	N/A
	Building direction	N/A
Airflow restrictions	North	No
	East	No
	South	Trees
	West	Trees
Distance to nearest trees (m)	North	N/A
	East	N/A
	West	45
	South	55
Sample manifold	Type	All glass
	Inlet height above roof	1m
Wind Sensors	Type	Ultrasonic
	Height above ground (m)	20
	Distance from station (m)	10

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	N/A	N/A

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Range road 101 (Asphalt)	Medium	100	Paved road frequented by heavy equipment, tractor trailers, and pickup trucks.
Highway 63	High	400	Provincial highway frequented by all types of traffic.

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Suncor Base Plant	Oil Sands Plant	< 5	North
Enbridge	Storage tank complex	0.2	East

Station Equipment

Equipment Owner: Suncor Energy Inc.

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo	43i	1008841399	2012	January, 1999
H_2S	Thermo	43IQTL	1200326169	2023	January, 1999
H_2S	Global Analyzer Systems	G150	3033-225	2023	
THC/CH_4/NMHC	Thermo	55i	1152430011	2021	January, 1999

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH-2m	Vaisala	HMP155	NA	4	2022	January, 1999
AT/RH-20m	Vaisala	HMP155	G4340067	4	2022	January, 1999
AT/RH-45m	Vaisala	HMP155	NA	4	2022	January, 1999
AT/RH-75m	Vaisala	HMP155	SS3550310	4	2022	January, 1999
AT/RH-90m	Vaisala	HMP155	NA	4	2022	September, 2012
WS-WD-VWS-20m	UVW Ultrasonic	81000	4000	4	2022	January, 1999
WS-WD-VWS-20m	UVW Ultrasonic	81000	3960	4	2022	January, 1999
WS-WD-VWS-20m	UVW Ultrasonic	81000	3998	4	2022	January, 1999
WS-WD-VWS-20m	UVW Ultrasonic	81000	3999	4	2022	September, 2012

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2580
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	621
Zero air generator	Zero Air Generator	Teledyne/API	701	5613
HVAC	Heating and air conditioning system	BARD	W12A2-A05EPXXXJ	330C132993376-01
Shelter / Building	Air monitoring shelter	C&V	8 x 16 wood	SAA81407

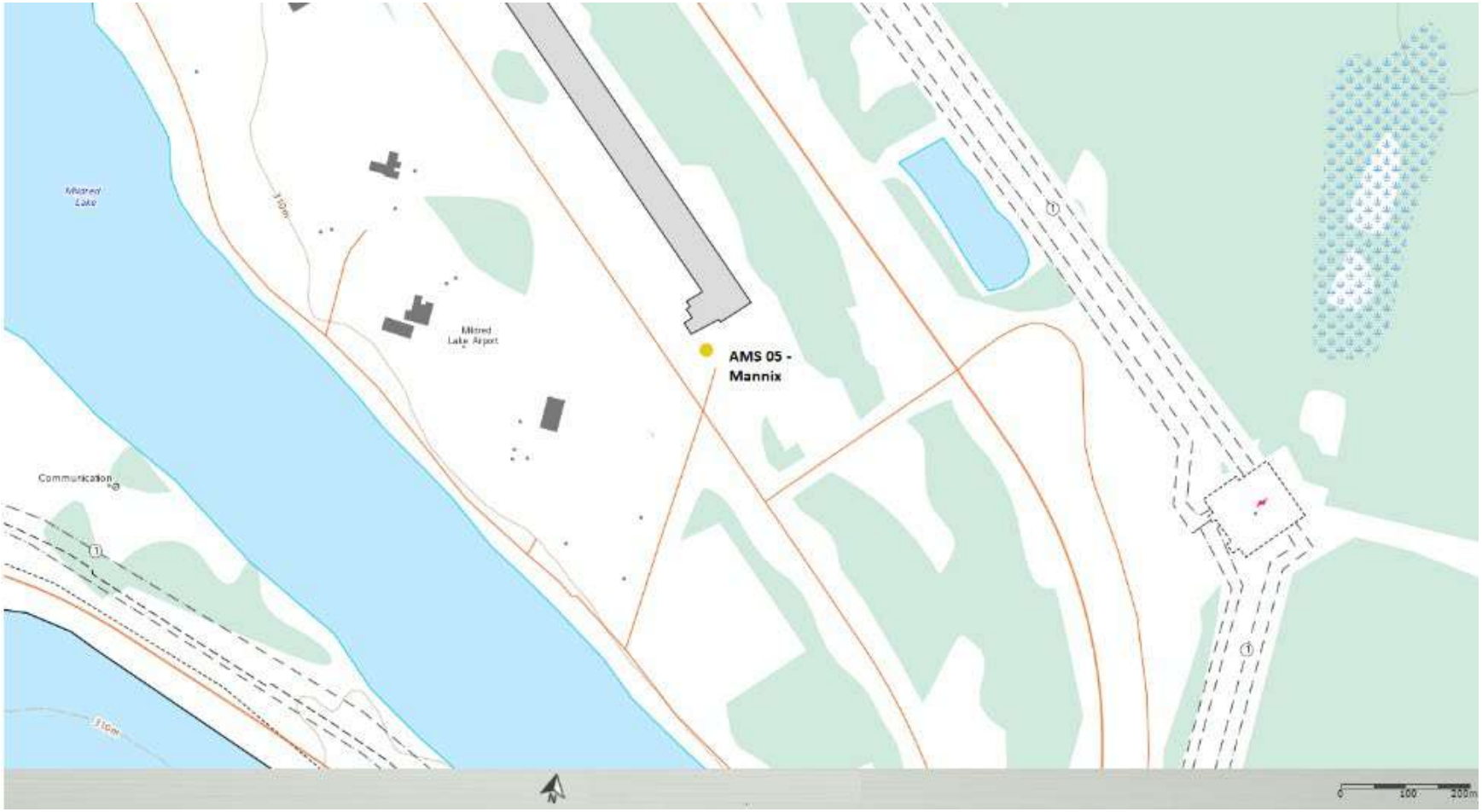

Figure 1 – Area topographic map showing AMS 05

Figure 2 – Aerial photo showing AMS 05

Figure 3 – Plan view sketch for AMS 05 site

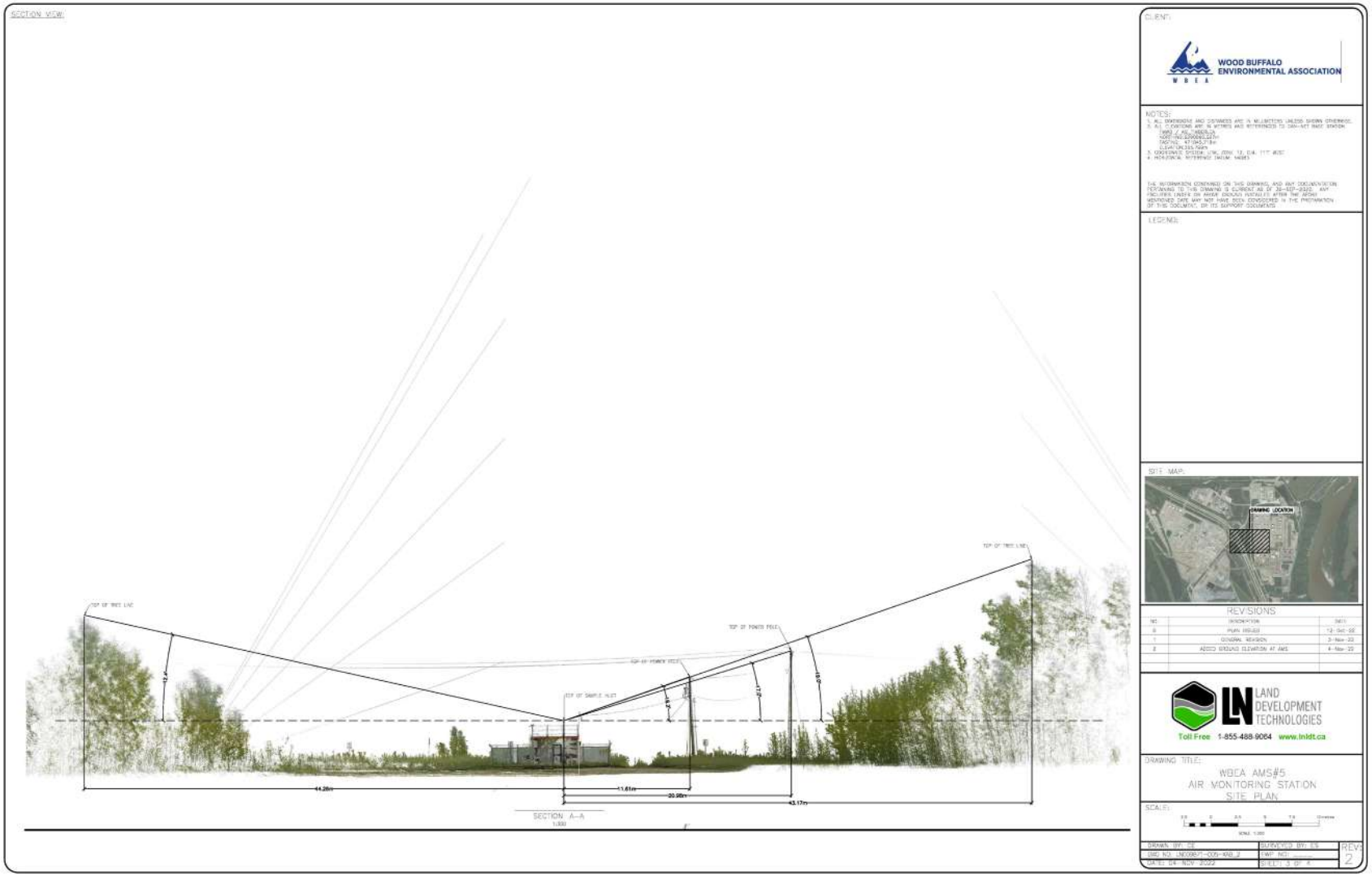

Figure 4 – Elevation view sketch for AMS 05 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

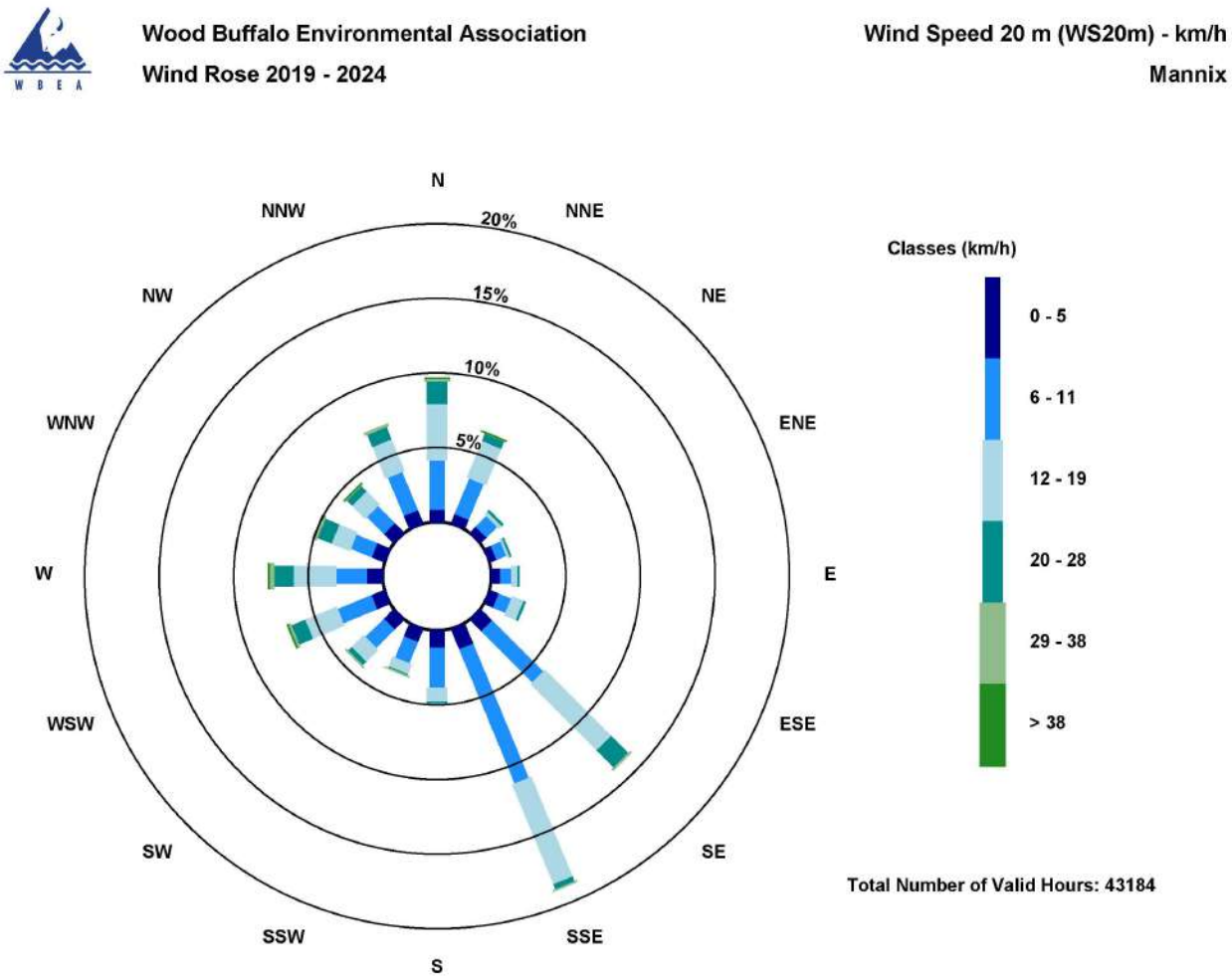

Figure 13 – Windrose 20 metres (2019-2024)

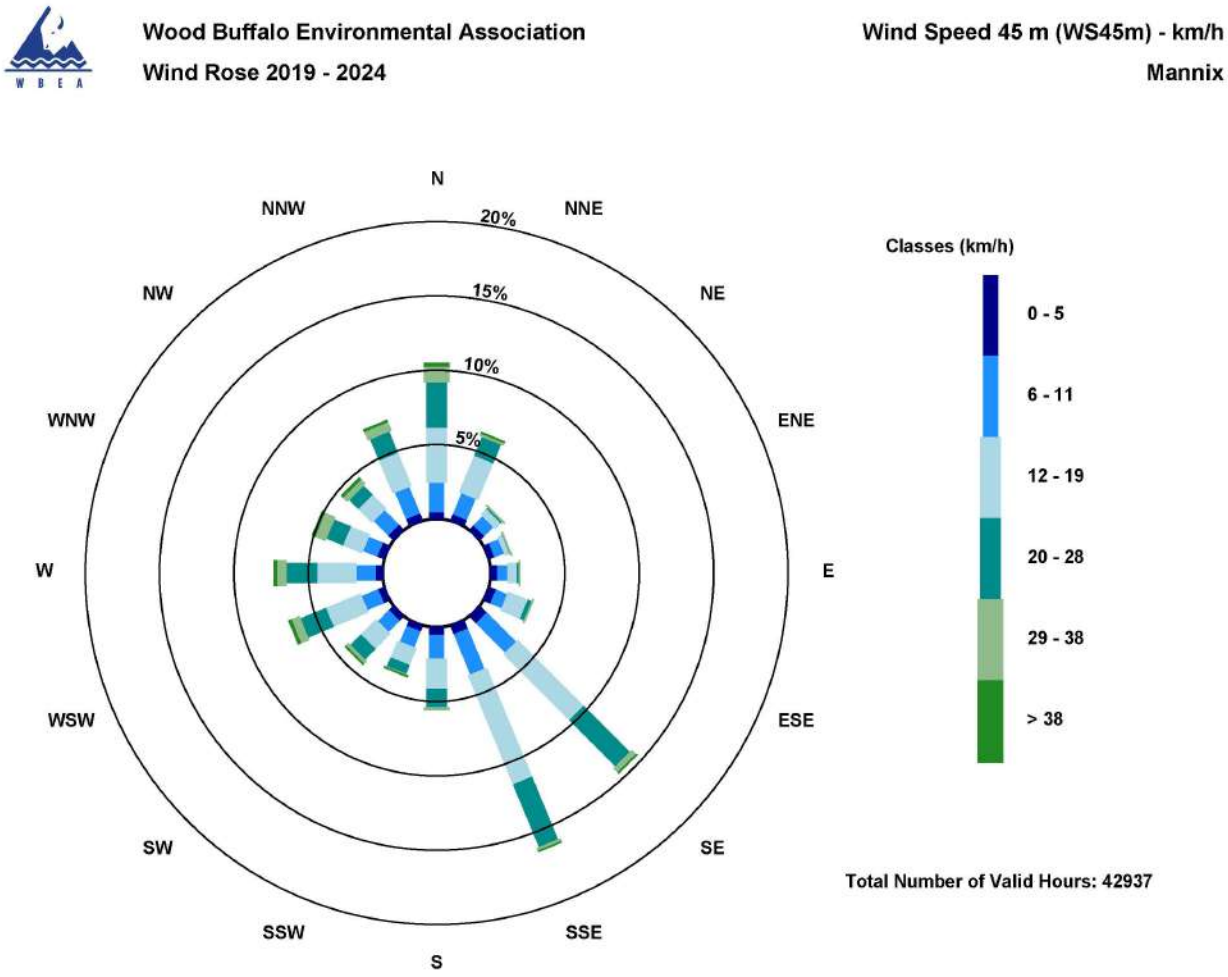

Figure 14 – Windrose 45 metres (2019-2024)

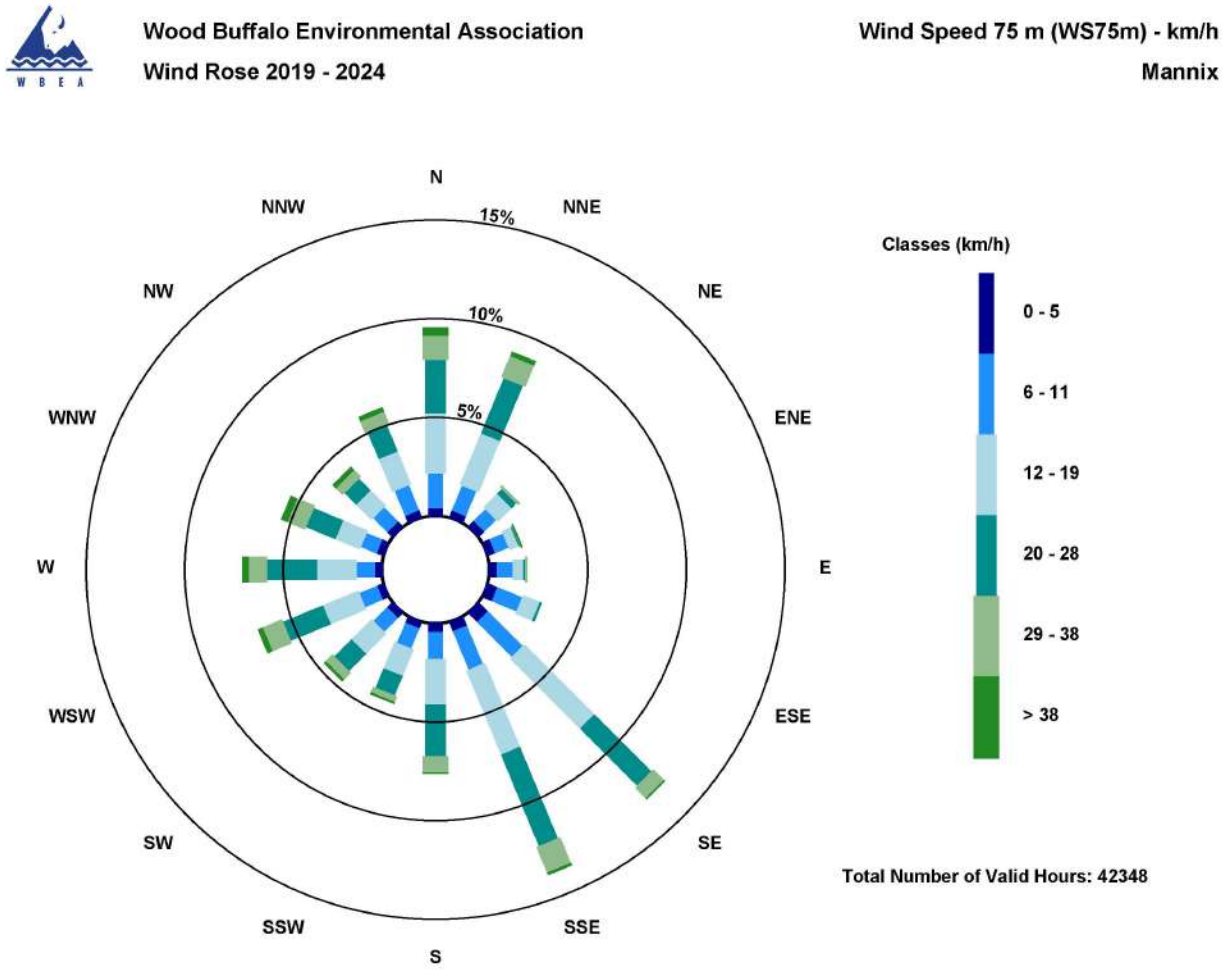

Figure 15 – Windrose 75 metres (2019-2024)

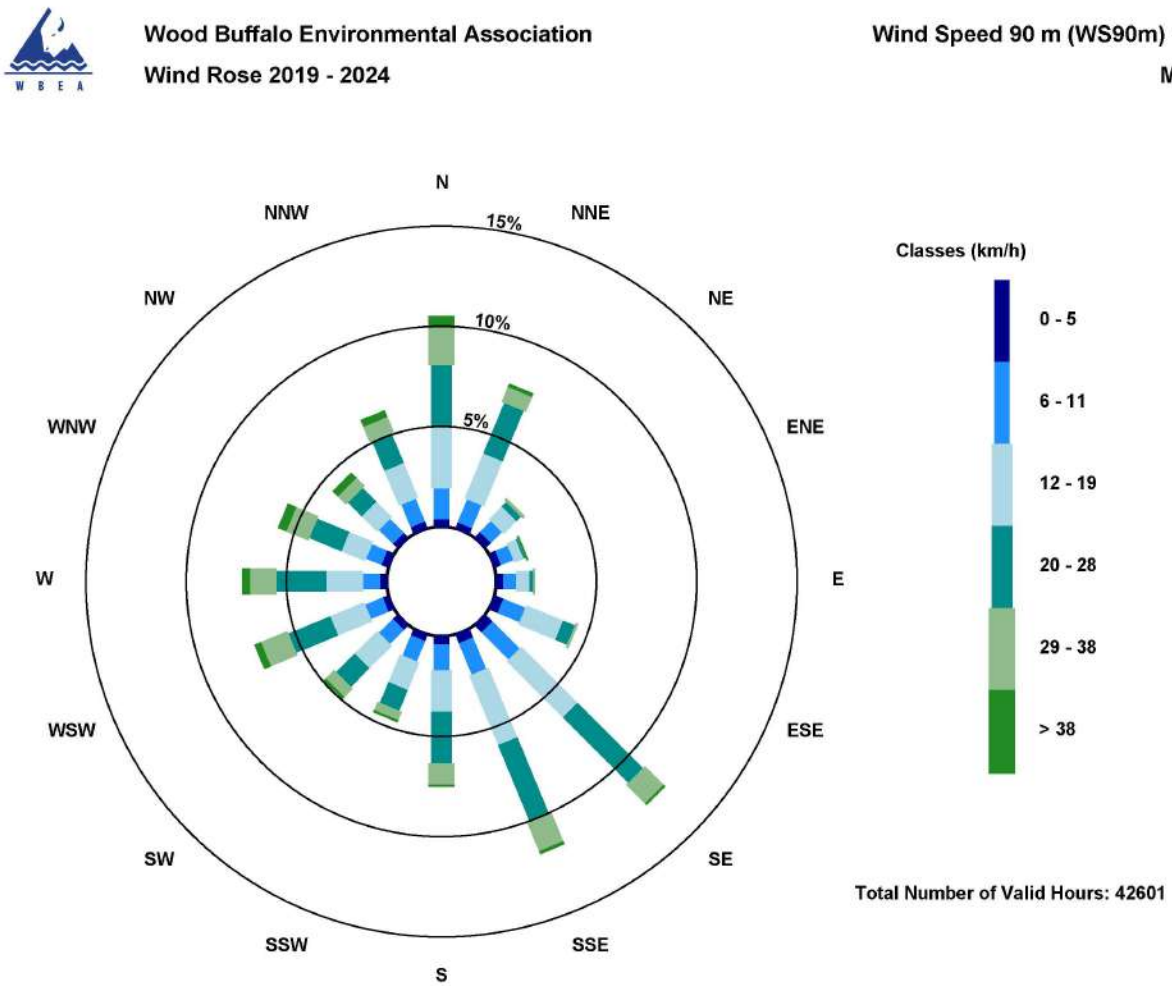

Figure 16 – Windrose 90 metres (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

AMS 06- Patricia McInnes

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 06
Station name	Patricia McInnes
Date station established	1998

Location

Station street address	Carteret Street, Fort McMurray
Legal land description	10-26-089-10 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56°45’4.96” North
Longitude	111°28’36.10” West
UTM East	470849
UTM North	6289812
Nearest community	Located in Fort McMurray
Community population	76000
Census Year	2023

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Wood Buffalo Environmental Association
Approval number	N/A
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Residential
	91 – 180 degrees	Residential
	181 – 270 degrees	Sports Grounds
	271 – 360 degrees	Sports Grounds
Site elevation (m) (above sea level)	362 M	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	N/A
Airflow restrictions	North	N/A
	East	N/A
	South	N/A

	West	N/A
Distance to nearest trees (m)	North	N/A
	East	N/A
	West	28m
	South	4m
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	0

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Recreational Complex	About 20-50 meters, north to northwest of the Station	Maintenance of sports fields and recreational complex, possible PM and NOx Sources
Residential Subdivision	South and southwest of the station	Wood burning in household stoves and backyard firepits

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Residential Road	High	30	Paved road

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Fort McMurray Water Treatment Plant	Water treatment plant	4	South east
Eveready	Asphalt production	4	North
Suncor / Syncrude	Oil Sands Production	15	North

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Scientific	43i	1160290013	2020	January, 1999
TRS	Teledyne/API	43i-TLE	1218153358	2019	January, 1999
THC/CH_4/NMHC/THC	Thermo Scientific	55i	1118148495	2020	January, 1999
NOx/NO/NO_2	Thermo Scientific	42i	1172750022	2016	January, 1999
NH_3	Teledyne/API	T 201	808	2020	August, 2006
O_3	Thermo Scientific	49i	1300156234	2022	January, 1999
PM $_{2.5}$	Teledyne/API	T640	871	2020	January, 1999
Time-Integrated					
PM $_{2.5}$ A	Thermo Scientific	2000i	2000I203861308	2018	-
PM $_{2.5}$ B	Thermo Scientific	2000i	2000I204851408	2018	-
PM $_{10}$ A	Thermo Scientific	2000i	2000I202151205	2018	-
PM $_{10}$ B	Thermo Scientific	2000i	2000IW20205251411	2018	-
PAH	Tisch	TE-1004BL	1001099	2016	-
VOC	Tisch	TE-123	1021	2016	-
Dustfall	Advantage Manufacturing	-	-	2022	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Instrument Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	N3840525	Class 3	2020	January, 1999
WS	Met One	010C-1	B10015	Class 3	2021	January, 1999
WD	Met One	020C-1	E4854	Class 3	2016	January, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	10957
Zero air generator	Zero Air Generator	Teledyne/API	701	261

HVAC	Heating and air conditioning system. Wall mount unit	BARD	2 ton	314H183561152-02
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	09 14786
Gas Dilution Calibrator	Mass flow controlled gas dilution	Teledyne/API	T700	3566
Thermal Oxidizer	TRS Converter	Global	G150	2022-195
Thermal Oxidizer	NH3 Converter	API	T501	484
Tower	Aluma Tower	Aluma	T135	N/A
Hydrogen Generator	Hydrogen Generator	Peak Scientific Canada	63-0100	771056335

Figure 1 – Area topographic map showing AMS 06

Figure 2 – Aerial image showing AMS 06

Figure 3 – Plan view image for AMS 06 site

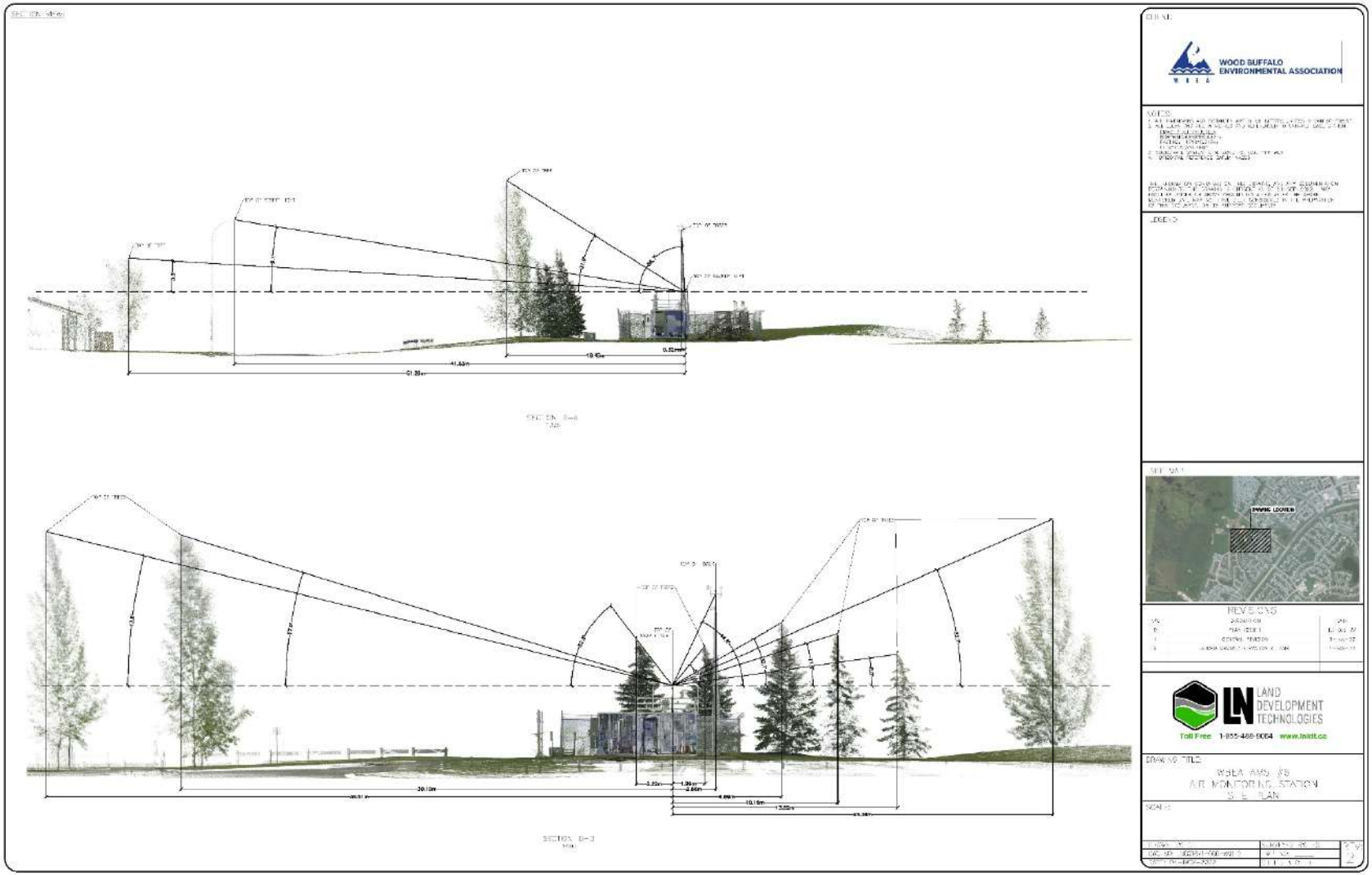

Figure 4 – Elevation view image for AMS 06 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

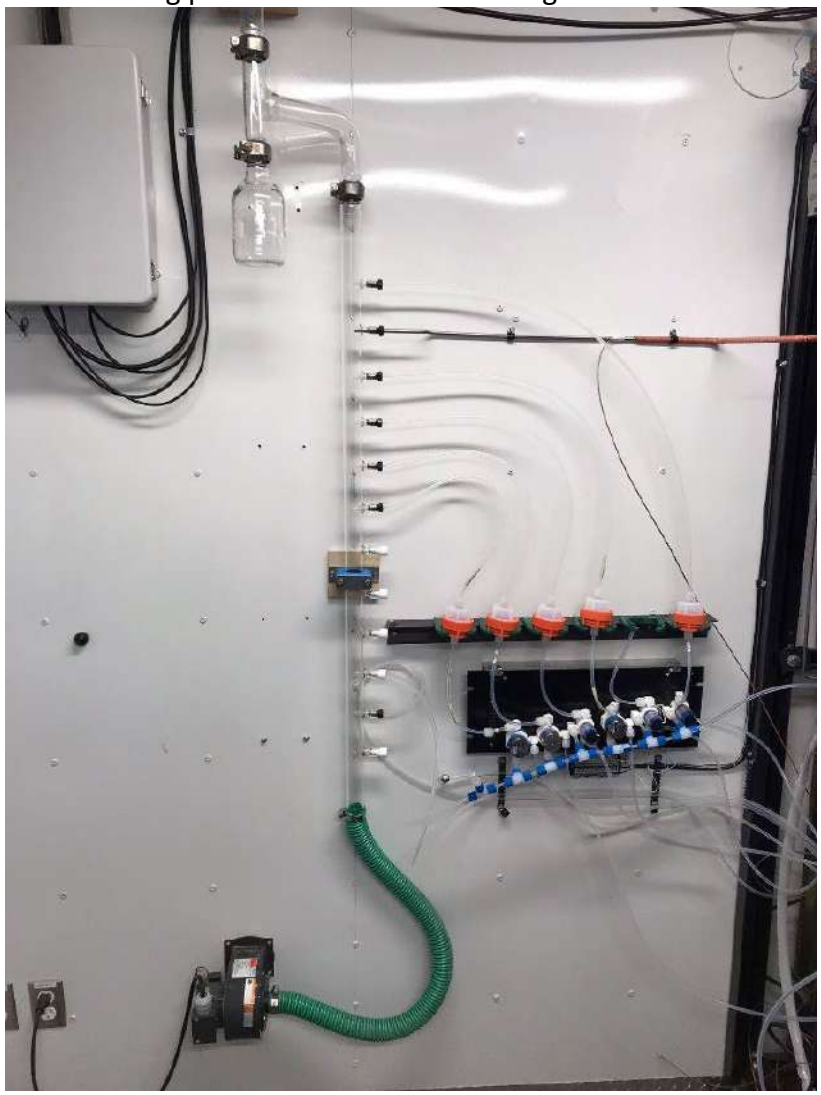

Figure 10 – Photo showing the sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 11 –Photo of the front and the back of instrument rack

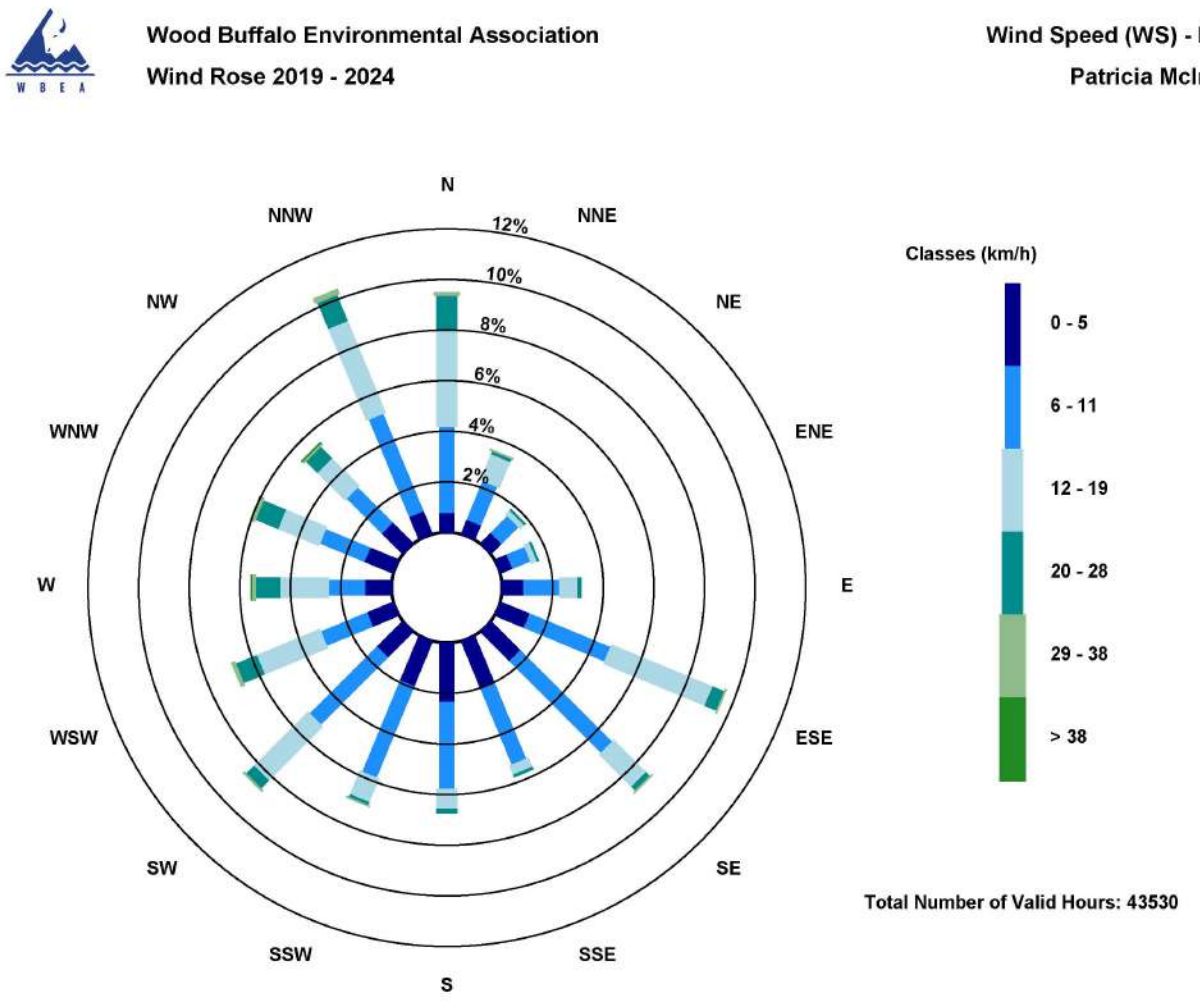

Figure 12 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Athabasca Valley

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 07
Station name	Athabasca Valley
Date station established	1977

Location

Station street address	Located on MacDonald Drive, Near the Athabasca River and McDonald Island
Legal land description	9-20-089-09 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56°44’00.21”N
Longitude	111°23’25.80”W
UTM East	476105.865
UTM North	6287773.834
Nearest community	Fort McMurray
Community population	75,186
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	N/A
Approval number	N/A
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Residential
	91 – 180 degrees	Residential
	181 – 270 degrees	Residential
	271 – 360 degrees	River
Site elevation (m) (above sea level)	497 m	
Angle of elevation to nearby buildings	Greatest angle	3
	Building direction	West
Airflow restrictions	North	None

	East	None
	South	None
	West	House
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	Attached to North end of monitoring station

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Wood Smoke	10m	Wood Stove from shelter (due West)

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Asphalt road	Medium	15	Access road to MacDonald Island
Highway	High	300	Hwy 63
Asphalt Road	Medium	330	City street

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Fort McMurray Water treatment Plant	Water treatment Plant	1.22	SW
McDonald Island	Sports Complex	0.265	NE
Eveready	Asphalt Plant	3.71	NW
Fort McMurray Waste Water Treatment Plant	Waste Water Treatment Plant	3.84	NW
Diversified	Main Bus Depo	4.48	NW
Suncor	Oil Sands Plant	26.81	N
Suncor	Tailings Pond	15.81	N
LaFarge	Concrete Plant	3.06	NW
Inland	Concrete Plant	3.32	NW
Burnco	Concrete Plant	4.24	NW

Station Equipment

Equipment Owner: Alberta EPA and WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Scientific	43i-LTE	1507864683	2020	January, 1999
TRS	Thermo Scientific	43i-LTE	1180540018	2019	January, 1999
TRS conv	CD-Nova	CDN-101	551	2019	-
$NO_x/NO/NO_2$	Thermo Scientific	42i	1160120024	2021	January, 1999
$THC/CH_4/NMHC$	Thermo Scientific	55i	12300522720	2024	January, 1999
O_3	Thermo Scientific	49i	1507964700	2019	January, 1999
CO	Thermo Scientific	48i-LTE	1408761381	2016	January, 1999
$PM_{2.5}$	Teledyne	T640	645	2024	January, 1999
Time-Integrated					
PM_{10}	Thermo Scientific	2000i	2000i 0361 1305	2016	-
PM_{10}	Thermo Scientific	2000i	2000iW206921702	2021	-
$PM_{2.5}$	Thermo Scientific	2000i	2000i2 0370 1306	2018	-
$PM_{2.5}$	Thermo Scientific	2000i	2000i2 0433 1312	2019	-
PAH	Tisch Environmental	TE-PIF+BL	1001057	2016	-
VOC	Global Analyzer Systems	G23MTS-2CH	2021-101	2023	-
VOC	Global Analyzer Systems	G23MTS-2CH	2021-102	2023	-
Dustfall	Advantage Manufacturing	-	-	2022	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G0840069	3	2020	January, 1999
WD	Met One	020C-1	G3212	3	2021	January, 1999
WS	Met One	010C-1	R14656	3	2019	January, 1999
BP	Young	61302V-10	BPA4395	3	2016	December, 2012

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	8205
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3805
Zero air generator	Zero Air Generator	Teledyne/API	T701H	198
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	N/A

HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	

Figure 1 – Area topographic map showing AMS 07

Figure 2 – Aerial image showing AMS 07

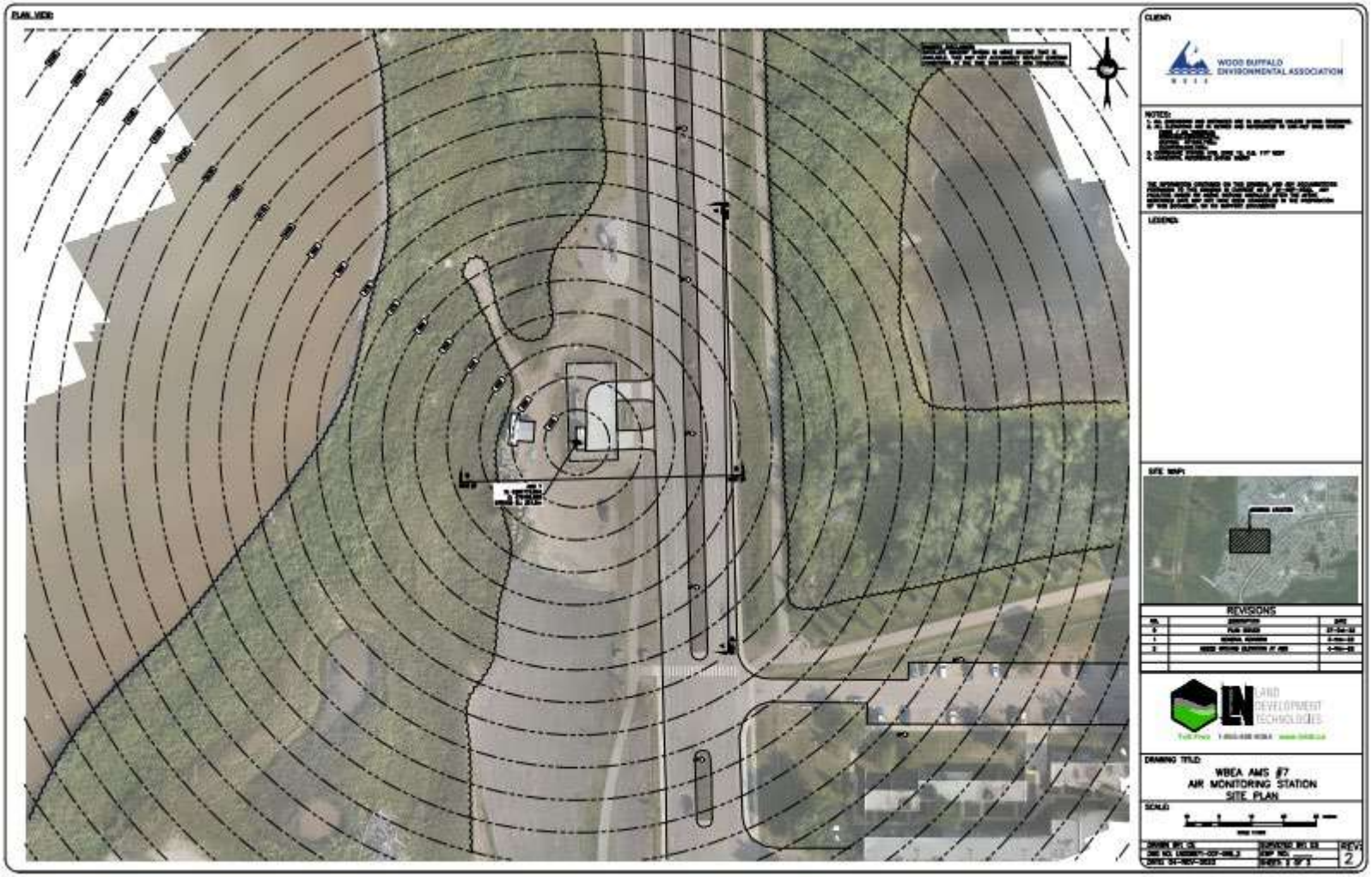

Figure 3 – Plan view image for AMS 07 site

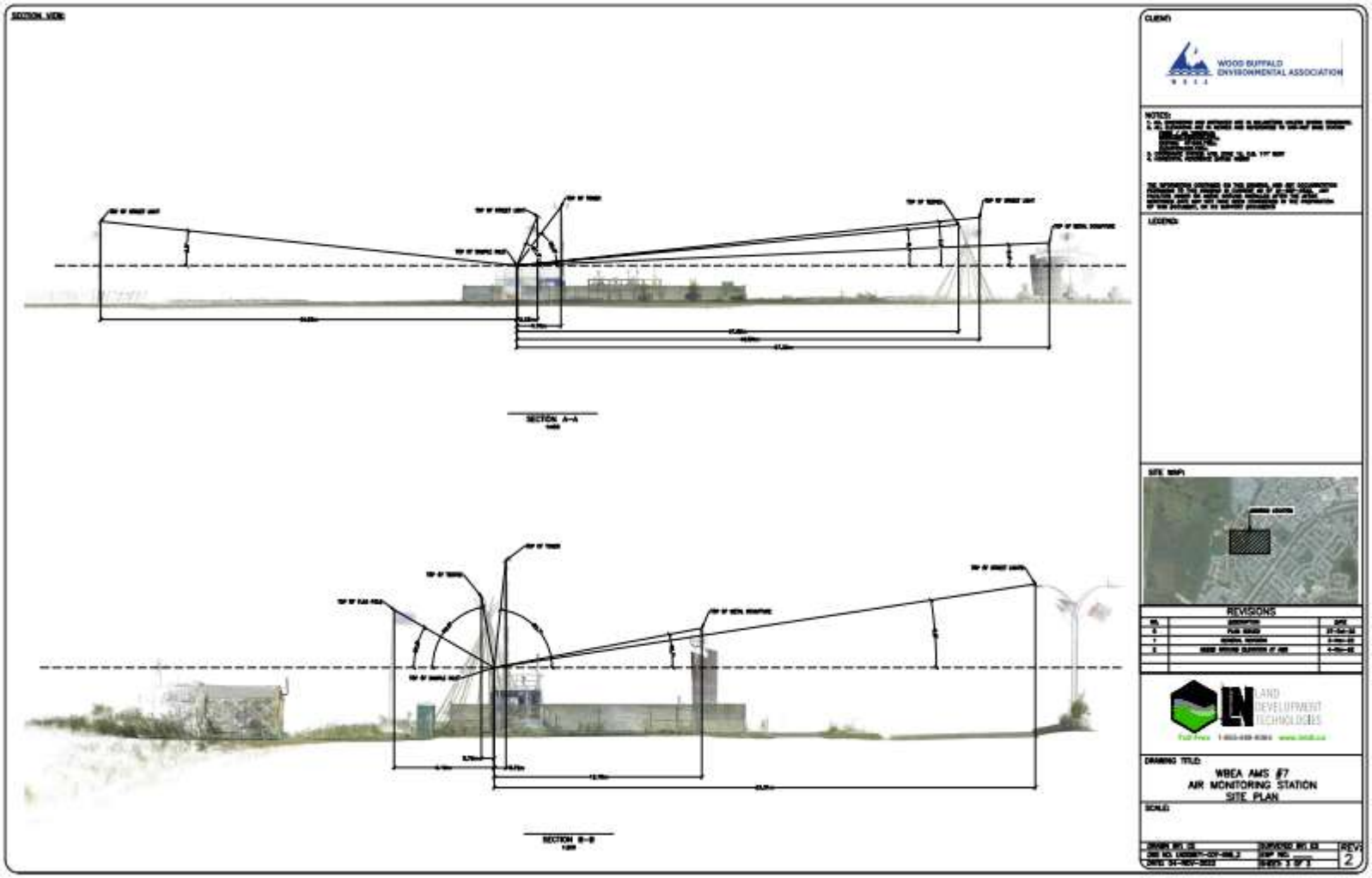

Figure 4 – Elevation view image for AMS 07 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

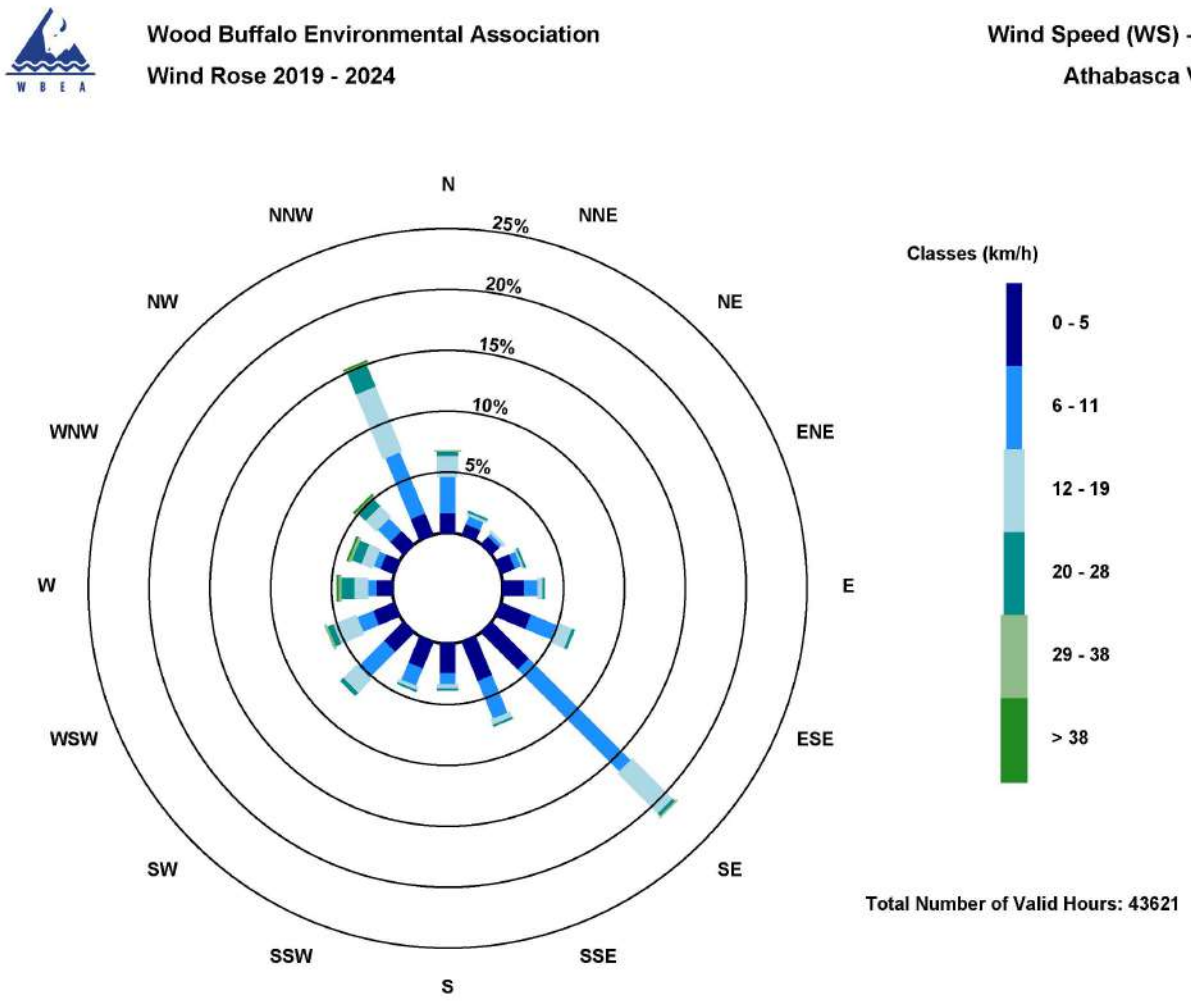

Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

AMS 08 – Fort Chipewyan

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 08
Station name	Fort Chipewyan
Date station established	1998

Location

Station street address	Fort Chipewyan
Legal land description	6-07-112-07 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	58.709285
Longitude	-111.175014
UTM East	489862
UTM North	6507689
Nearest community	Located in Fort Chipewyan
Community population	798
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	NA
Approval number	NA
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3 – 805 Memorial Drive, Fort McMurray, AB
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Residential
	91 – 180 degrees	Residential, Lake
	181 – 270 degrees	Residential, Lake
	271 – 360 degrees	Residential
Site elevation (m) (above sea level)	221 m	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	No
	East	No

	South	No
	West	No
Distance to nearest trees (m)	North	50m
	East	NA
	West	NA
	South	NA
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	0

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
House	About 20 m, South	Local residential house, potential for wood burning.

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Driveway	Low	10	Dirt road, residential use
Local roads	Low	100	Paved road, very low volume

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Suncor/Syncrude	Oil Sands Production	160	South

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Environmental	43i-TLE	1136451241	2014	January, 1999
CO	Teledyne API	T300	3505	2019	April, 2019
CO_2	Teledyne API	T360	289	2020	April, 2019
$NO_x/NO/NO_2$	Thermo Environmental	42i	1426262592	2022	January, 1999
O_3	Teledyne API	T400	3872	2021	January, 1999
TRS	Thermo Environmental	43iq-TLE	NA	2022	-
$PM_{2.5}$	Teledyne API	T 640	216	2018	February, 2000
Time-Integrated					
VOC	Tisch	TE-123	1029	2023	-
PM10	Thermo Scientific	2000i	2000IW-20929-2106	2023	-
PM10	Thermo Scientific	2000i	2000IW-20933-2106	2023	-
PM2.5	Thermo Scientific	2000i	2000IW-20932-2106	2023	-
PM2.5 EC/OC	Thermo Scientific	2000i	2000IW-20934-2106	2023	-
PAH	Tisch	TE-PUF+BL	100111	2023	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
PC	OTT	Pluvio 2 – 400	358347	2	March, 2023	February, 1999
AT/RH	Vaisala	HMP155	N0810528	5	March, 2014	January, 2008
WS	Met One	010C-1	P22394	2	March, 2014	January, 1999
WD	Met One	020C-1	E4853	2	March, 2014	January, 1999
LW	Campbell Scientific	LWS-L	NA	NA	March, 2014	February, 1999
GR	Eppley Lab Inc.	8-48	38243	1	March, 2014	January, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	11039
Datalogger	Datalogger	Campbell Scientific	CR310	2237
Zero air generator	Zero Air Generator	Teledyne/API	701	260
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	314B132990230-02
Shelter / Building	Air monitoring portable	ITB	10 x 20 trailer	13 15920
Gas Dilution Calibrator	Mass flow-controlled gas dilution	Teledyne/API	T700	23252
Hydrogen Generator	Hydrogen Generator	Peak Scientific	100cc	720121160
Nitrogen Generator	Nitrogen Generator	Peak Scientific	NG5000A	771048318

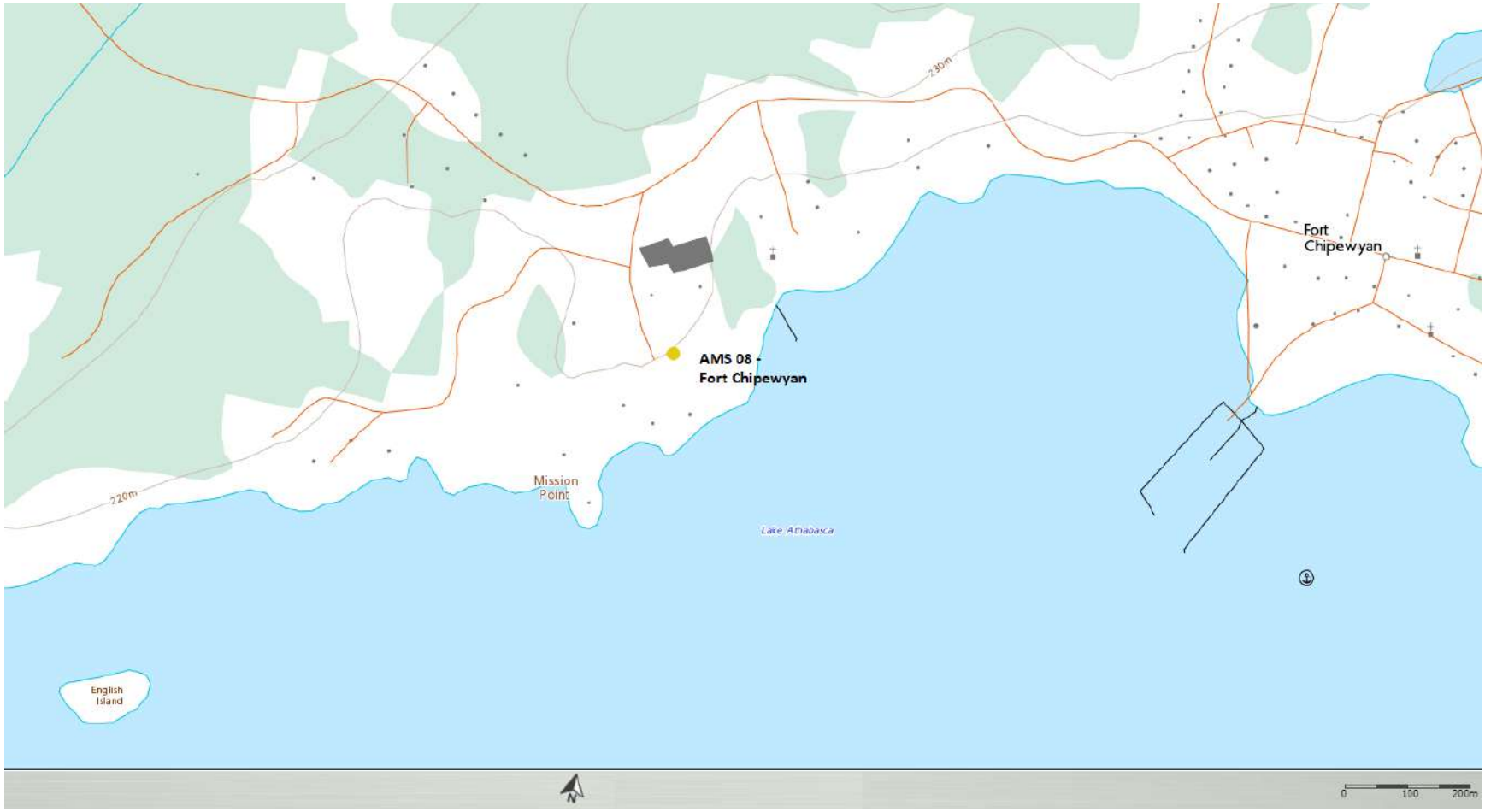
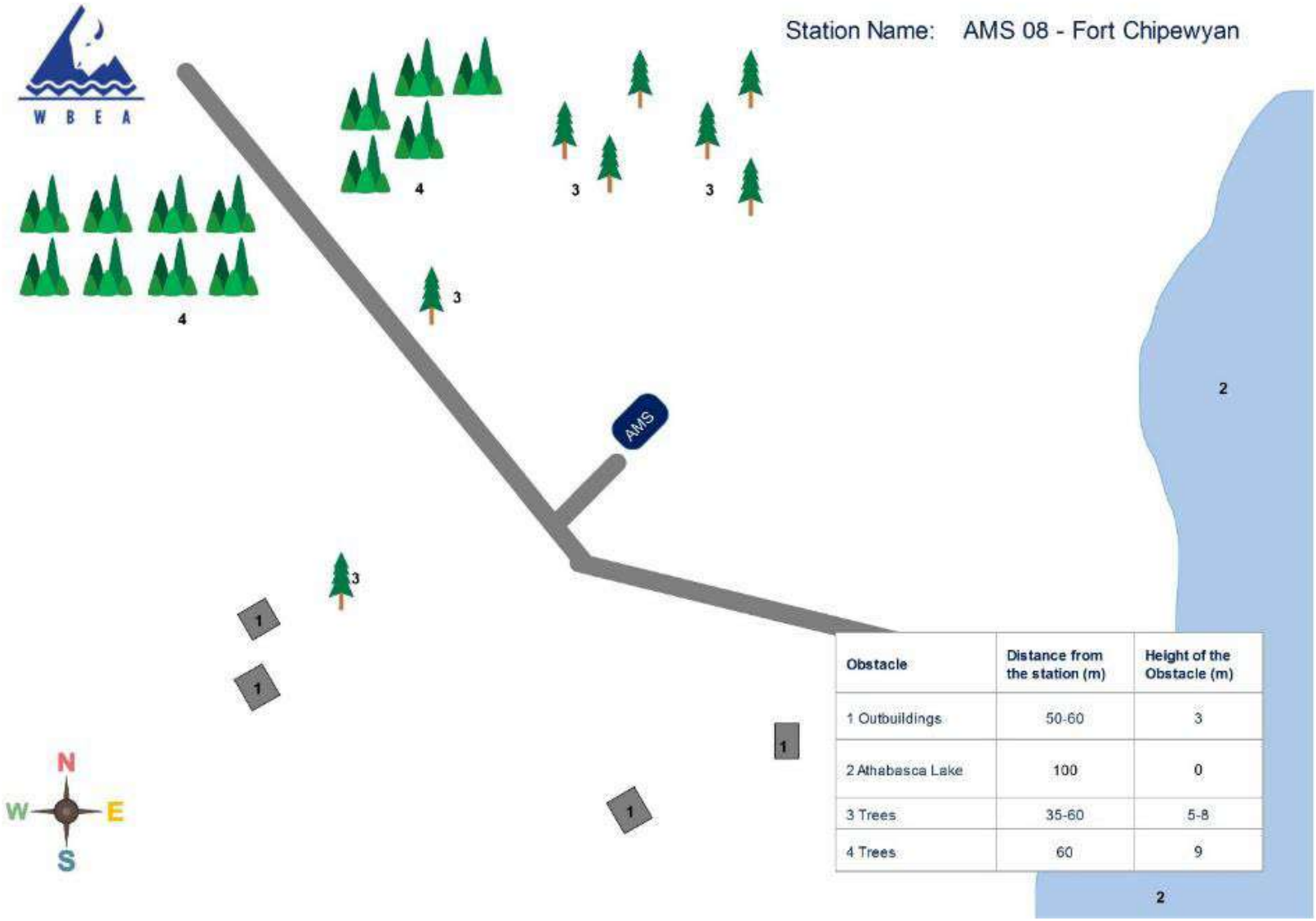


Figure 1 – Area topographic map showing AMS 08

Figure 2 – Aerial photo showing AMS 08



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Outbuildings	50-60	3
2 Athabasca Lake	100	0
3 Trees	35-60	5-8
4 Trees	60	9

Figure 3 – Plan view sketch for AMS 08 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 4 – Environment looking North

Figure 5 – Environment looking East

Figure 6 – Environment looking South

Figure 7 – Environment looking West

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

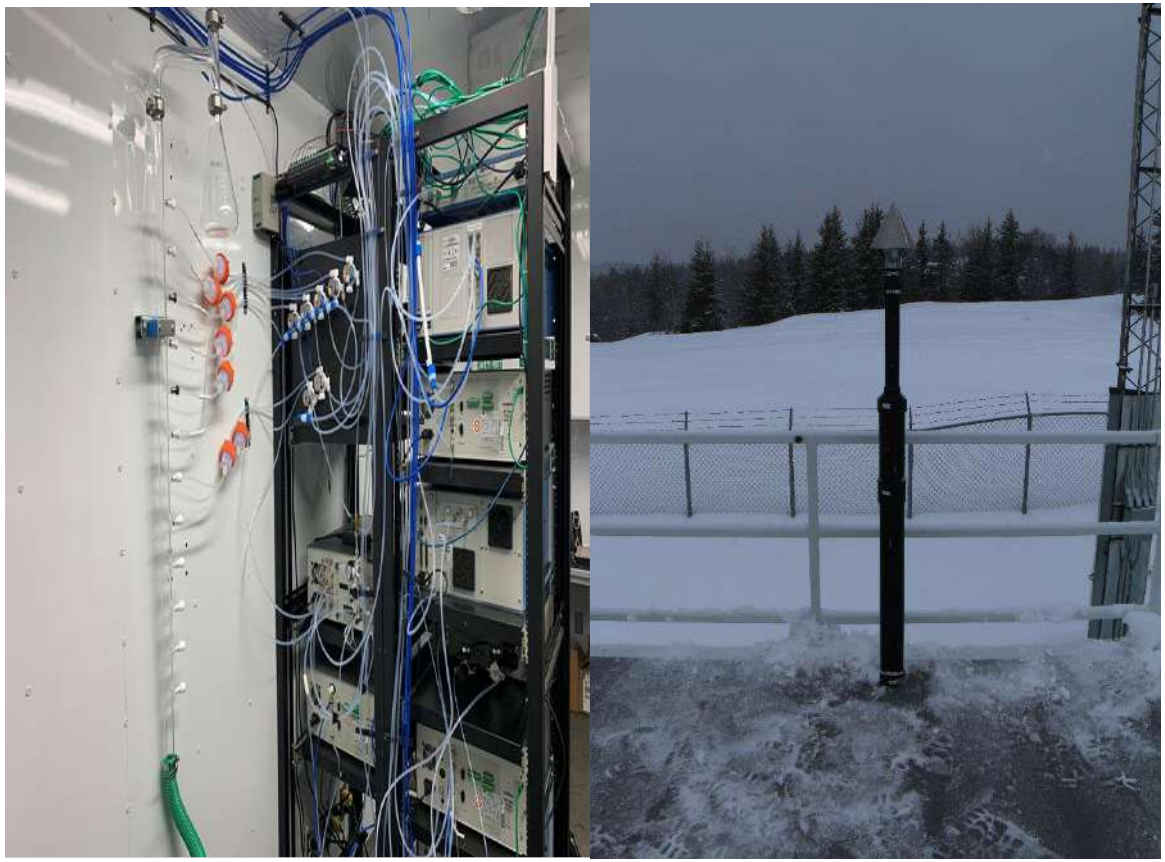


Figure 9 – Photo showing the inlet and sample manifold

Figure 10 – Curb shot of the monitoring station

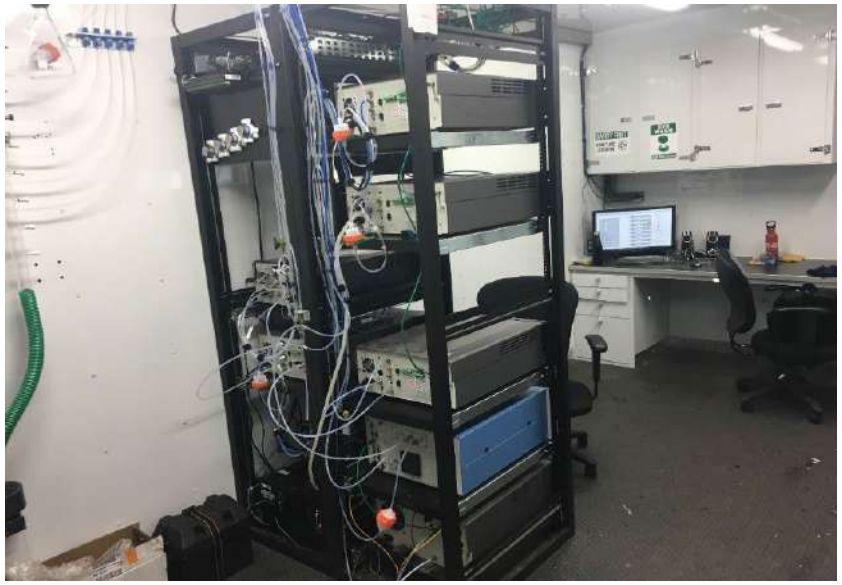


Figure 11 –Photo of the front and the back of instrument rack

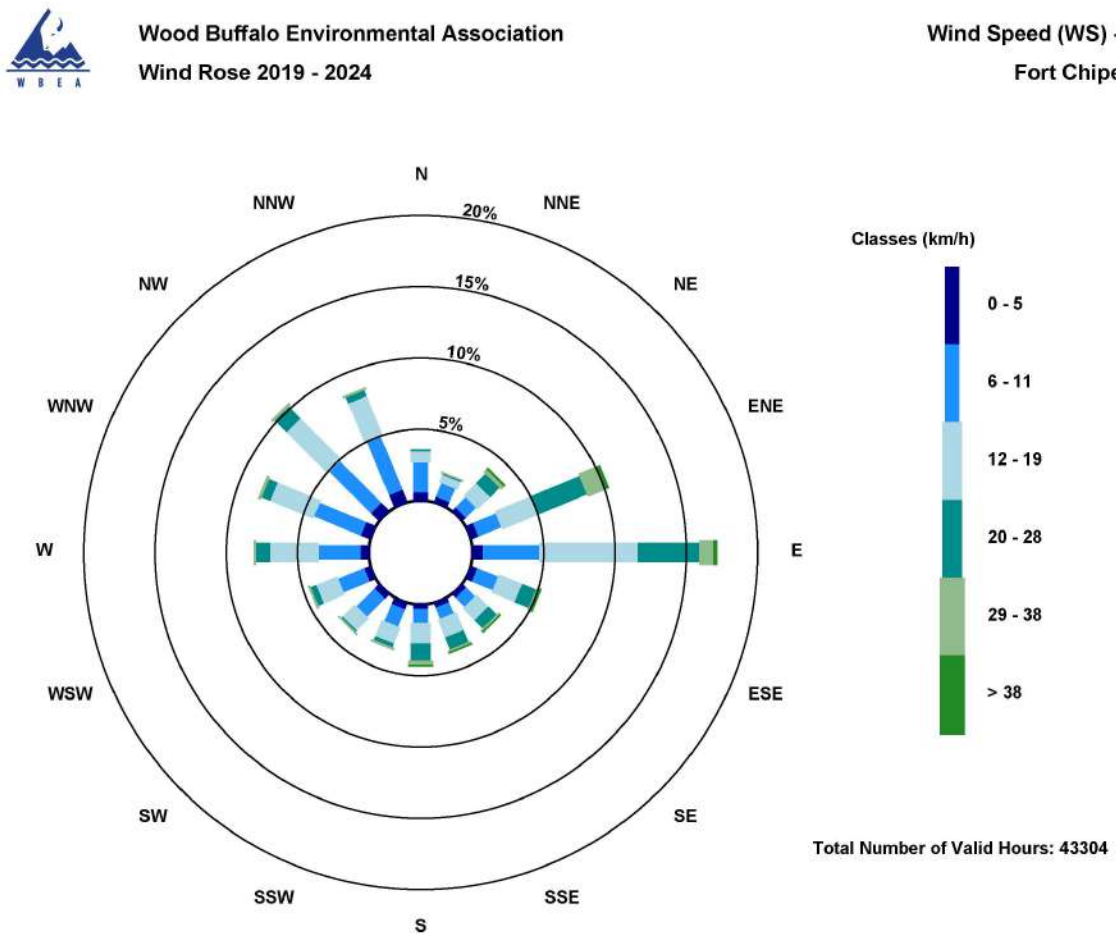


Figure 12 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Barge Landing

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 09
Station name	Barge Landing
Date station established	2000

Location

Station street address	Northeast of the Barge Landing Road, approximately 460 meters northwest of the Highway 63 intersection
Legal land description	7-31-094-10 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.198178
Longitude	-111.59946327
UTM East	463778
UTM North	6339606
Nearest community	Fort Mackay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Canadian Natural Upgrading Limited
Approval number	20809-02-00
Contact Name	Tina Ding
Address	Albian Sands, P.O. Box 5670
Phone number	780-713-4454
Email address	Tina.Ding@cnrl.com

Site Description

Land use by sector	0 – 90 degrees	Wooded area
	91 – 180 degrees	Wooded area
	181 – 270 degrees	Wooded area
	271 – 360 degrees	Wooded area
Site elevation (m) (above sea level)	282 m	
Angle of elevation to nearby buildings	Greatest angle	N/A
	Building direction	N/A
Airflow restrictions	North	Trees

	East	Trees
	South	Trees
	West	Trees
Distance to nearest trees (m)	North	10 m
	East	10 m
	West	10 m
	South	20 m
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	20 m
	Distance from station (m)	2 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	N/A	N/A

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Barge Landing Road	Very low	70	Well maintained dirt access road frequented by pickup trucks and heavy equipment
Highway 63	Medium	400	Provincial highway frequented by tractor trailers and pickup trucks.

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNRL Albian	Oil Sands Plant	10	NE
CNRL Horizon	Oil Sands Plant	20	NW

Station Equipment

Equipment Owner: Canadian Natural

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Environmental	43i	1118148498	2018	December, 2018
TRS	Thermo Environmental	43i-TLE	1331259320	N/A	January, 1999
$NO_x/NO/NO_2$	Thermo Environmental	42i	1426262593	2018	December, 2018
$THC/CH_4/NMHC$	Thermo Environmental	55i	1170050131	2021	January, 1999
PM 2.5	Teledyne	T640	844	2023	January, 2019
Time-Integrated					
VOC	Global Analyzers Systems ltd.	G170	2023-236	2023	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	P3640808	3	2023	January, 2000
WS	Met One	010C-1	B4129	4	2023	August, 2021
WD	Met One	020C-1	D14061	4	2023	August, 2021
Barometric Pressure	WBEA	61302V-10	BPA4394	N/A	2018	December, 2018

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	1850
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3812
Zero air generator	Zero Air Generator	Teledyne/API	701	4888
Hydrogen Generator	Hydrogen Generator	AMA Instruments	HG 300	171067036
TRS Converter	Thermal Oxidizer	CD Nova	CDN-101	519
Shelter / Building	Air monitoring portable	ITB	10 x 20	ITB0814464

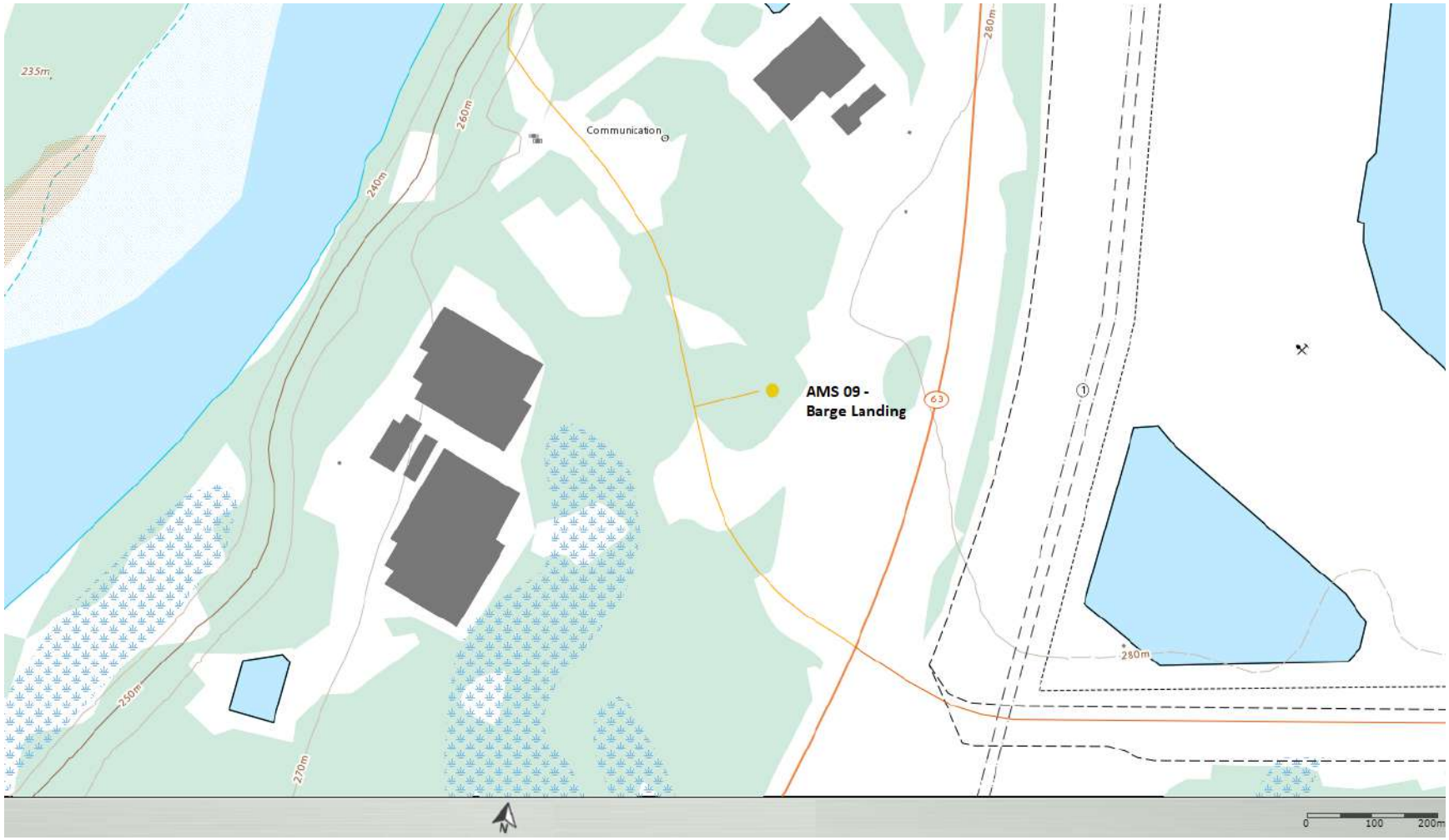

Figure 1 – Area topographic map showing AMS 09

Figure 2 – Aerial photo showing AMS 09

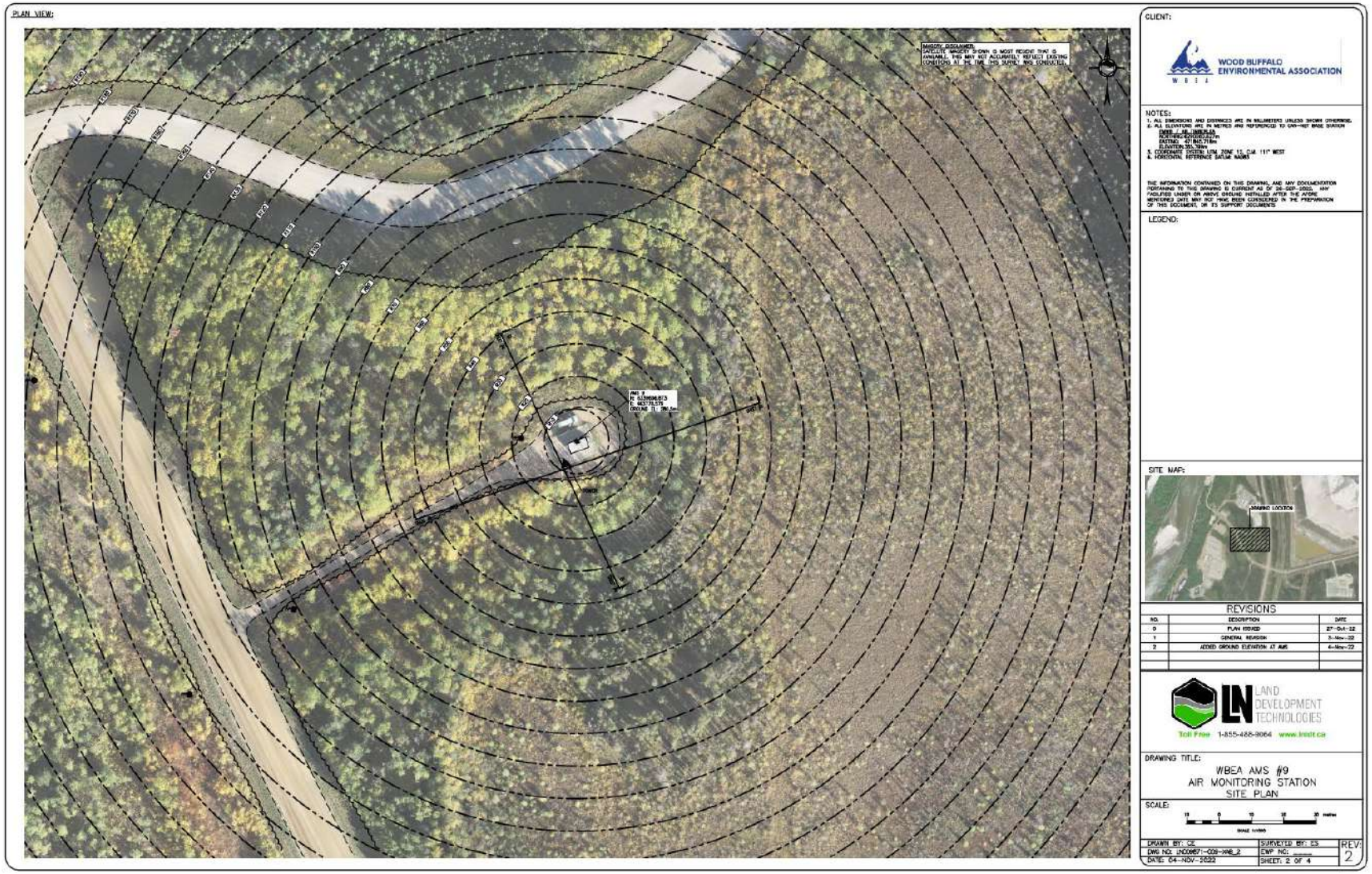

Figure 3 – Plan view sketch for AMS 09 site

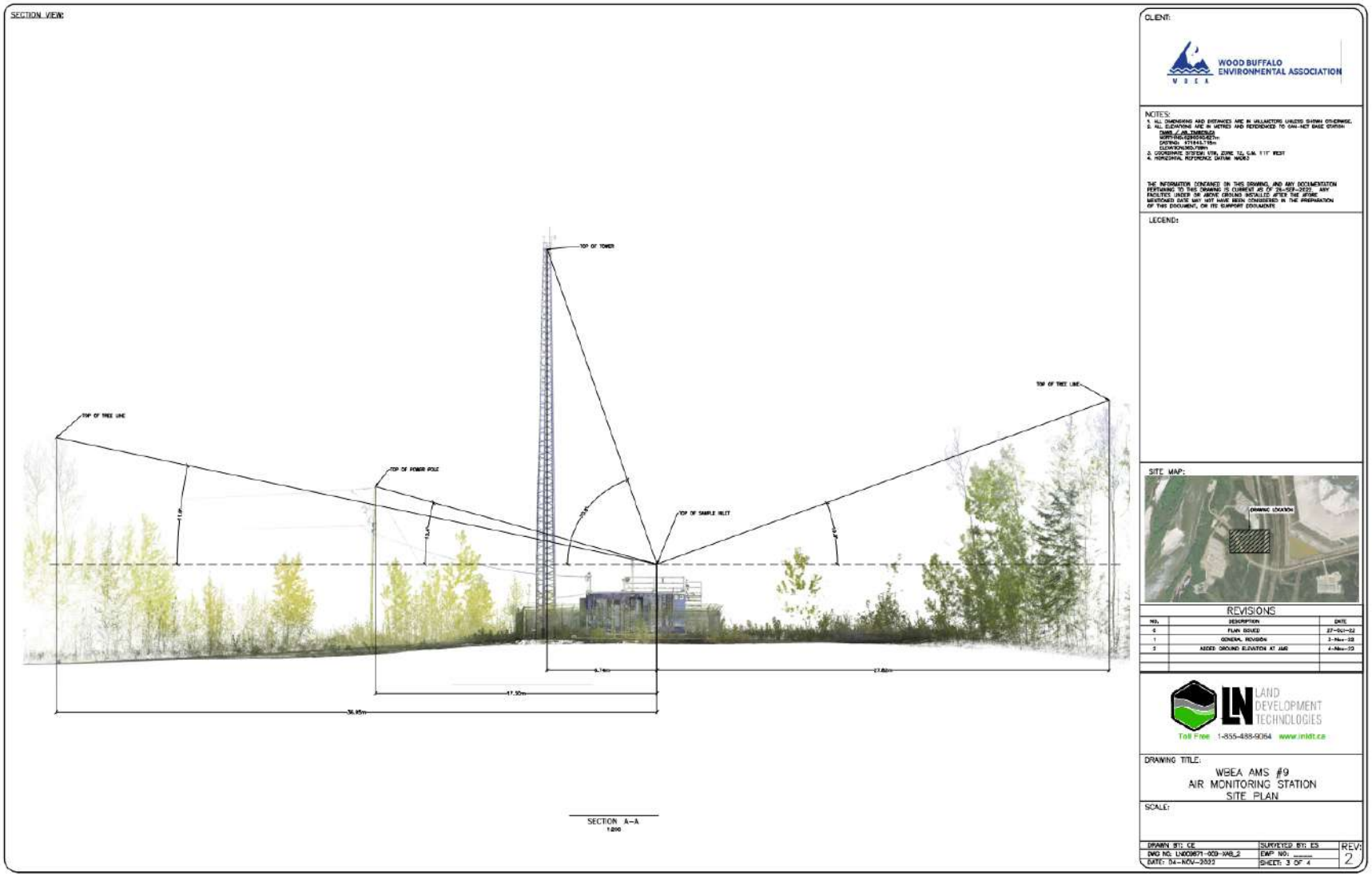

Figure 4 – Elevation view image for AMS 09 site, section A-A

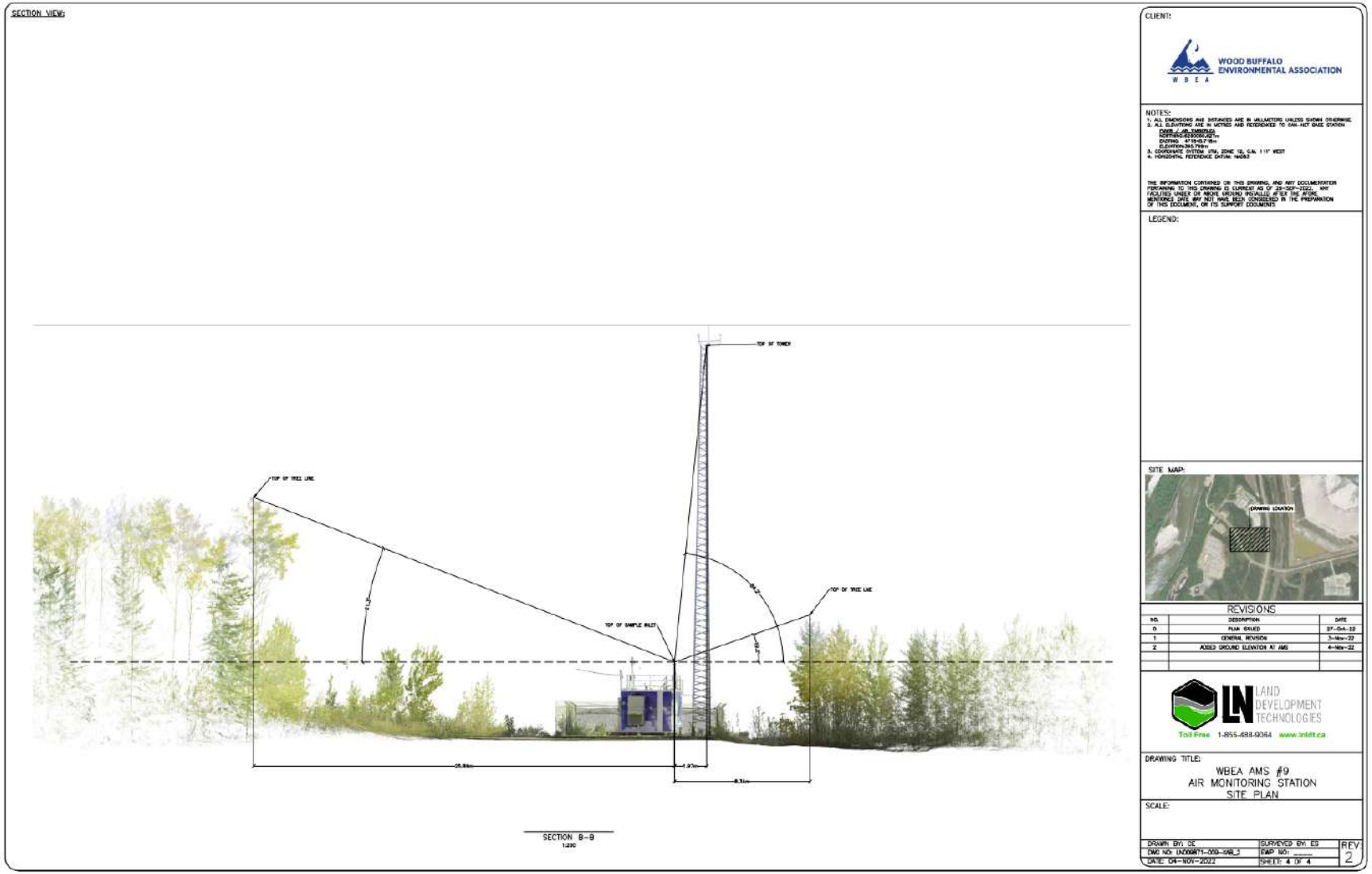

Figure 5 – Elevation view image for AMS 09 site, section B-B

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 6 – Environment looking North

Figure 7 – Environment looking East

Figure 8 – Environment looking South

Figure 9 – Environment looking West

Figure 10 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 11 – Photo showing the inlet and sample manifold

Figure 12 – Curb shot of the monitoring station

Figure 13 –Photo of the front and the back of instrument rack

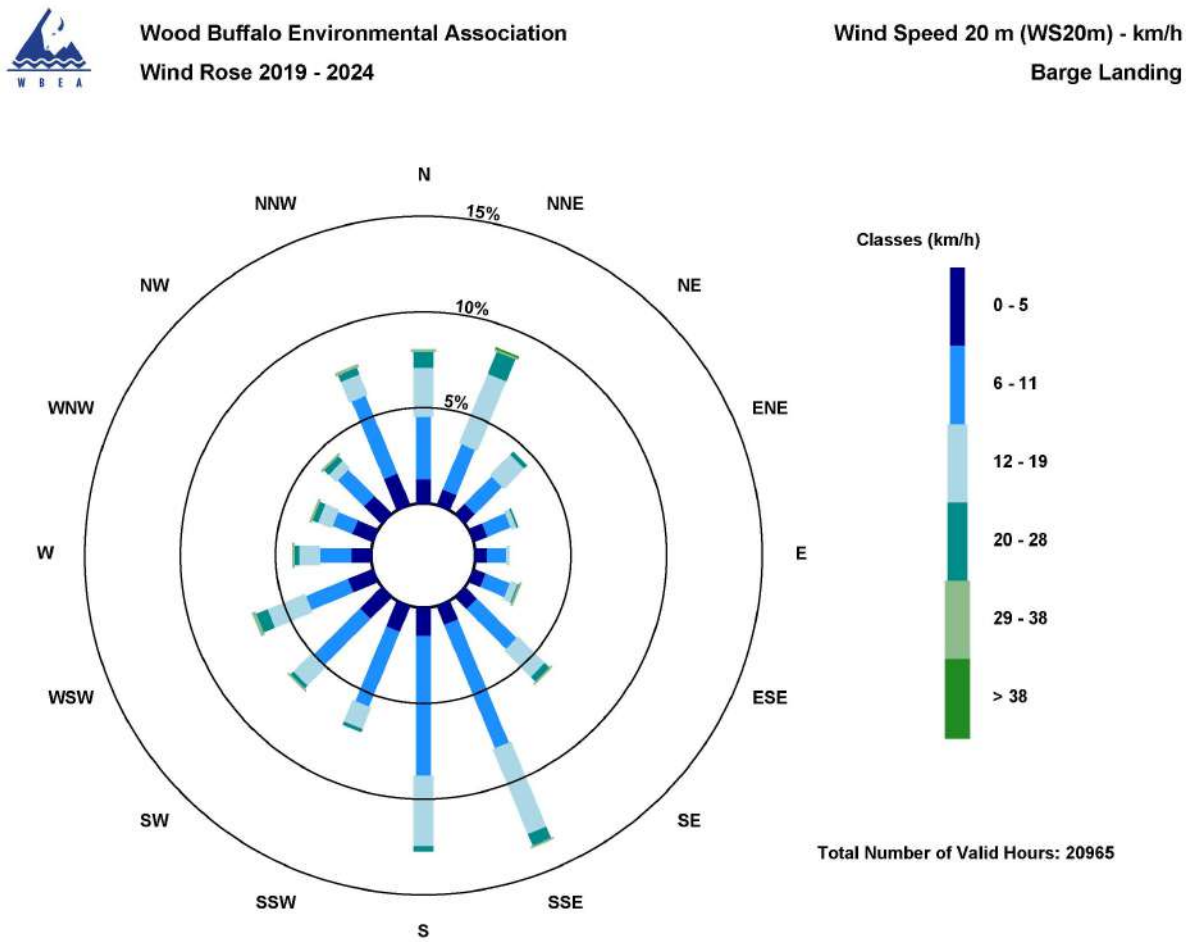

Figure 14 – Windrose (2019 – 2024)

W B E A

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Lower Camp

LAST UPDATED: MARCH 27, 2024

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General Site Information

Station

Station ID	AMS 11
Station name	Lower Camp
Date station established	1975

Location

Station street address	Located by the Athabasca River Valley at about 115 meters south of the Syncrude pump house
Legal land description	11-35-092-10 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.0267916667
Longitude	-111.500819444
UTM East	469597.806
UTM North	6320474.662
Nearest community	Fort McMurray
Community population	75186
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Syncrude Canada Ltd.
Approval number	026-03-00
Contact Name	Nikola Stears
Address	Base Plant Rd, Wood Buffalo, AB
Phone number	780-742-7281
Email address	nstears@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Syncrude open mining operations
	91 – 180 degrees	Athabasca River
	181 – 270 degrees	Athabasca River
	271 – 360 degrees	Syncrude open mining operations
Site elevation (m) (above sea level)	238 metres	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	North
Airflow restrictions	North	Pump House
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	42
	East	12
	West	12
	South	NA
Sample manifold	Type	All glass
	Inlet height above roof	1 meter
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	attached

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Laydown	79.21	Equipment Laydown
Water Pond	136.8	Reservoir
Athabasca River	33.8	River
Pumping Station	114	Syncrude Water Pump Station

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Gravel road	Low	20	Road access to lay down and pumping station

Major Point Sources

Facility Name	Source Type	Production Capacity	Distance from site (km)	Compass direction from site
Suncor Energy	Oil refinery	330,000 bbl/day	2	South
Syncrude	Oil refinery/open mining	225,000 bbl/day	3	West
Suncor Energy	Open mining operations	NA	4	East

Station Equipment

Equipment Owner: Syncrude

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43i	100841398	2015	January, 1999
H2S	Thermo Scientific	450iq	CM20080003	2015	January, 1999
THC/CH_4/NMHC	Thermo Scientific	55i	1505164381	2019	January, 1999

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G0840085	4	2022	January, 2000
WS	Met One	010C-1	N11710	4	2017	January, 1999
WD	Met One	020C-1	N12035	4	2022	January, 1999
BP	Vaisala	CS106	T2210938	4	2022	December, 2021

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2403
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3807
Zero air generator	Zero Air Generator	Teledyne/API	701	196
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	11447

Figure 1 – Area topographic map showing AMS 11.

Figure 2 – Aerial image showing AMS 11.

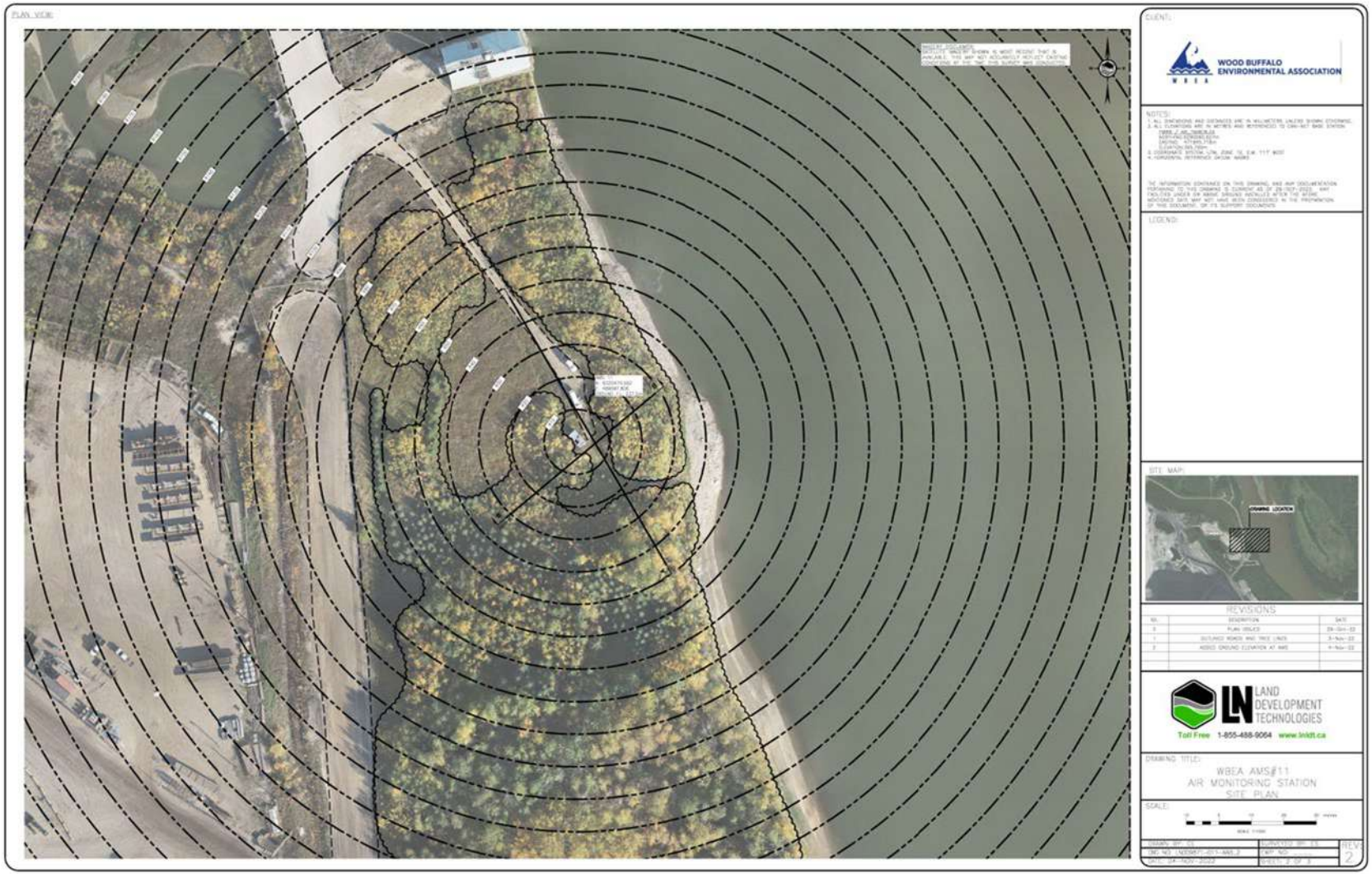

Figure 3 – Plan view image for AMS 11 site.

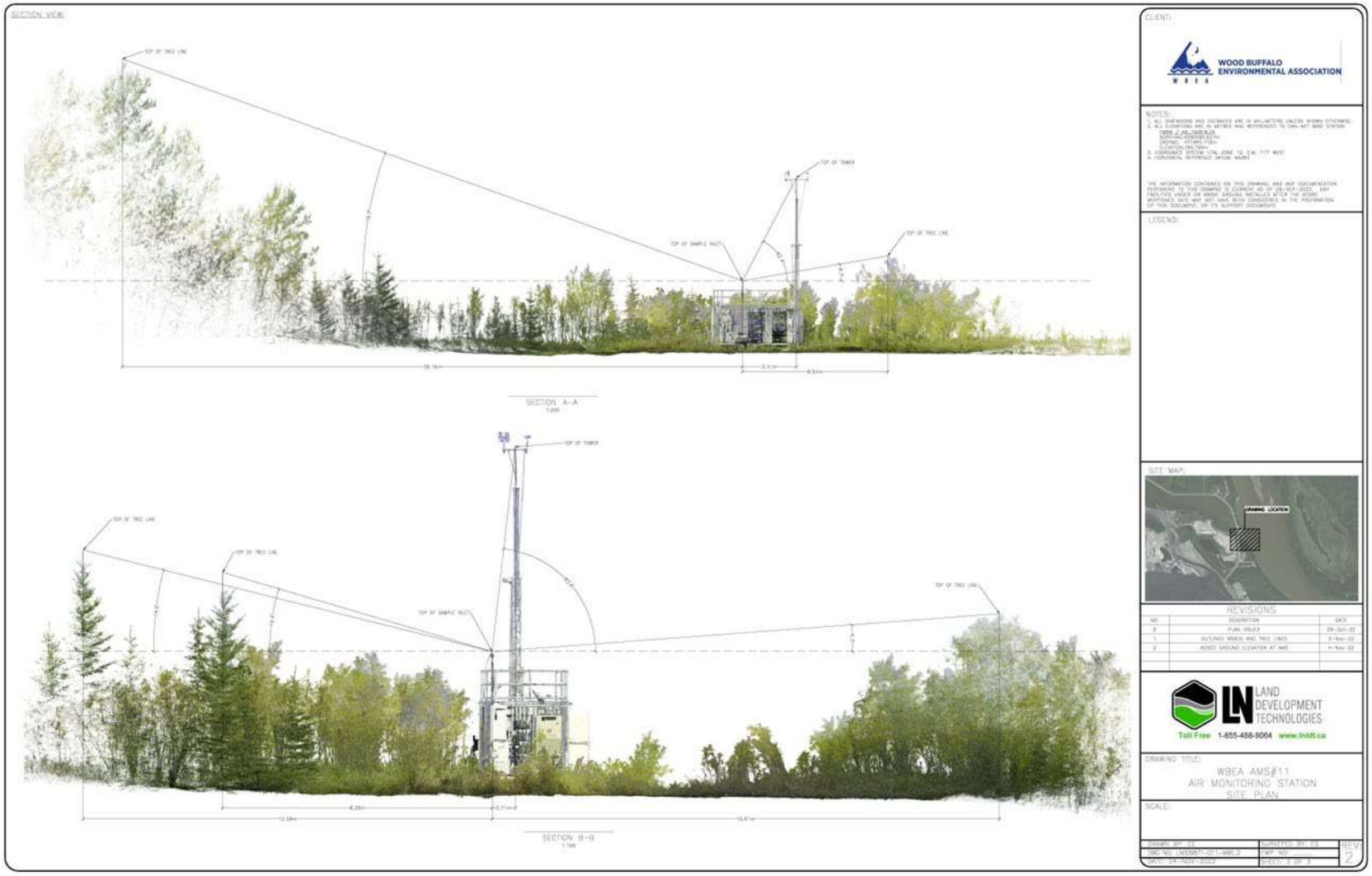

Figure 4 – Elevation view image for AMS 11 site.

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North.

Figure 6 – Environment looking East.

Figure 7 – Environment looking South.

Figure 8 – Environment looking West.

This photo is currently not available

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold.

Figure 11 – Curb shot of the monitoring station.

Figure 12 –Photo of the front and the back of instrument rack.

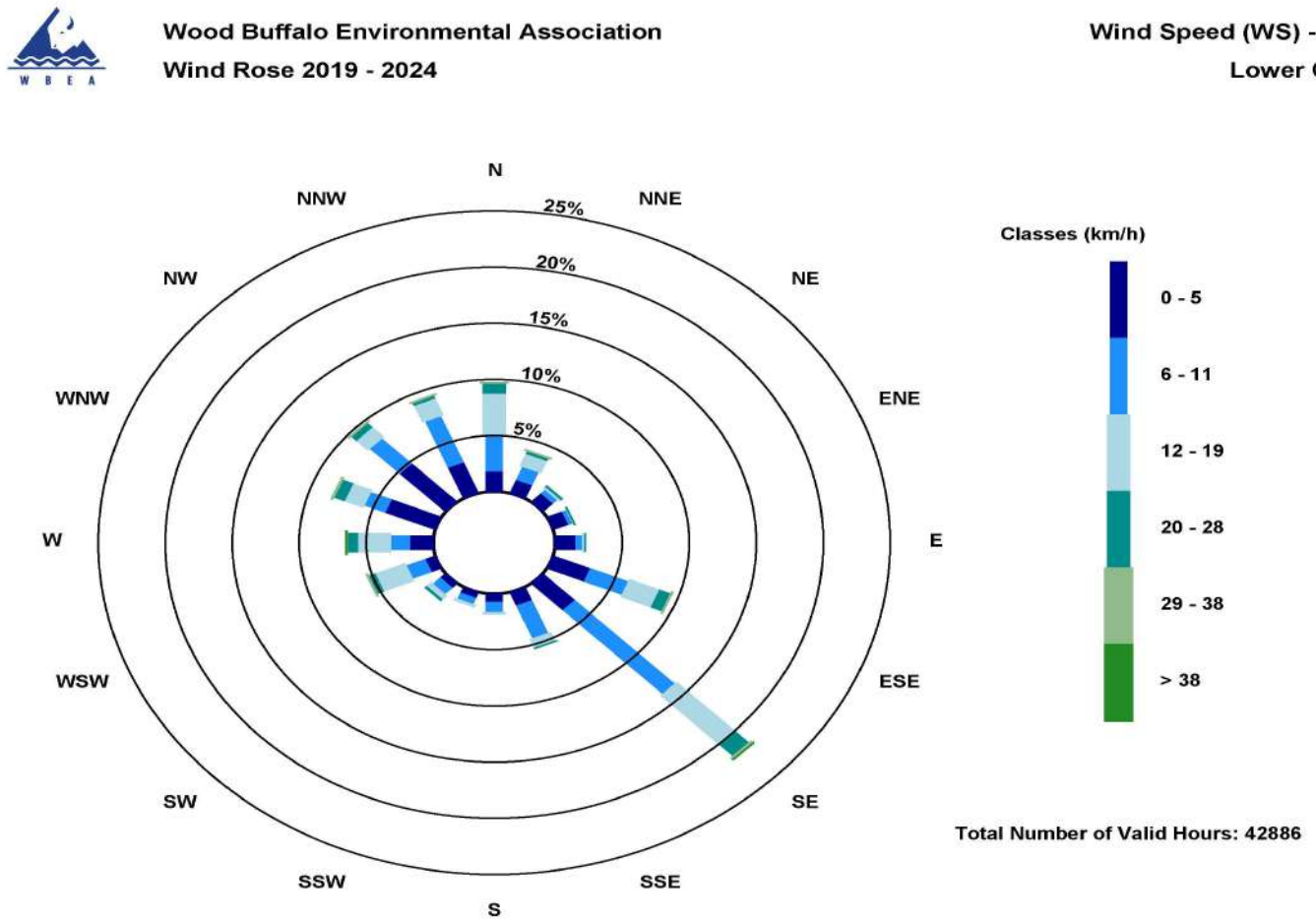

Figure 13 – Windrose (five year)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Fort McKay South

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 13
Station name	Fort McKay South
Date station established	2002

Location

Station street address	None
Legal land description	4-13-094-11 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.149175
Longitude	-111.642344
UTM East	461136
UTM North	6334175
Nearest community	Fort McKay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Syncrude Canada Ltd
Approval number	026-03-00
Contact Name	Nikola Stears
Address	Bag 4009, MD 4160, Fort McMurray, Alberta, T9H 3L1
Phone number	780-742-7281
Email address	nstears@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Forest
	91 – 180 degrees	Forest
	181 – 270 degrees	Forest
	271 – 360 degrees	Forest
Site elevation (m) (above sea level)	268 m	
Angle of elevation to nearby buildings	Greatest angle	None
	Building direction	None
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	150
	East	108
	West	56
	South	150
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Asphalt	High	326	Main Road to Fort McKay and CNRL Horizon
Dirt	Low	99	Road to AMS 13
Dirt	Very Low	10	Access Road to AMS 13

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNRL Horizon	OilSands Plant	21.9	N
Syncrude	Tailings pond	6.2	SW
Syncrude	OilSands Plant	12.3	S
Fort McKay Enterprises Ltd.	Laydown Yard	1	SE
Bouchier Group	LayDown Yard	1	SE
BME Ltd.	Laydown Yard	1	SE
Wood Buffalo Water Treatment Plant	Water Treatment Plant	4.9	N
CNRL Albian	Tailings pond	9.2	NE
CNRL Albian	Oilsands Plant	14.1	NE

Station Equipment

Equipment Owner: Syncrude Canada Ltd.

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Teledyne/API	T100	599	2016	January, 1999
TRS	Thermo Scientific	43i-TLE	1180540017	2016	January, 1999
$NO/NO_x/NO_2$	Thermo Scientific	42i	1410661329	2016	January, 1999
$THC/CH_4/NMHC$	Thermo Scientific	55i	1172750023	2023	January, 1999
O_3	Teledyne/API	T400	3871	2021	January, 1999
$PM_{2.5}$	Teledyne/API	T640	1335	2023	January, 1999
PM_{10}	Thermo Scientific	2000i	20001203861408	2016	July, 2019
Time-Integrated					
PM_{10}	Thermo Scientific	2000i	20001203861408	2016	-
VOC	Tisch	TE123	1023	2016	-
TRS converter	Thermo Scientific	CDN-101	521	2016	

Commented [DM1]: Same serial number as above, is that accurate?

Commented [DM2]: Do we need this?

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G430047	Class 3	2016	January, 2002
WS	Met One	010C-1	N10022	Class 4	2022	January, 1999
WD	Met One	020C-1	W16101	Class 4	2021	January, 1999

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	11038
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	2248
Zero air generator	Zero Air Generator	Teledyne/API	701	1117
Shelter / Building	Air monitoring portable	C&V	8 x 16 trailer	5201657
HVAC	Heating and air conditioning system. Wall mount unit	Intherem	E2EB-010HB	E2E011101302

Figure 1 – Area Topographic map showing AMS 13

Figure 2 – Aerial image showing AMS 13

Figure 3 – Plan view image for AMS 13 – Fort McKay South

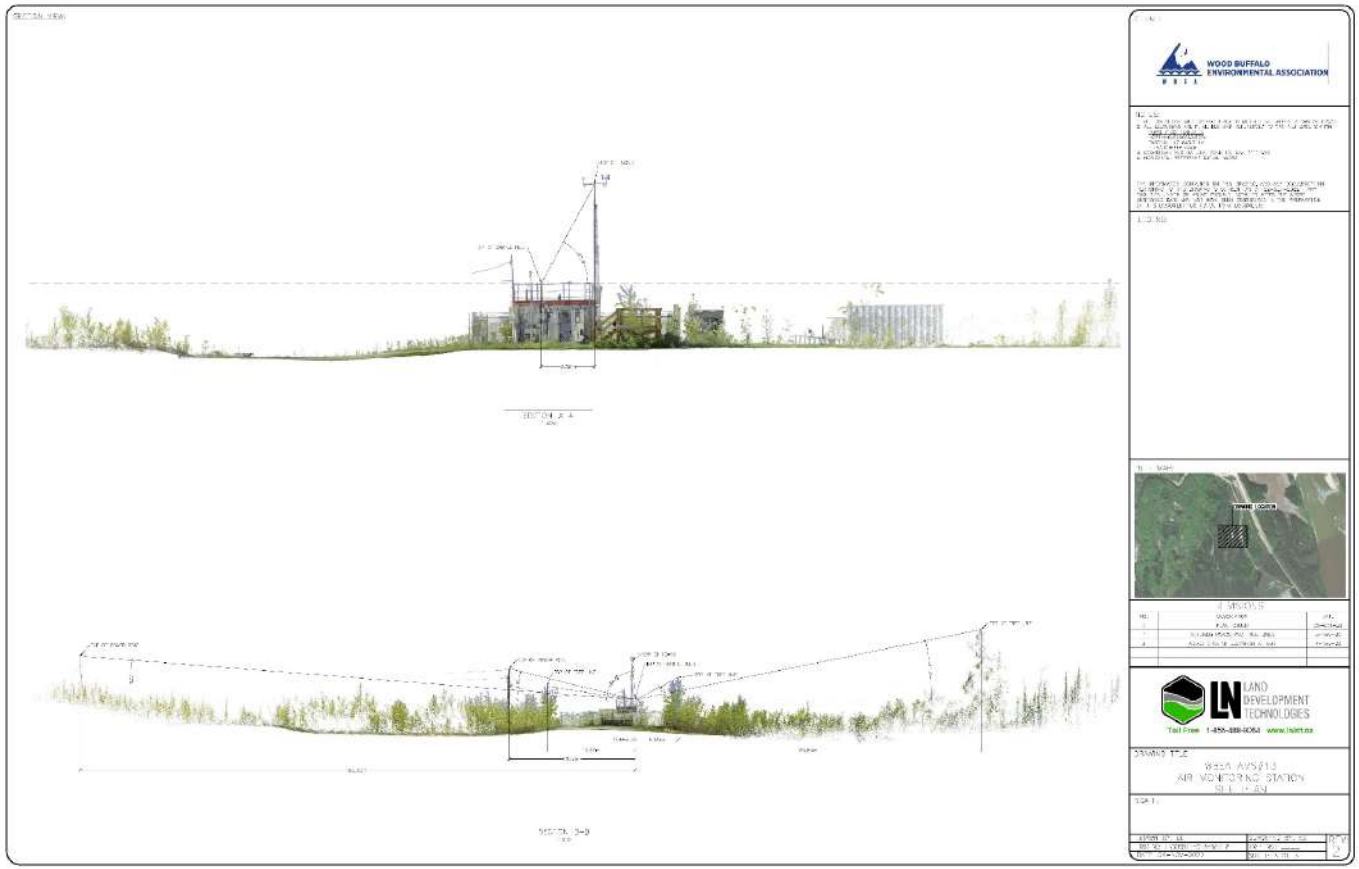

Figure 4 – Elevation image for AMS 13 – Fort McKay South

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold.

Figure 11 – Curb shot of the monitoring station.

Figure 12 –Photo of the front and the back of instrument rack

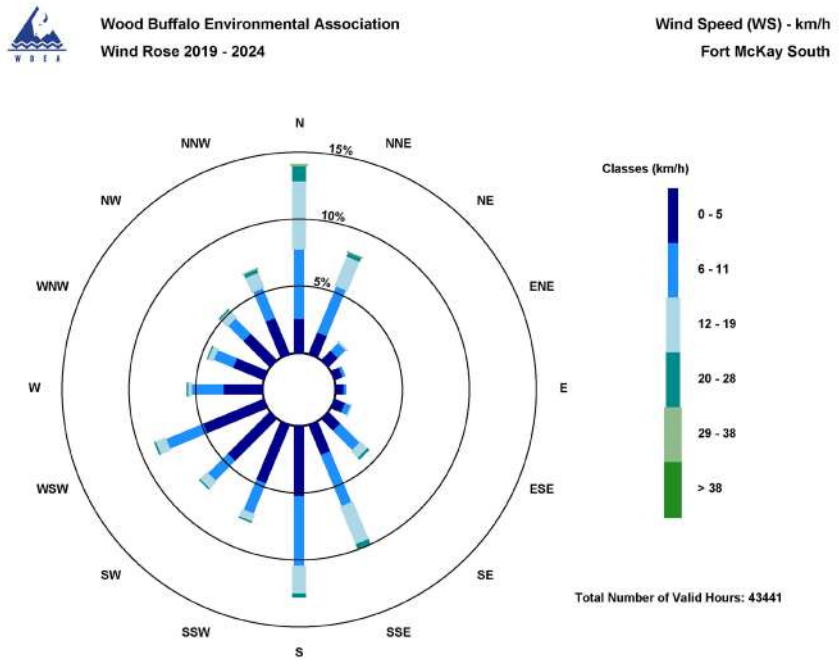

Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Anzac

LAST UPDATED: MARCH 27, 2024

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General Site Information

Revision Date: March 27, 2024

Station

Station ID	AMS 14
Station name	Anzac
Date station established	January 1, 2006

Location

Station street address	Stony Mountain Road
Legal land description	16-09-086-07 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56.4489083333
Longitude	-111.037975
UTM East	497659
UTM North	6256044
Nearest community	Anzac
Community population	506
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	CNOOC Petroleum North America ULC
Approval number	137467-01-00; 236394-00-00
Contact Name	Narges Boroujerdi
Address	Suite 2300, 500 Centre St. SE, Calgary, AB, T2G 1A6
Phone number	403-699-4000
Email address	Narges.boroujerdi@intl.cnoocltd.com

Site Description

Land use by sector	0 – 90 degrees	Trees
	91 – 180 degrees	Trees
	181 – 270 degrees	House
	271 – 360 degrees	Trailer
Site elevation (m) (above sea level)	497 m	
Angle of elevation to nearby buildings	Greatest angle	18
	Building direction	West
Airflow restrictions	North	None
	East	None

	South	None
	West	House
Sample manifold	Type	All glass
	Inlet height above roof	1 meter
Wind Sensors	Type	Cup and vane
	Height above ground (m)	20 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Trailer	17 m	Main road of Anzac
House	18 m	House west of station

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Pavement	Low	62 m	Main road of Anzac
Access road	Low	16 m	Access road to the station
Railway	Low	70 m	Freight train passage

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNOOC Long Lake	SAGD	4.38	Soutwest

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Scientific	43i	710321322	2022	February, 2006
TRS	Thermo Scientific	43i-LTE	1218153582	2022	February, 2006
TRS	CD-Nova	CDN-101	503	2022	
$NO/NO_x/NO_2$	Thermo Scientific	42i	1152430008	2022	February, 2006
$THC/CH_4/NMHC$	Thermo Scientific	55i	12300522720	2022	February, 2006
O_3	Thermo Scientific	49i	1426262595	2022	February, 2006
$PM_{2.5}$	Teledyne	T640	825	2022	June, 2006
Time-Integrated					
PM_{10}	Thermo Scientific	2000i	2000i 294821408	-	-
PM_{10}	Thermo Scientific	2000i	2000i 204581405	-	-
$PM_{2.5}$	Thermo Scientific	2000i	2000i 203871308	-	-
$PM_{2.5}$	Thermo Scientific	2000i	2000iW205911510	-	-
PAH	Tisch Environmental	TE-PIF+BL	1001055	-	-
VOC	Tisch Environmental	TE-123	1024	2022	-
Dustfall	Advantage Manufacturing	-	-	2022	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G0840082	2	-	October, 2011
WS	Met One	010C-1	E5132	3	-	February, 2006
WD	Met One	020C-1	Z1048	3	-	February, 2006
Leaf Wetness	Decagon Devices	LWS-L	N/A	N/A	2022	October, 2011

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2582
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3060
Zero air generator	Zero Air Generator	Teledyne/API	T701H	357
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB 21 18397

HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	n/a

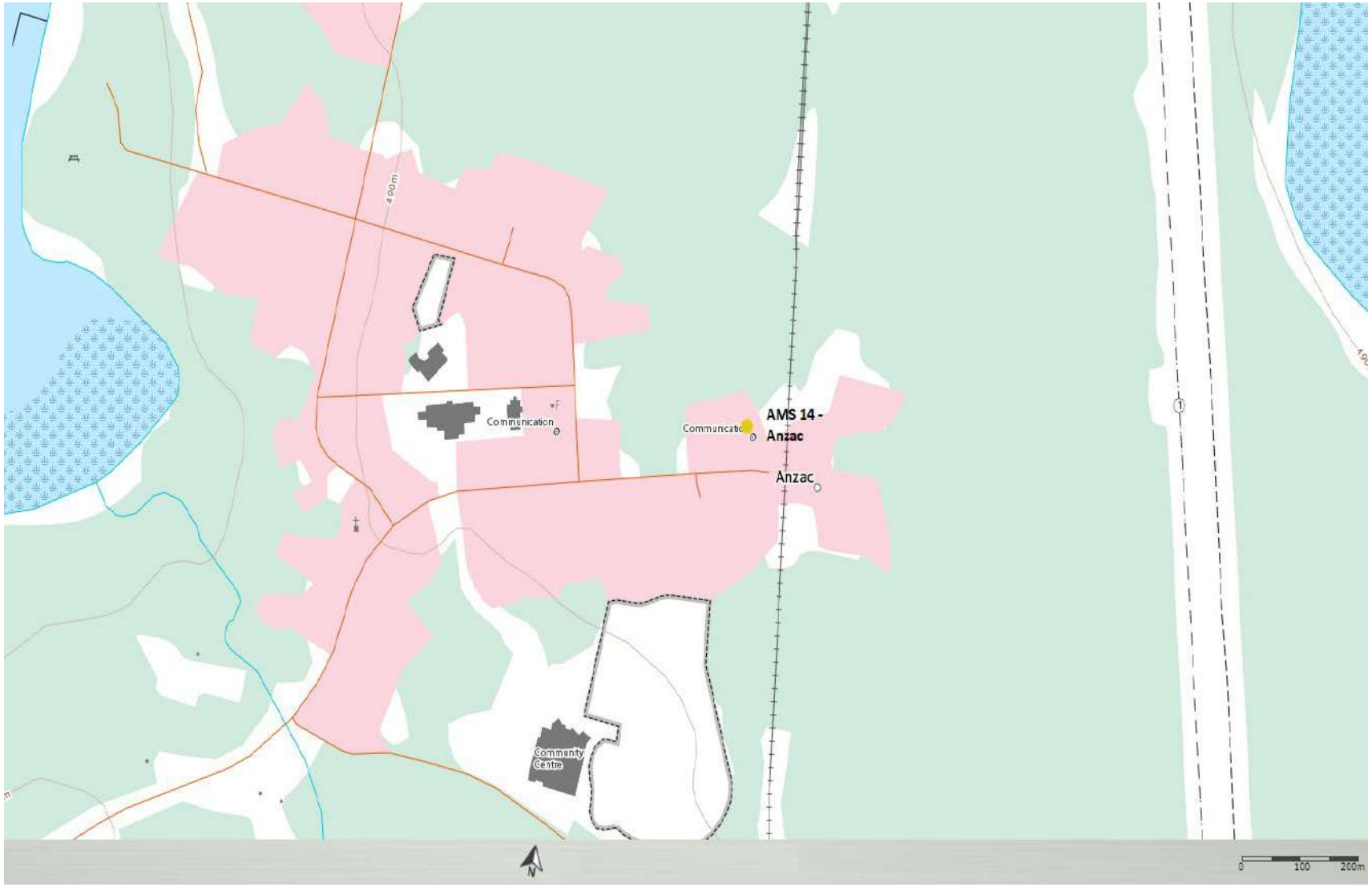

Figure 1 – Area topographic map showing AMS 14.

Figure 2 – Aerial image showing AMS 14.

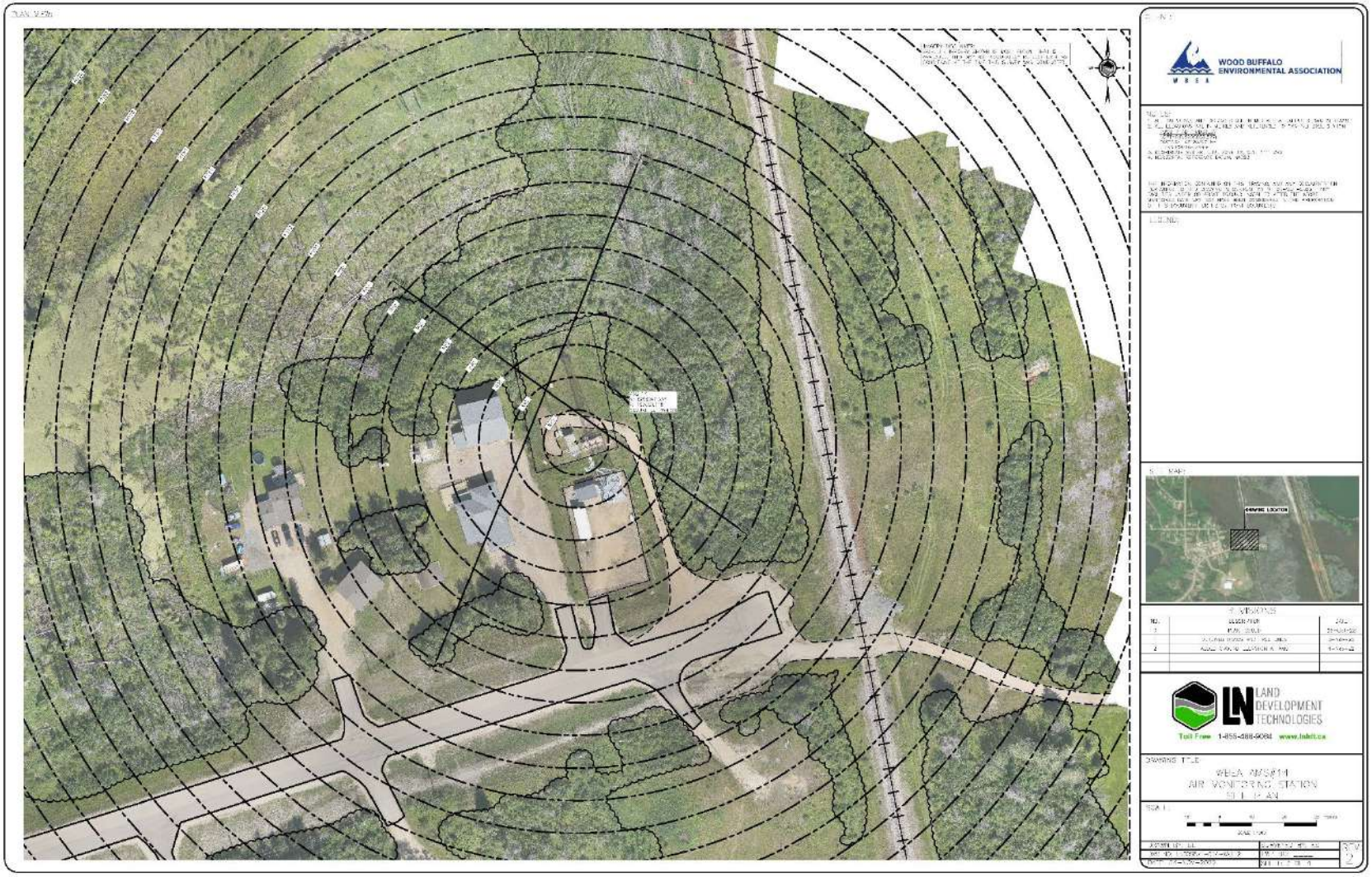

Figure 3 – Plan view image for AMS 14 site.

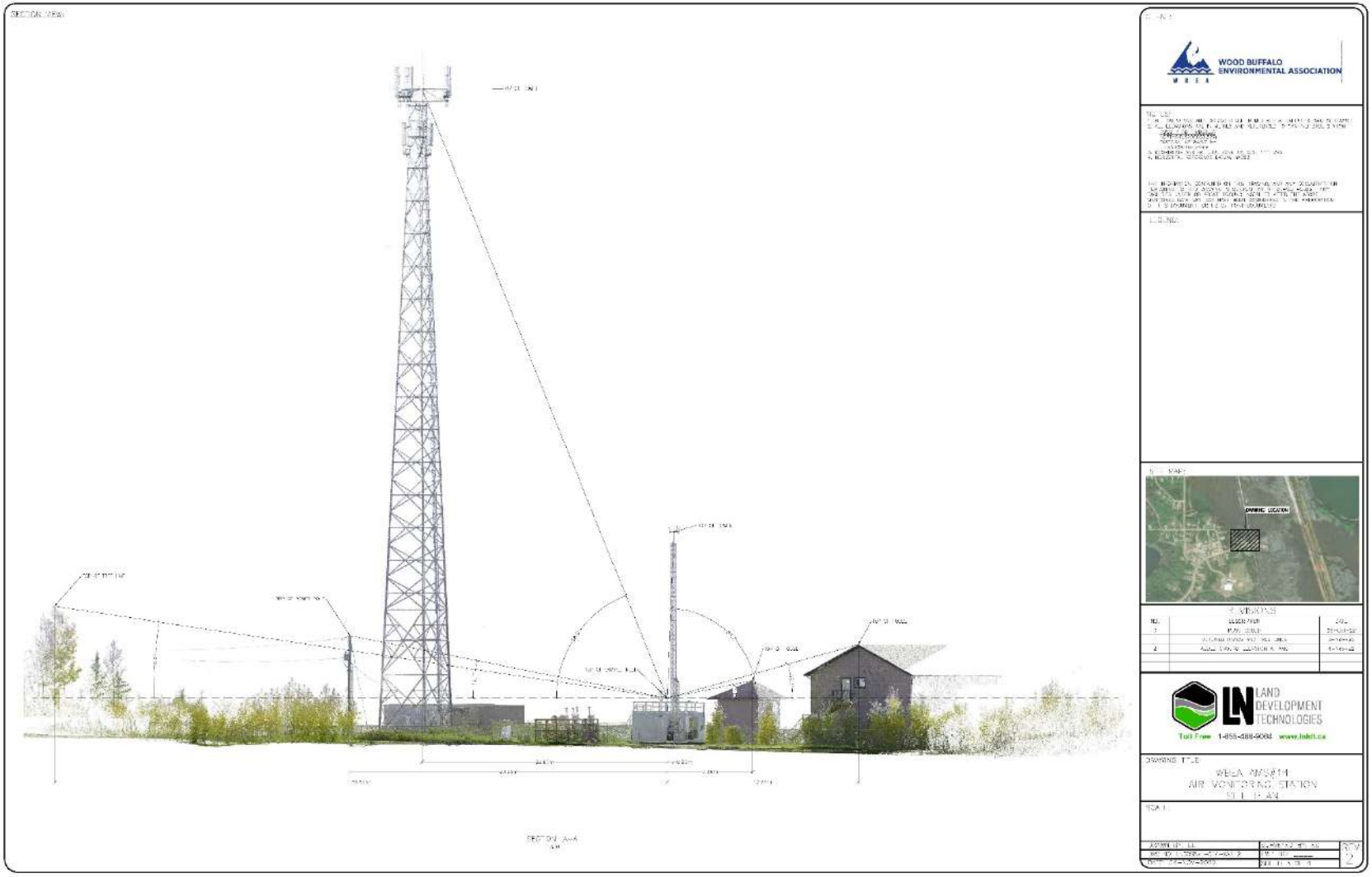

Figure 4 – Elevation view image for AMS 14 site.

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North.

Figure 6 – Environment looking East.

Figure 7 – Environment looking South.

Figure 8 – Environment looking West.

Figure 9 – Meteorological Tower.

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold.

Figure 11 – Curb shot of the monitoring station.

Figure 12 –Photo of the front and the back of instrument rack.

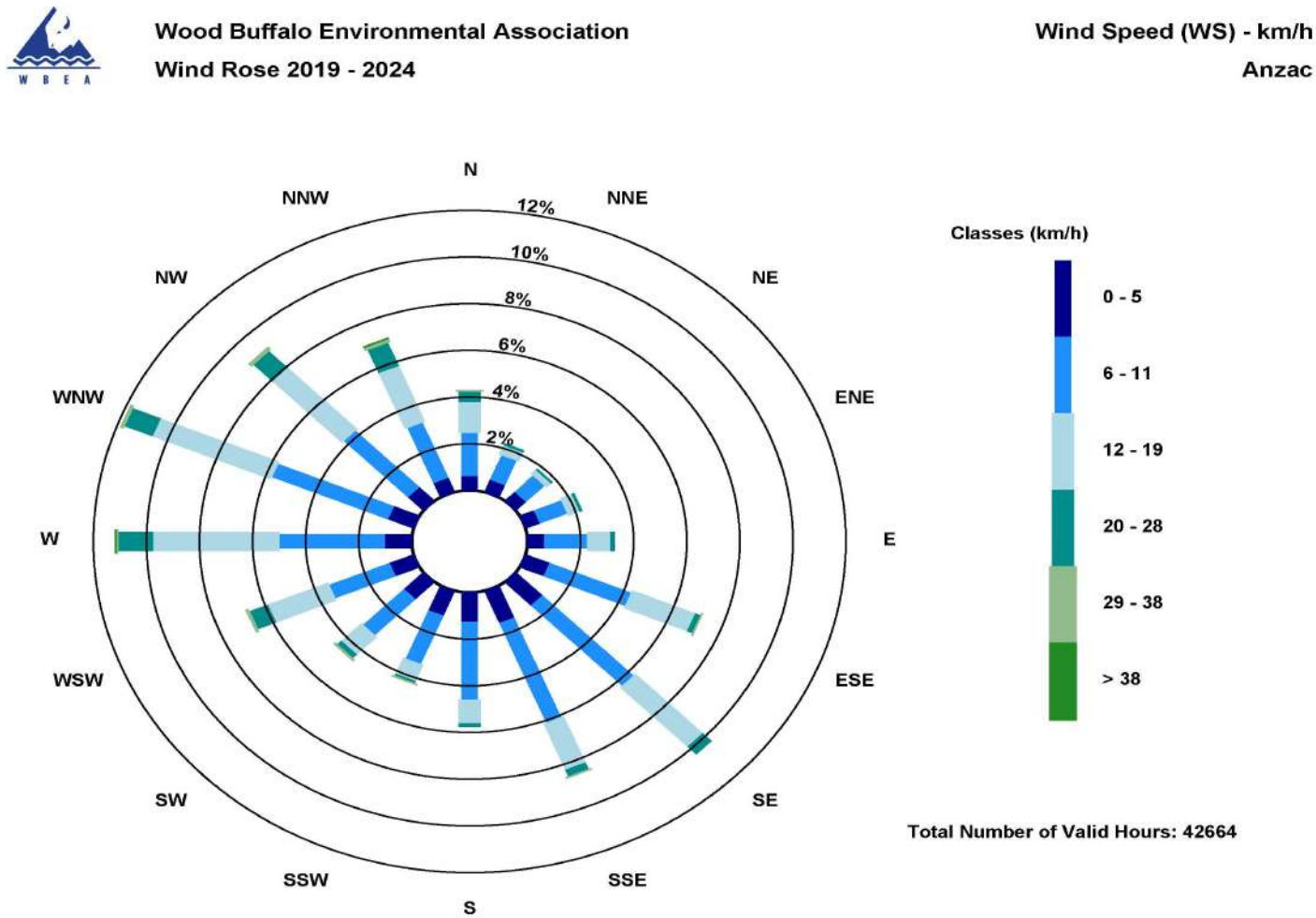

Figure 13 – Windrose (2018-2022)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Wapasu

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 17
Station name	Wapasu
Date station established	November, 2013

Location

Station street address	Located northeast of Husky Sunrise.
Legal land description	9-22-095-07 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.25913818
Longitude	-111.0385386
UTM East	497672
UTM North	6346240
Nearest community	Fort Mackay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Cenovus
Approval number	206355-01-00
Contact Name	Rene Morales
Address	N/A
Phone number	403-816-6144
Email address	Rene.morales@cenovus.com

Site Description

Land use by sector	0 – 90 degrees	Decommissioned well pad
	91 – 180 degrees	Wooded area
	181 – 270 degrees	Wooded area
	271 – 360 degrees	Site access road
Site elevation (m) (above sea level)	491	
Angle of elevation to nearby buildings	Greatest angle	N/A
	Building direction	N/A
Airflow restrictions	North	No
	East	No

	South	No
	West	No
Distance to nearest trees (m)	North	45 m
	East	45 m
	West	80 m
	South	45 m
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	N/A	N/A

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Access road	Low	5	Gravel access road used by pickup trucks.
Canterra Main Road	High	1500	Heavily trafficked gravel road frequented by heavy equipment, tractor trailers, and pickup trucks.

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Suncor Firebag	Oilsands Operation	10	SE
Cenovus Sunrise	Oilsands Operation	2	SW

Station Equipment

Equipment Owner:

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Environmental	43i	1218153459	March, 2016	December, 2013
H_2S	Thermo Environmental	450i	1218453583	March, 2016	December, 2013
$NO/NO_x/NO_2$	Thermo Environmental	42iQ	12300522720	June, 2023	December, 2013
THC	Thermo Environmental	51i	1218153352	March, 2016	December, 2013
O_3	Teledyne/API	T400	3870	March, 2016	January, 2014
$PM_{2.5}$	Teledyne/API	T640	1183	March, 2016	December, 2013
Time-Integrated					
ECOC	Thermo Environmental	2000i	20001204511404	March, 2016	-
PC	N-CON	00-120-2	60198	March, 2016	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G4330041	3	September, 2021	December, 2013
WS	Met One	010C-1	N14664	3	May, 2018	December, 2013
WD	Met One	020C-1	P19942	3	May, 2018	December, 2013
PC	OTT	Pluvio 2	31209514	3	March, 2016	December, 2015

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2663
Datalogger	Datalogger	Campbell Scientific	CR310	6009
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	2449
Zero air generator	Zero Air Generator	Teledyne/API	701H	359
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB12-15686
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA

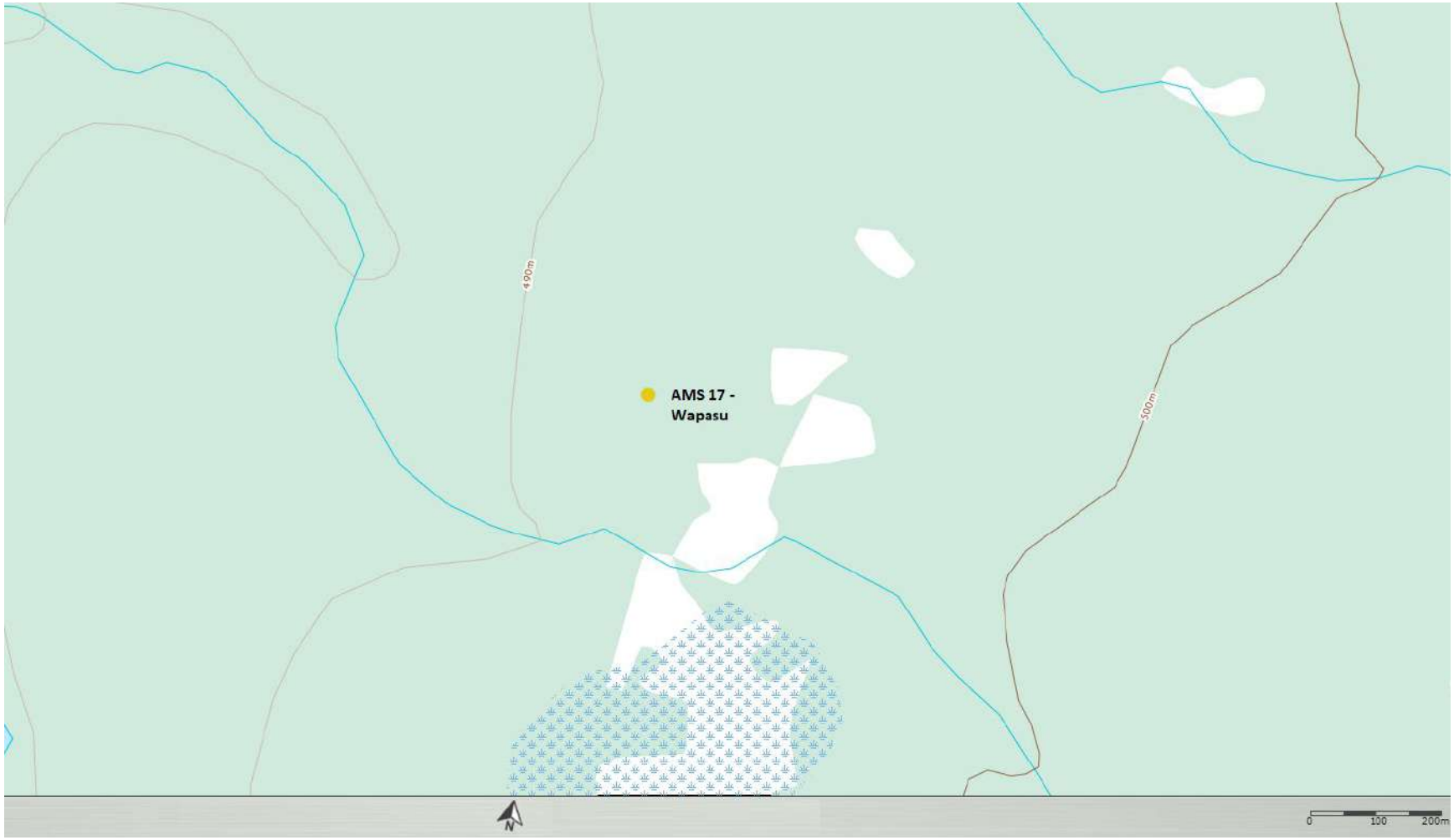

Figure 1 – Area topographic map showing AMS 17

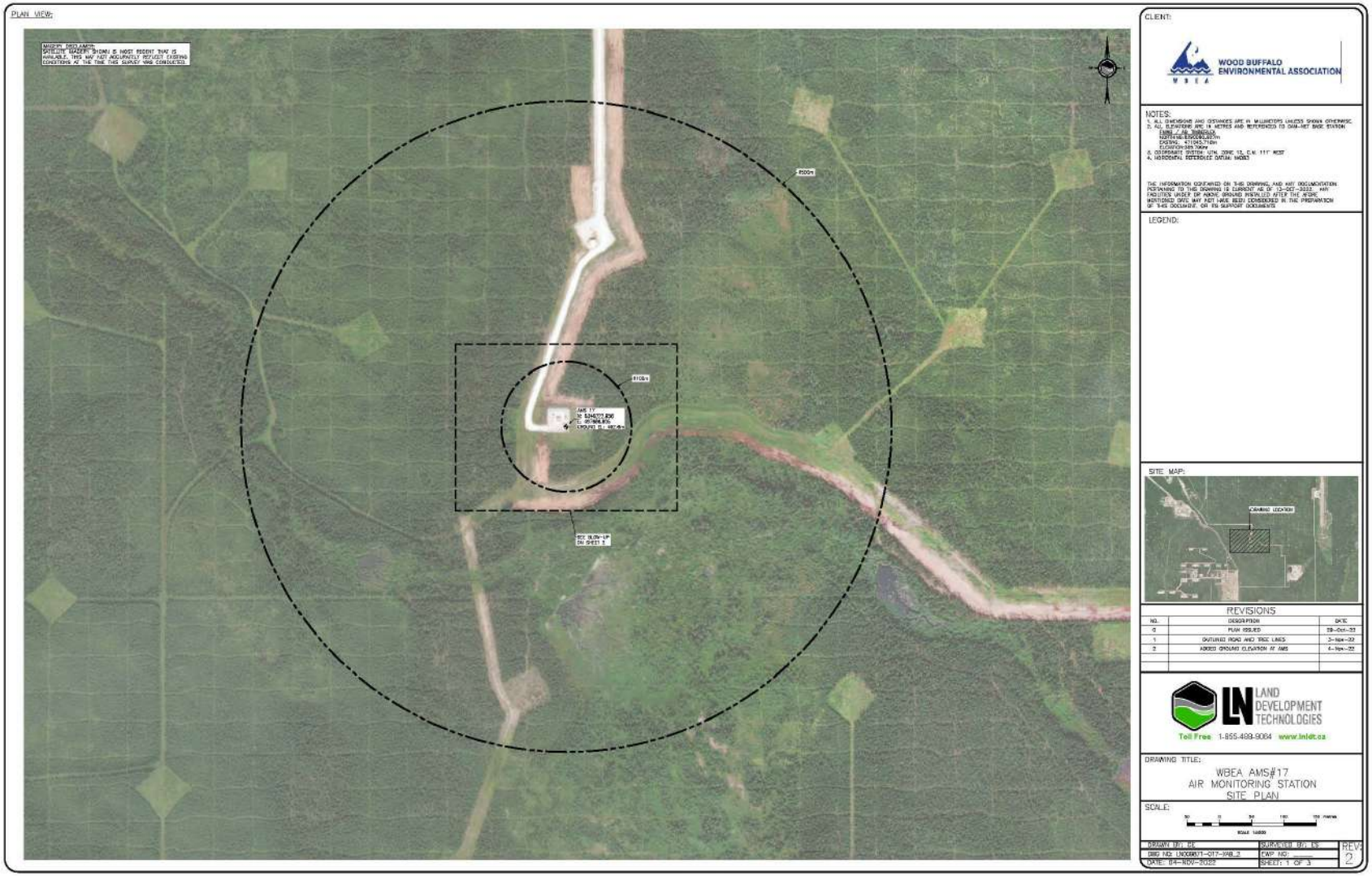

Figure 2 – Aerial photo showing AMS 17

Figure 3 – Plan view sketch for AMS 17 site

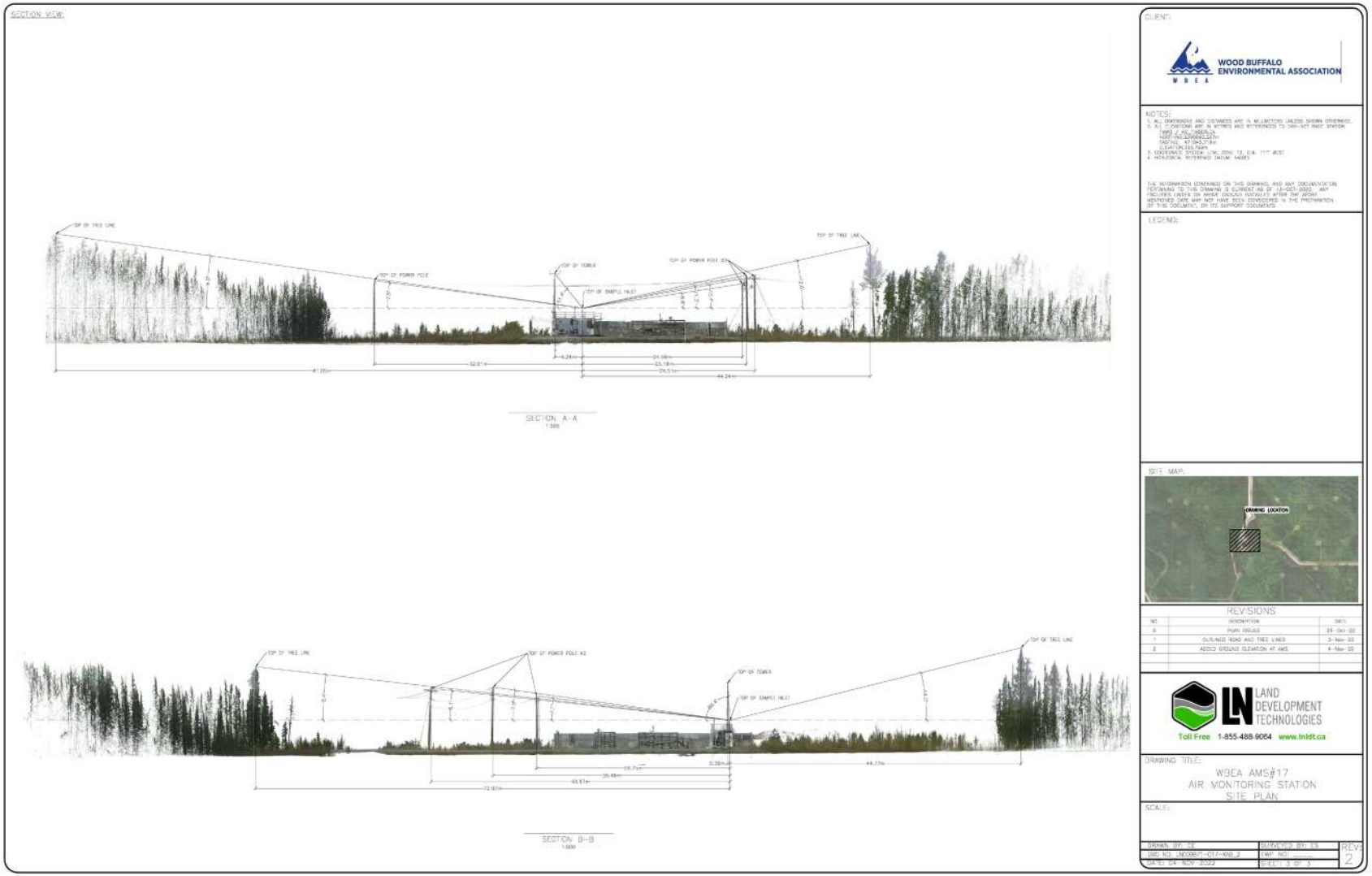

Figure 4 – Elevation view sketch for AMS 17 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

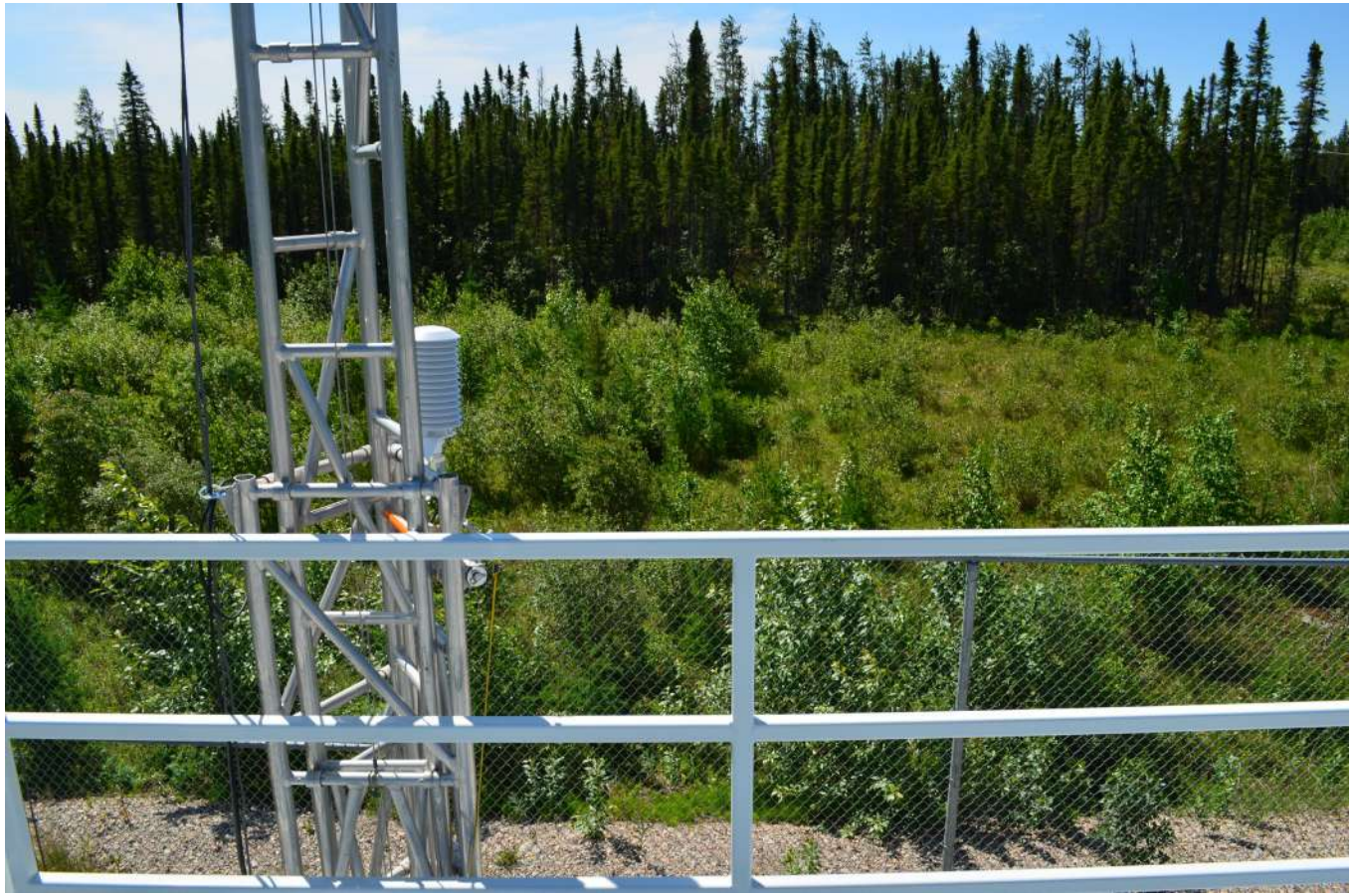

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

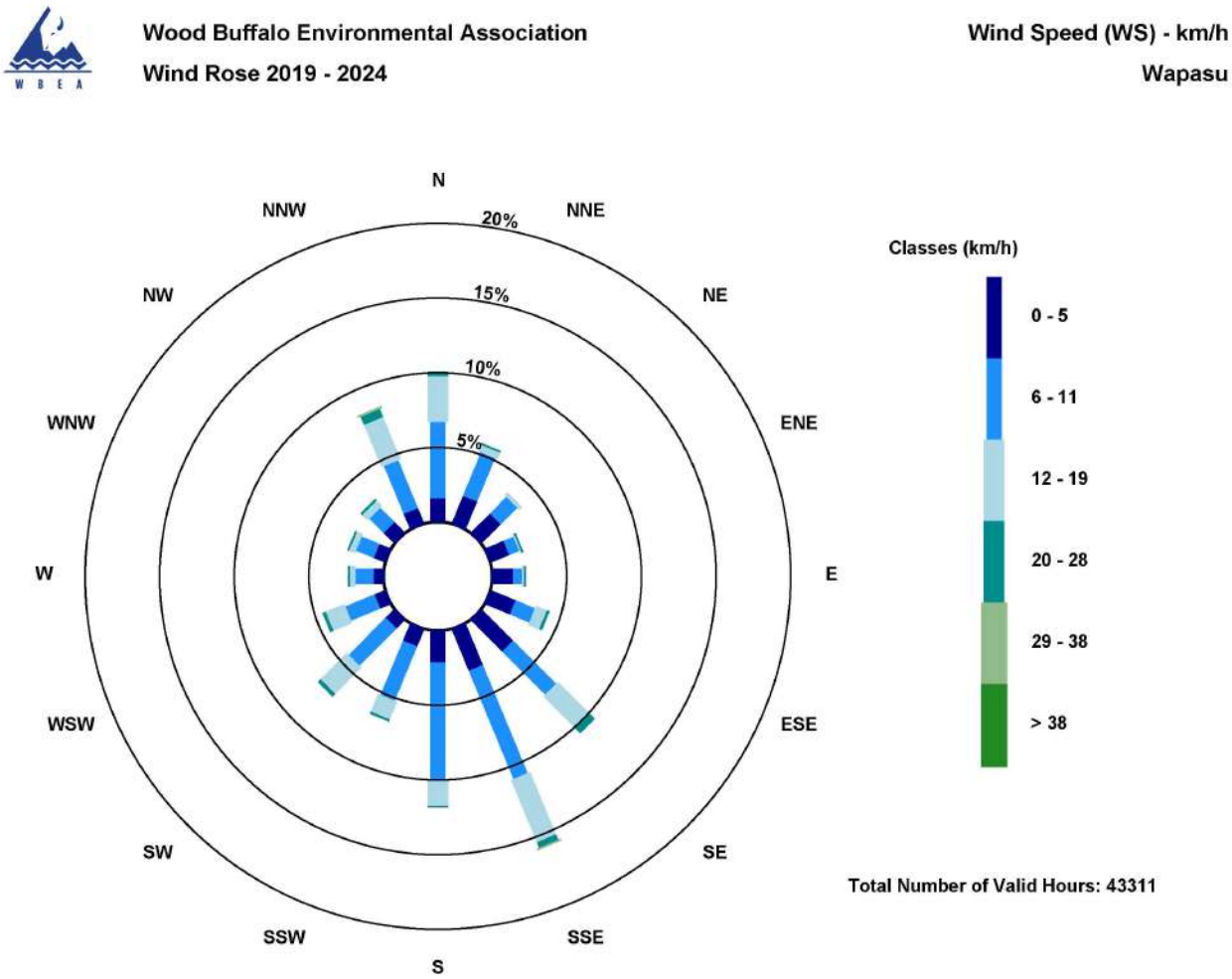

Figure 13 – Windrose (2019-2024)

W B E A

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Stony Mountain

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 18
Station name	Stony Mountain
Date station established	June 2015

Location

Station street address	NA
Legal land description	1-33-076-08 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.621487
Longitude	-111.172798
UTM East	489125
UTM North	6163958
Nearest community	Conklin
Community population	229
Census Year	2018

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	NA
Approval number	NA
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3-805 Memorial Drive, Fort McMurray, Alberta, T9K 0K4
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Trees
	91 – 180 degrees	Trees
	181 – 270 degrees	Trees
	271 – 360 degrees	Fire tower, trees
Site elevation (m) (above sea level)	673	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	30
	East	30
	West	30
	South	30
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	20
	Distance from station (m)	2

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Fire watch tower	100 m NW of Station	Fire lookout tower, operated by the province of Alberta
Communication Tower	30 m E of Station	Cell tower

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Access road	Low	10	Dirt/sand road

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Cenovus	SAGD	12.26	SE
CNRL	SAGD	15	SE

Station Equipment

Equipment Owner:

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Environmental	43i	1501301453	2015	August, 2015
TRS	Thermo Environmental	43i – TLE	1218153359	2021	August, 2015
$NO/NO_x/NO_2$	Thermo Environmental	42i	1336160088	2016	August, 2015
$THC/CH_4/NMHC$	Thermo Environmental	55i	1193585647	2023	September, 2015
O_3	Teledyne API	T400	825	2019	August, 2015
CO	Teledyne API	T300	3504	2021	July, 2019
CO_2	Teledyne API	T360	283	2022	July, 2019
$PM_{2.5}$	Teledyne API	T640	1335	2022	August, 2015
Time-Integrated					
PC	N-CON Systems	00-120-2	60140	2018	-
$PM_{2.5}$ EC/OC	Thermo Environmental	2000i-A-N	2000IW 20691 1702	2018	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G0840106	3	2018	August, 2015
WS	Met One	010C-1	A1406	4	2022	August, 2015
WD	Met One	020C-1	NA	4	2022	August, 2015
PC	OTT	OTT Pluvio-2	363526	3	2016	December, 2015
LW	Decagon Devices	LWS-L	NA	N/A	2022	October, 2015
GR	Epply	8-48 Solar Rad	38007	N/A	2021	August, 2015

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	12345
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	12345
Zero air generator	Zero Air Generator	Teledyne/API	701	12345

Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	12345
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	12345

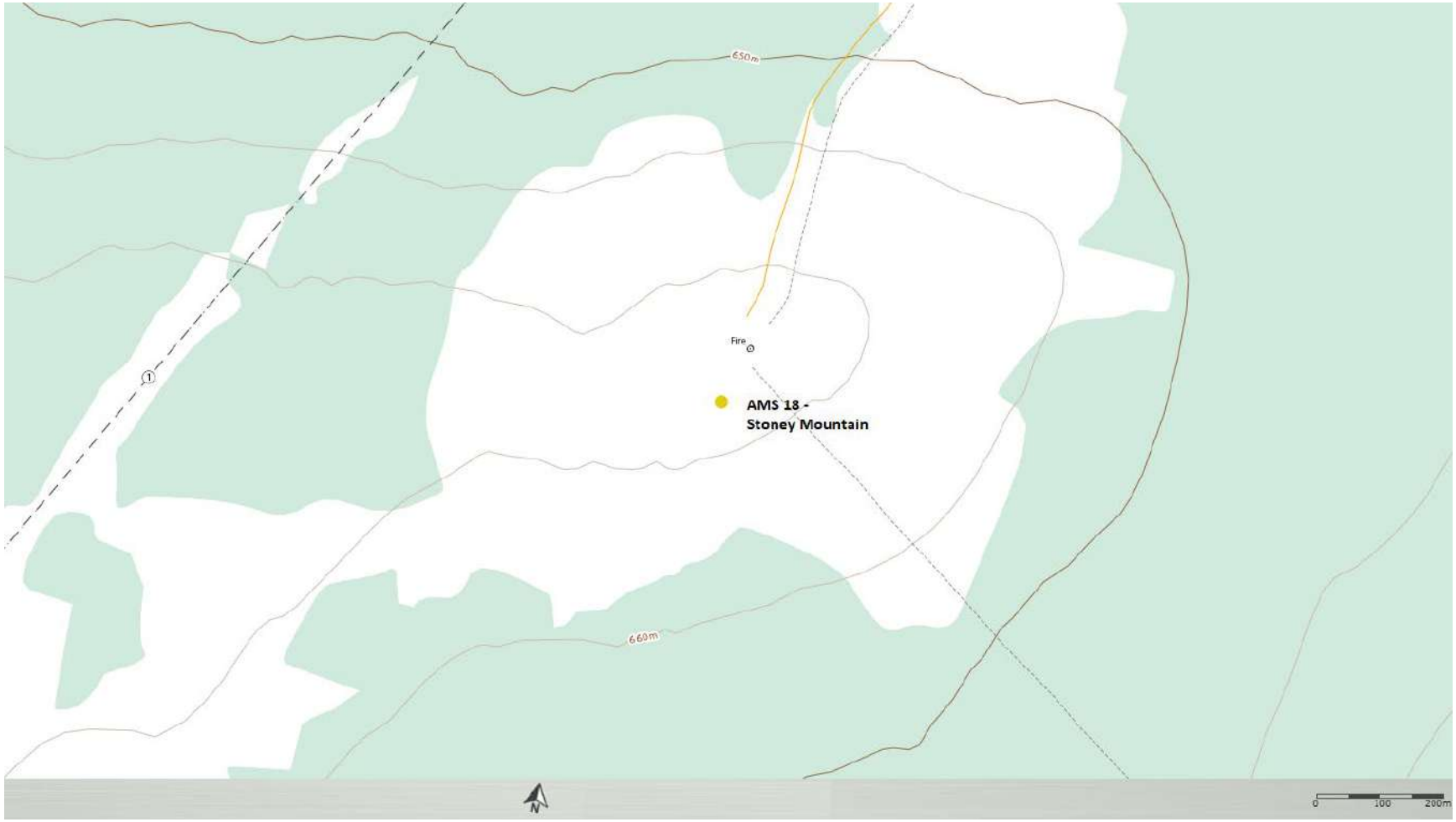

Figure 1 – Area topographic map showing AMS 18

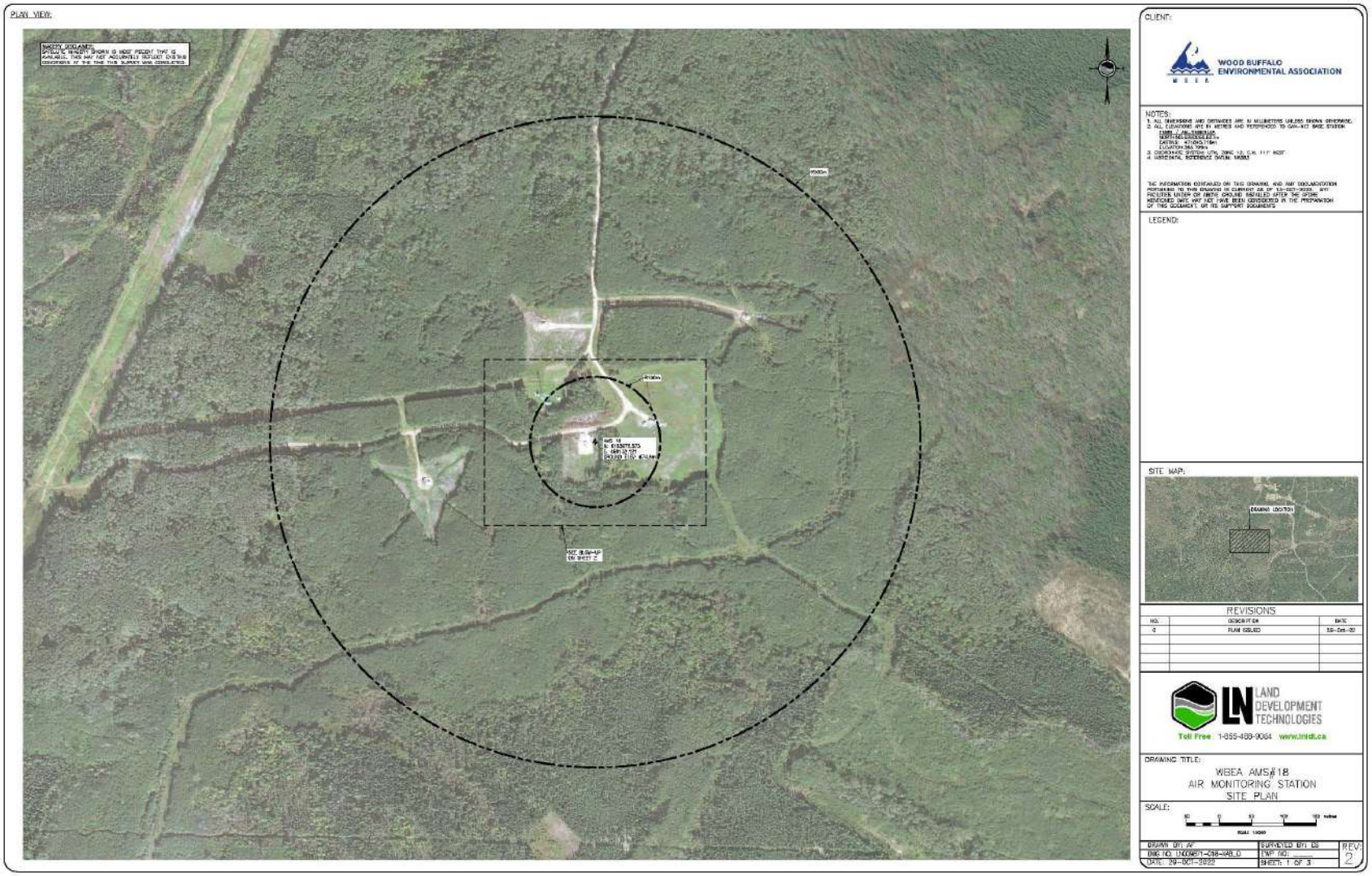

Figure 2 – Aerial photo showing AMS 18

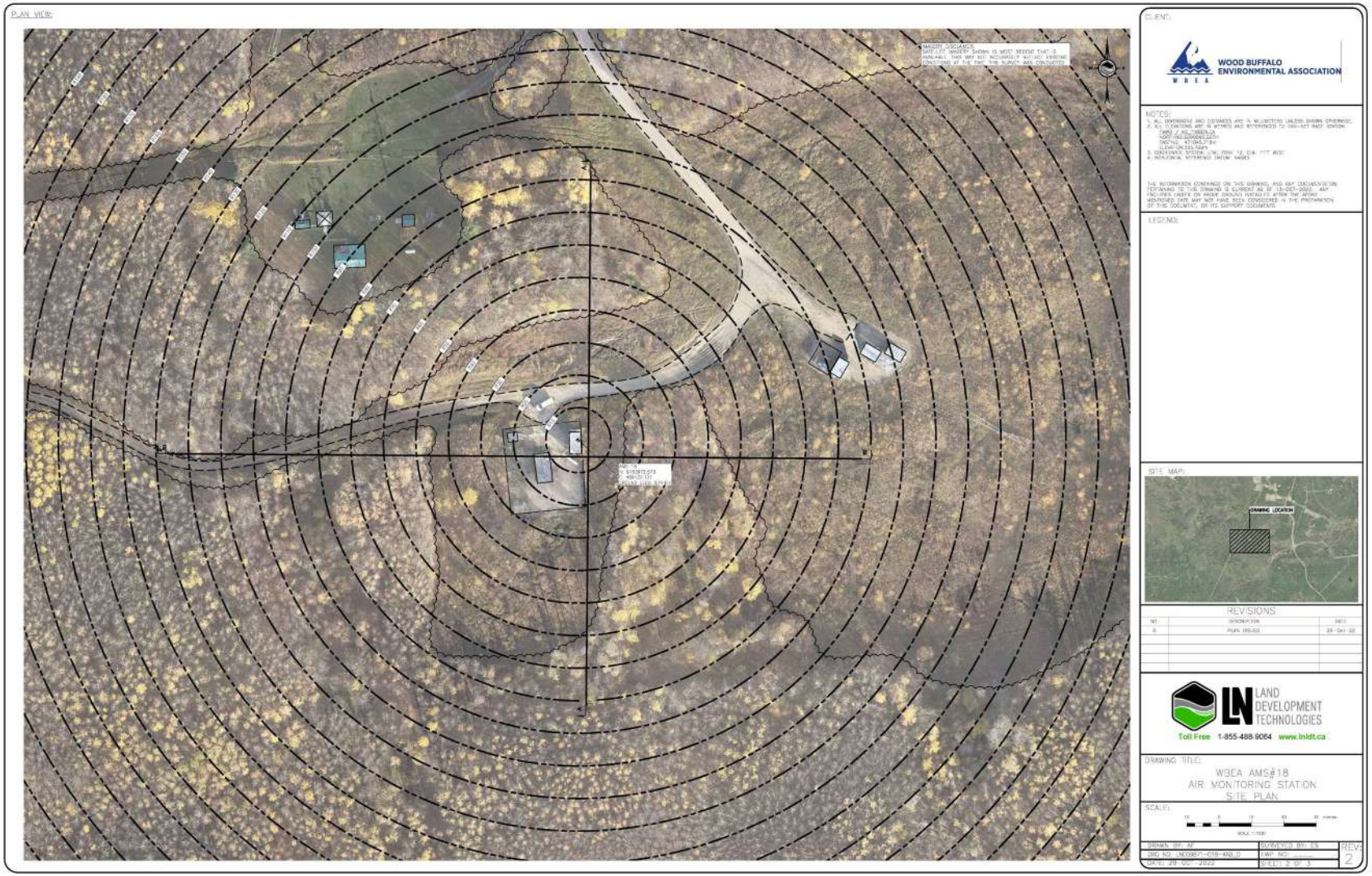

Figure 3 – Plan view sketch for AMS 18 site

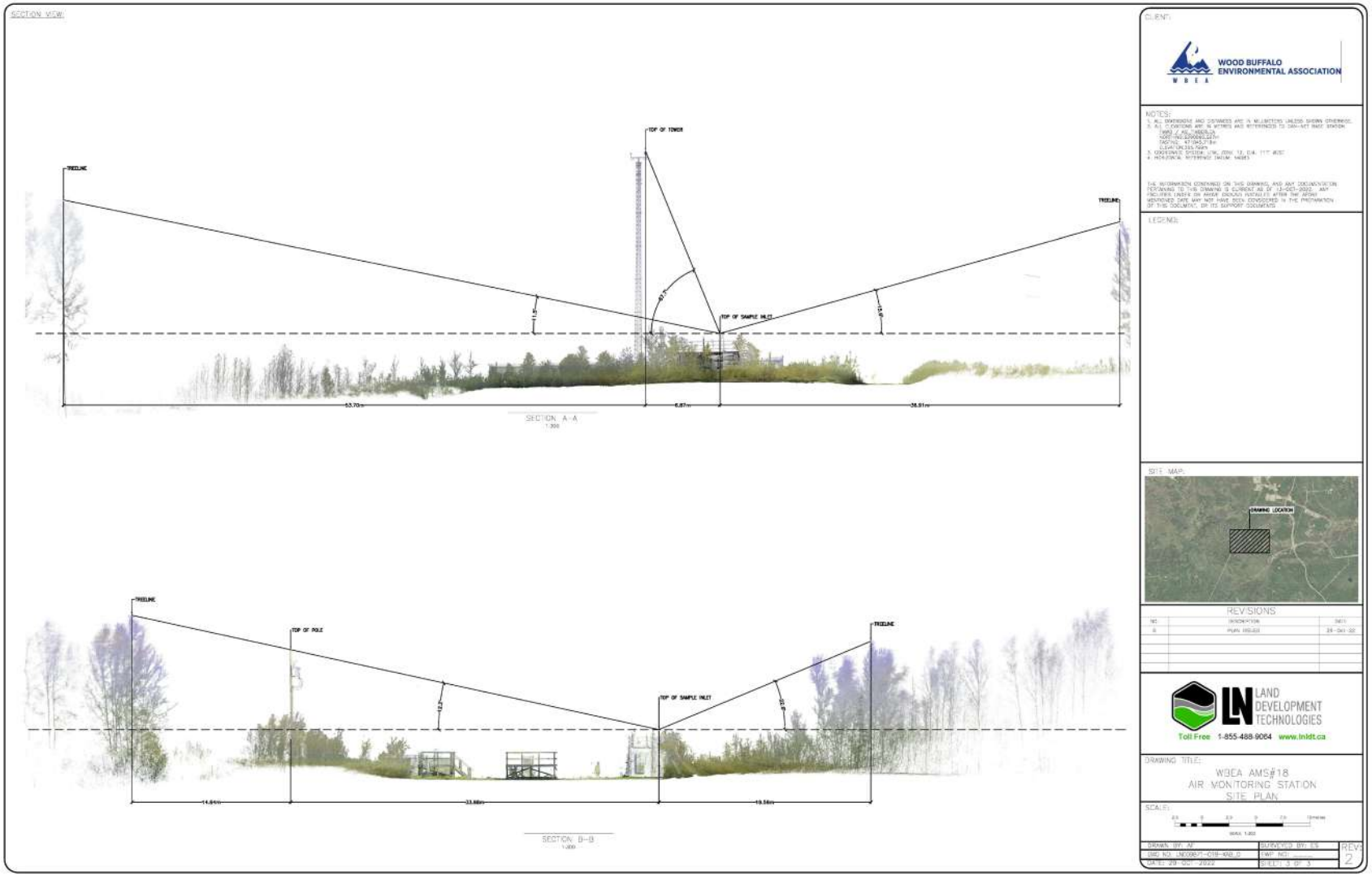

Figure 4 – Elevation view sketch for AMS 18 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

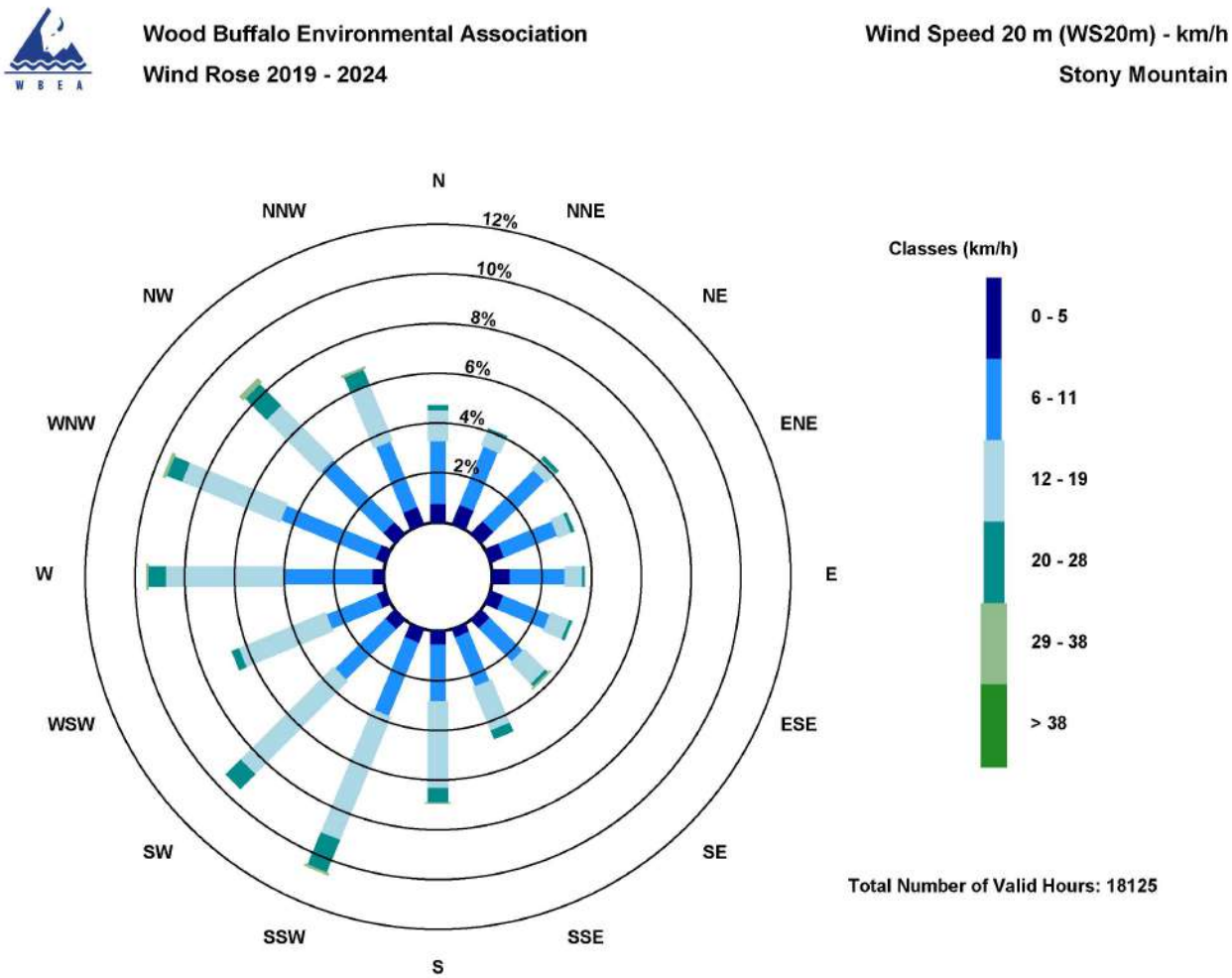

Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Firebag

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 19
Station name	Firebag
Date station established	2014

Location

Station street address	Firebag Camp
Legal land description	5-15-095-06 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.2395250989
Longitude	-110.897990073
UTM East	506157
UTM North	6344054
Nearest community	Fort McKay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Suncor Energy Inc.
Approval number	80105-01-00
Contact Name	Sara Mazhar
Address	Suncor Energy, Fort McMurray
Phone number	780-743-7780 (business hours); 780-762-4200 (non-business hours)
Email address	smazhar@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Oil sands development
	91 – 180 degrees	Oil sands development
	181 – 270 degrees	Oil sands development
	271 – 360 degrees	Oil sands development
Site elevation (m) (above sea level)		
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	No

	East	No
	South	No
	West	No
Distance to nearest trees (m)	North	NA
	East	NA
	West	NA
	South	NA
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Suncor Firebag	0	Oil sands development
Firebag Camp	20	Camp housing, cafeteria, heating system

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Local Camp roads	Low	20	Camp traffic

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Suncor Firebag	Oilsands	0	NA
Husky	Oilsands	10	WNW

Station Equipment

Equipment Owner: Suncor

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Environmental	43i	1410661308	2016	August, 2014
H_2S	Thermo Environmental	43i-TLE	1151680032	2023	August, 2014
$NO/NO_x/NO_2$	Thermo Environmental	42i	1410661309	2016	August, 2014
THC	Thermo Environmental	51i	1336160089	2016	August, 2014

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	K2870021	3	2016	August, 2014
WS	Met One	010C-1	W15276	1	2021	August, 2014
WD	Met One	020C-1	A23968	1	2016	August, 2014

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	6466
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	1607
Zero air generator	Zero Air Generator	Teledyne/API	701	1118
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB14-16269
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA
Tower	10m Tower	Aluma Tower	T-135	AT213028-Y-3
H2S converter	H2S converter	Global Analyzer Systems	G150	2022-222

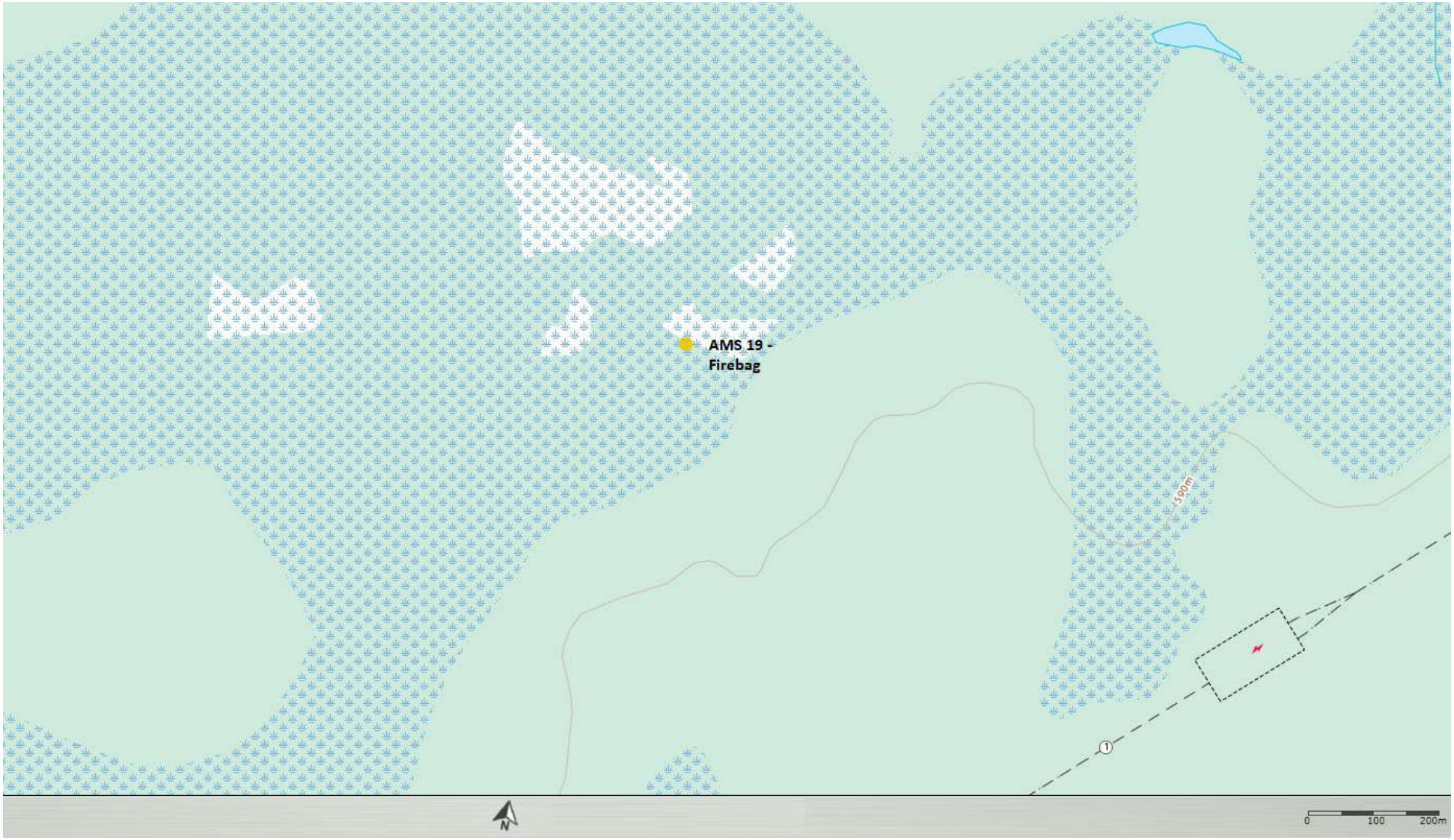
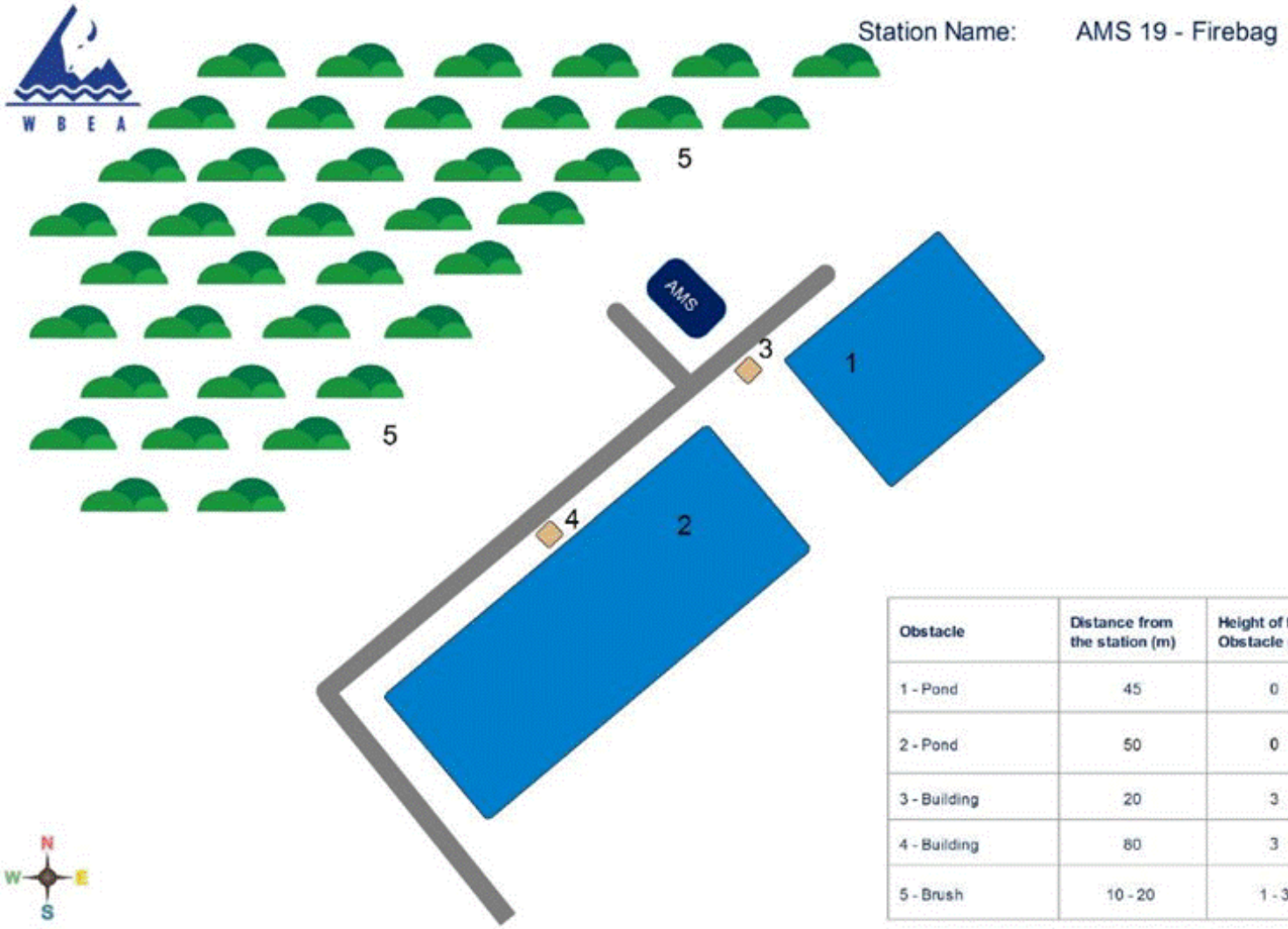


Figure 1 – Area topographic map showing AMS 19



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 - Pond	45	0
2 - Pond	50	0
3 - Building	20	3
4 - Building	80	3
5 - Brush	10 - 20	1 - 3

Figure 2 – Plan view sketch for AMS 19 – Firebag

Figure 3 – Aerial photo showing AMS 19 - Firebag

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 4 – Environment looking North

Figure 5 – Environment looking East

Figure 6 – Environment looking South

Figure 7 – Environment looking West

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

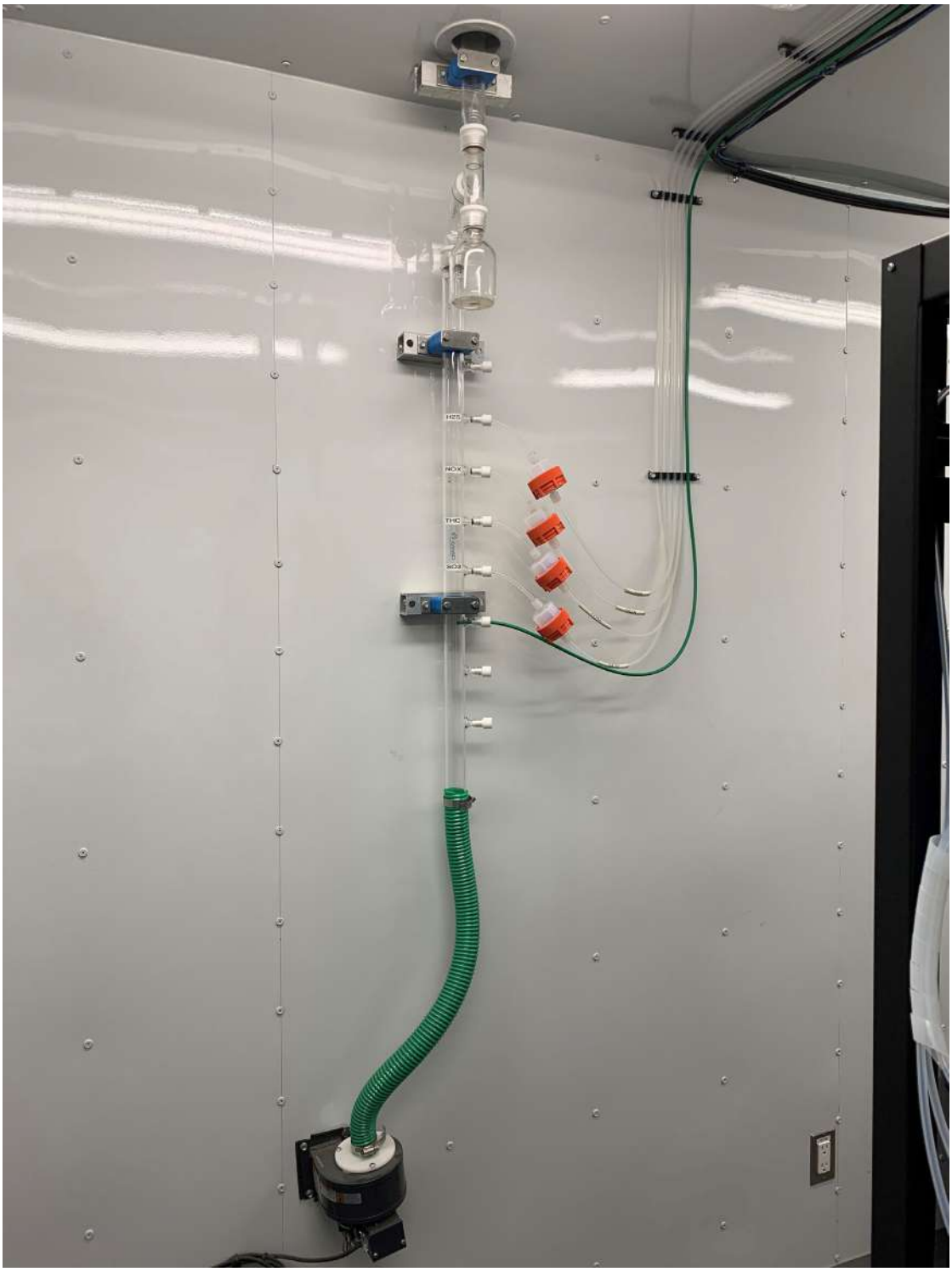


Figure 9 – Photo showing the inlet and sample manifold

Figure 10 – Curb shot of the monitoring station

Figure 11 –Photo of the front and the back of instrument rack

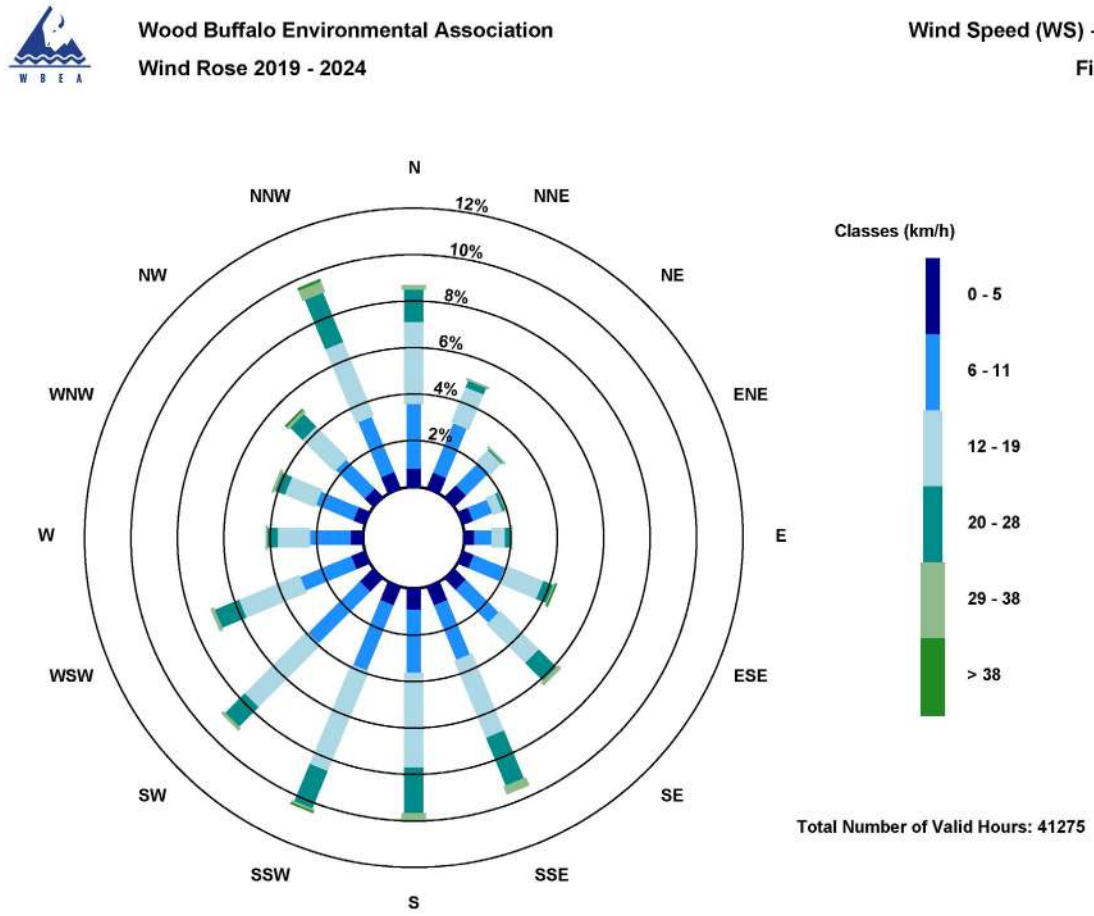


Figure 12 – Windrose (2019 – 2024)

W B E A

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Mackay River

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 20
Station name	Mackay River
Date station established	January 7, 2016

Location

Station street address	NA
Legal land description	10-01-090-14 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56.7797279768
Longitude	-112.0890203
UTM East	433455.57
UTM North	6293395.78
Nearest community	Fort McMurray
Community population	75186
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	PetroChina Canada Ltd.
Approval number	254465-01-00
Contact Name	Blakney Hopkins
Address	NA
Phone number	403-880-1836
Email address	Blakney.hopkins@petrochinacanada.com

Site Description

Land use by sector	0 – 90 degrees	Forest and SAGD project
	91 – 180 degrees	Forest and SAGD project
	181 – 270 degrees	Forest
	271 – 360 degrees	Forest
Site elevation (m) (above sea level)	498	
Angle of elevation to nearby buildings	Greatest angle	0 degree
	Building direction	None
Airflow restrictions	North	None
	East	None

	South	None
	West	Yes
Distance to nearest trees (m)	North	30
	East	20
	West	30
	South	50
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	Attached to the North end of the station

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Gravel Road	Low	30	Access Road

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
PetroChina Canada Ltd.	Oil and Gas industry	5	North

Station Equipment

Equipment Owner: PetroChina

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43i	1501301450	March, 2016	February, 2016
H_2S	Thermo Scientific	43i-LTE	1236656117	2023	February, 2016
$NO/NO_x/NO_2$	Thermo Scientific	42i	1505164379	November, 2018	February, 2016
THC	Thermo Scientific	51i	1501663727	March, 2016	February, 2016

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	F5010002	3	September, 2018	February, 2016
WS	Met One	010C-1	Y18363	3	June, 2020	January, 2016
WD	Met One	020C-1	N9937	3	March, 2016	January, 2016
PC	OTT	OTT-Pluvio2	363524	3	May, 2016	December, 2016

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9627
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	1220
Zero air generator	Zero Air Generator	Teledyne/API	701	4522
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB-15-16552
Meteorological Tower	Telescoping 10 metre tower	Aluma Tower Co.	T-135	AT-215036-AA-5-2
Datalogger	Datalogger	Campbell Scientific	CR310	6239
H2S Converter	Thermal Oxidizer	Global Analyzer Systems	G150	2022-226

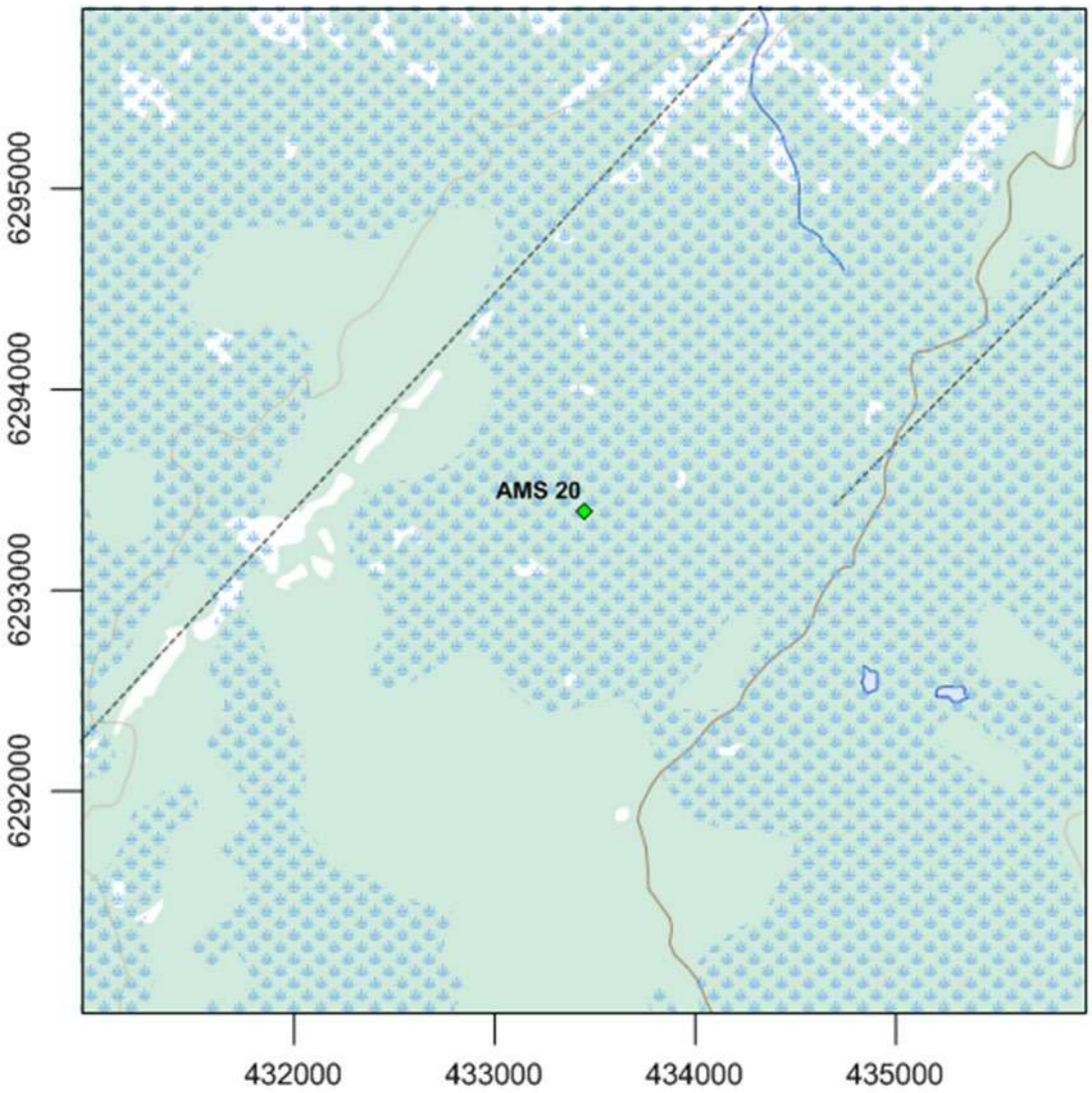

Figure 1 – Area topographic map showing AMS 20

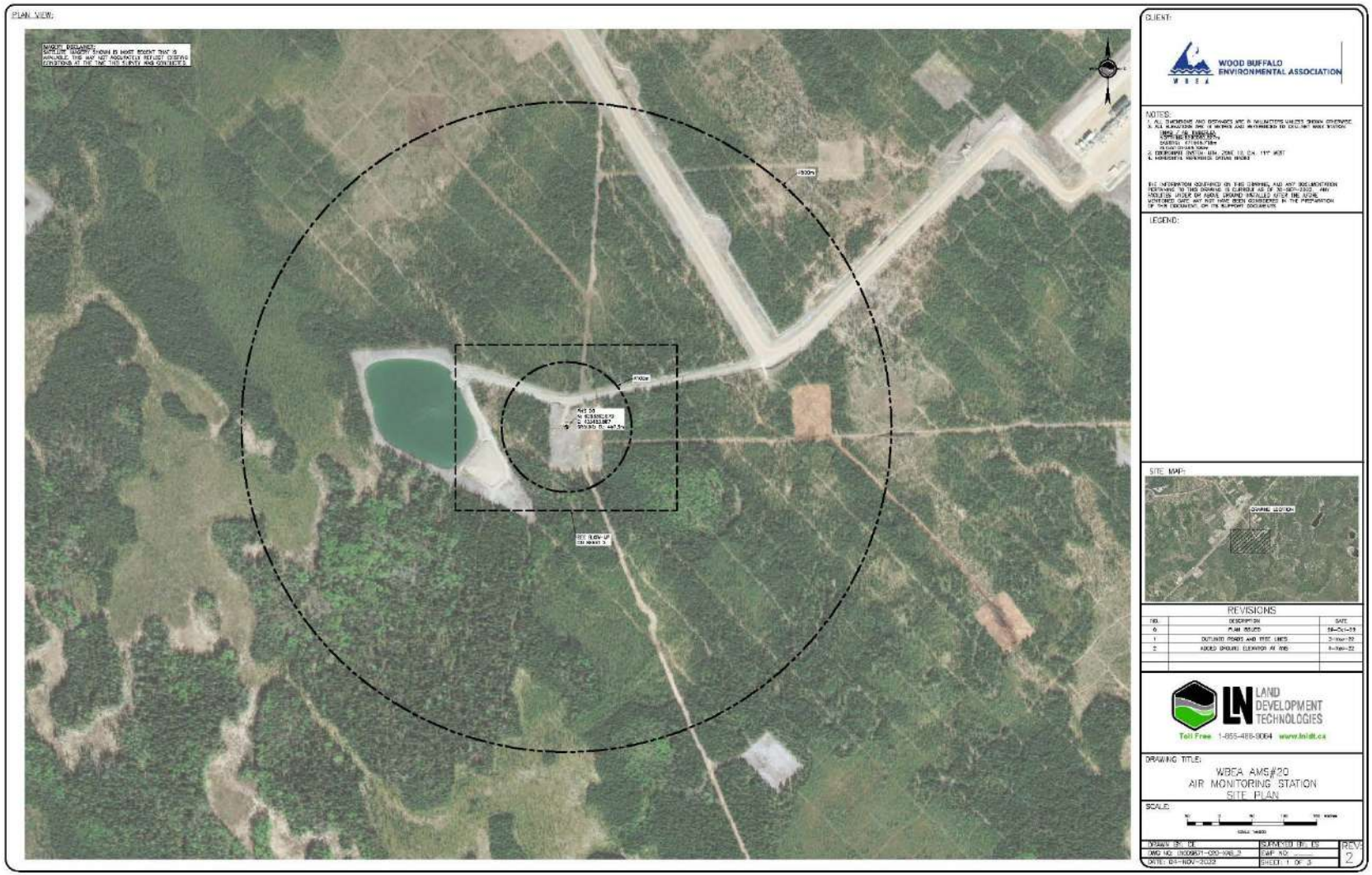

Figure 2 – Aerial image showing AMS 20

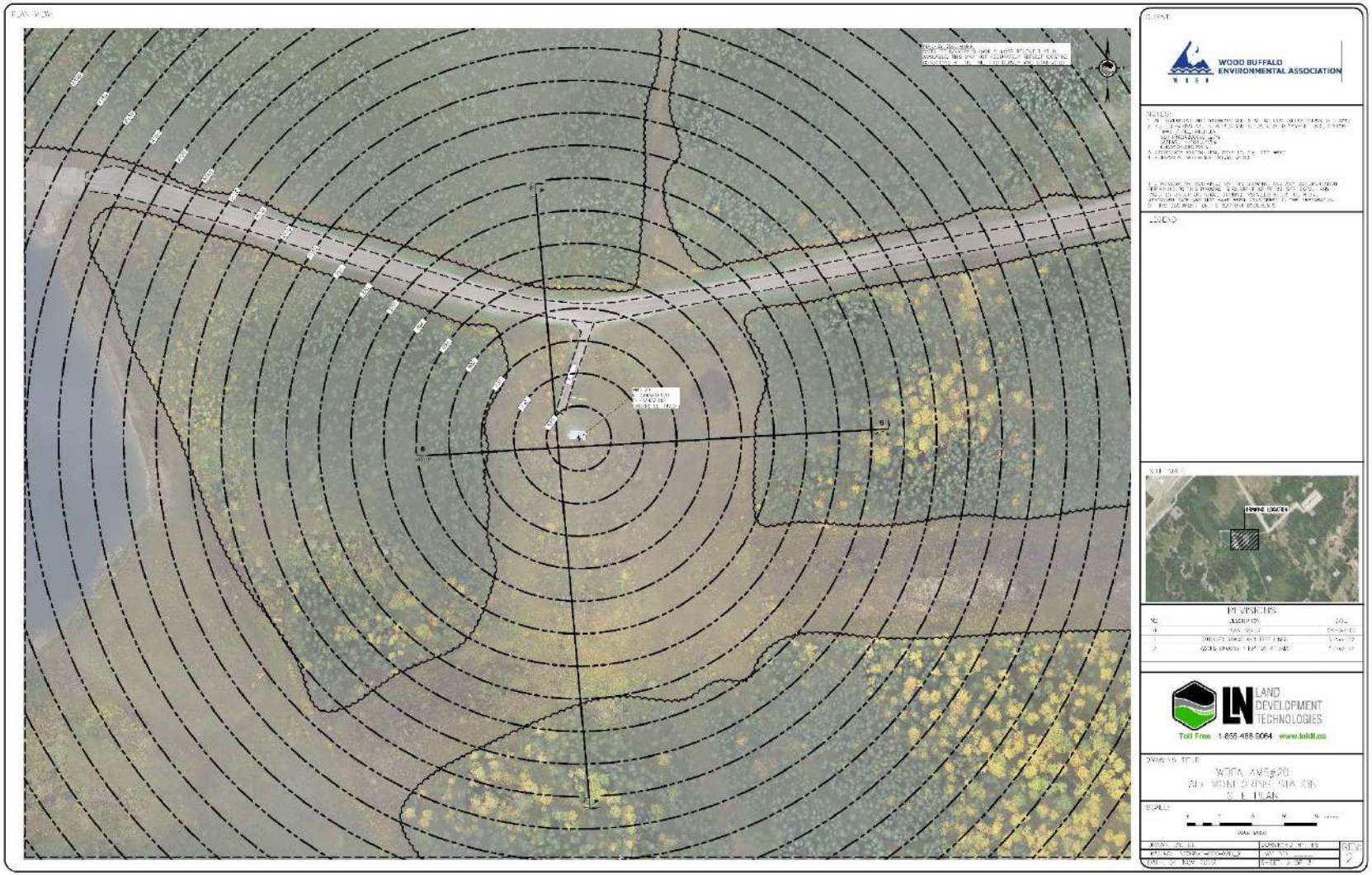

Figure 3 – Plan view image for AMS 20 site

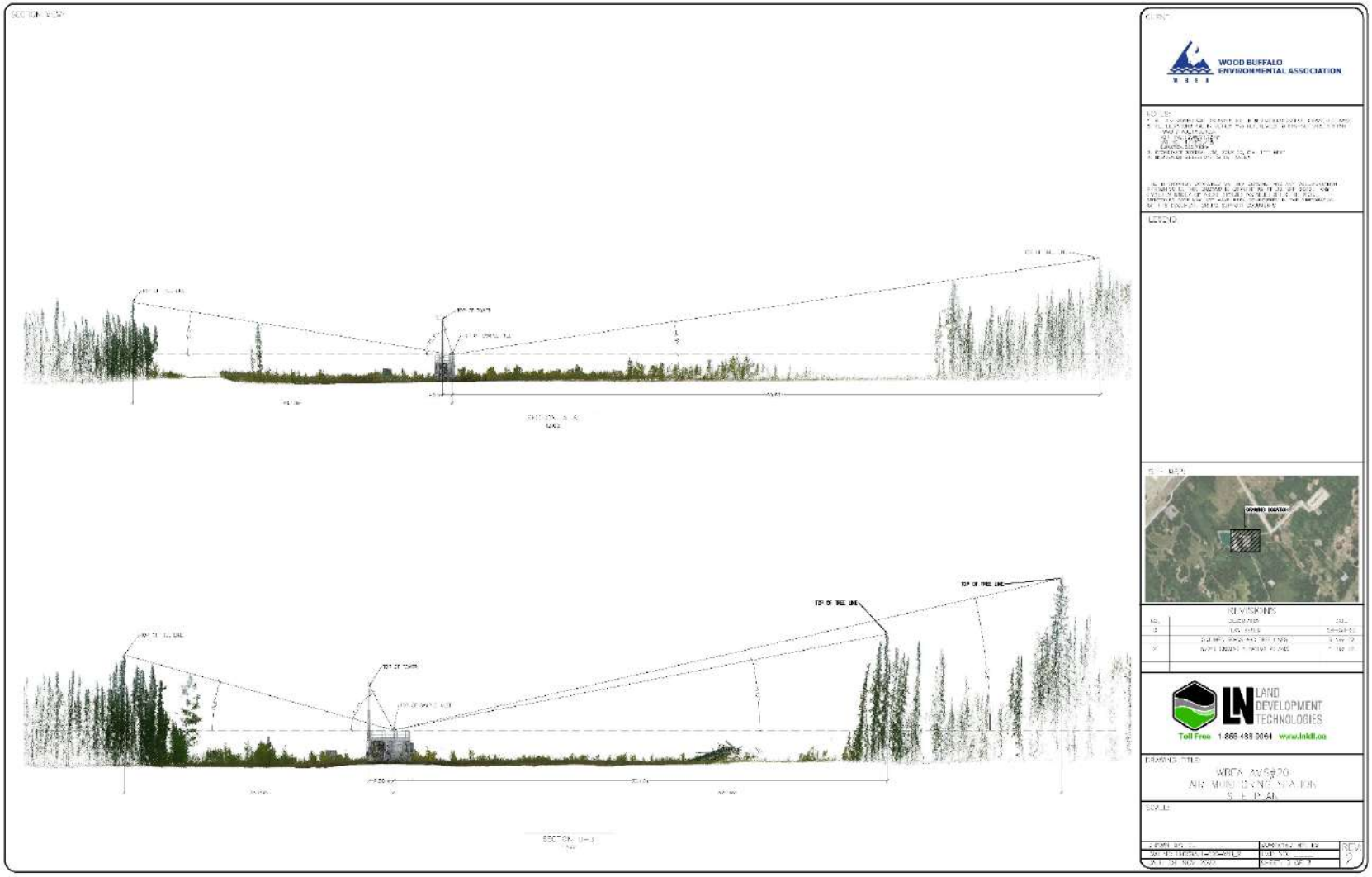

Figure 4 – Elevation view image for AMS 20 site

Site photos

The following photos show the environment surrounding the monitoring station.

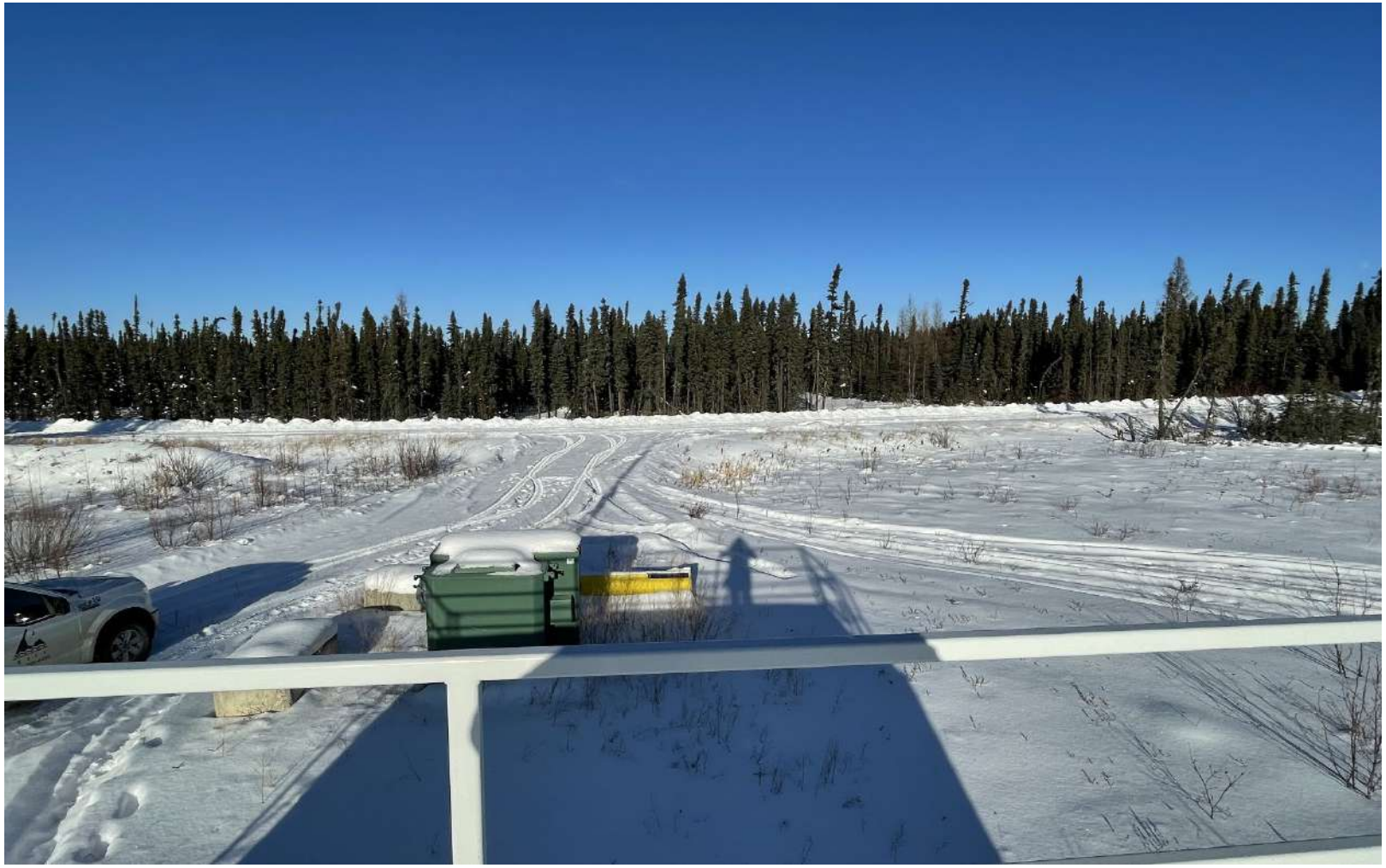

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

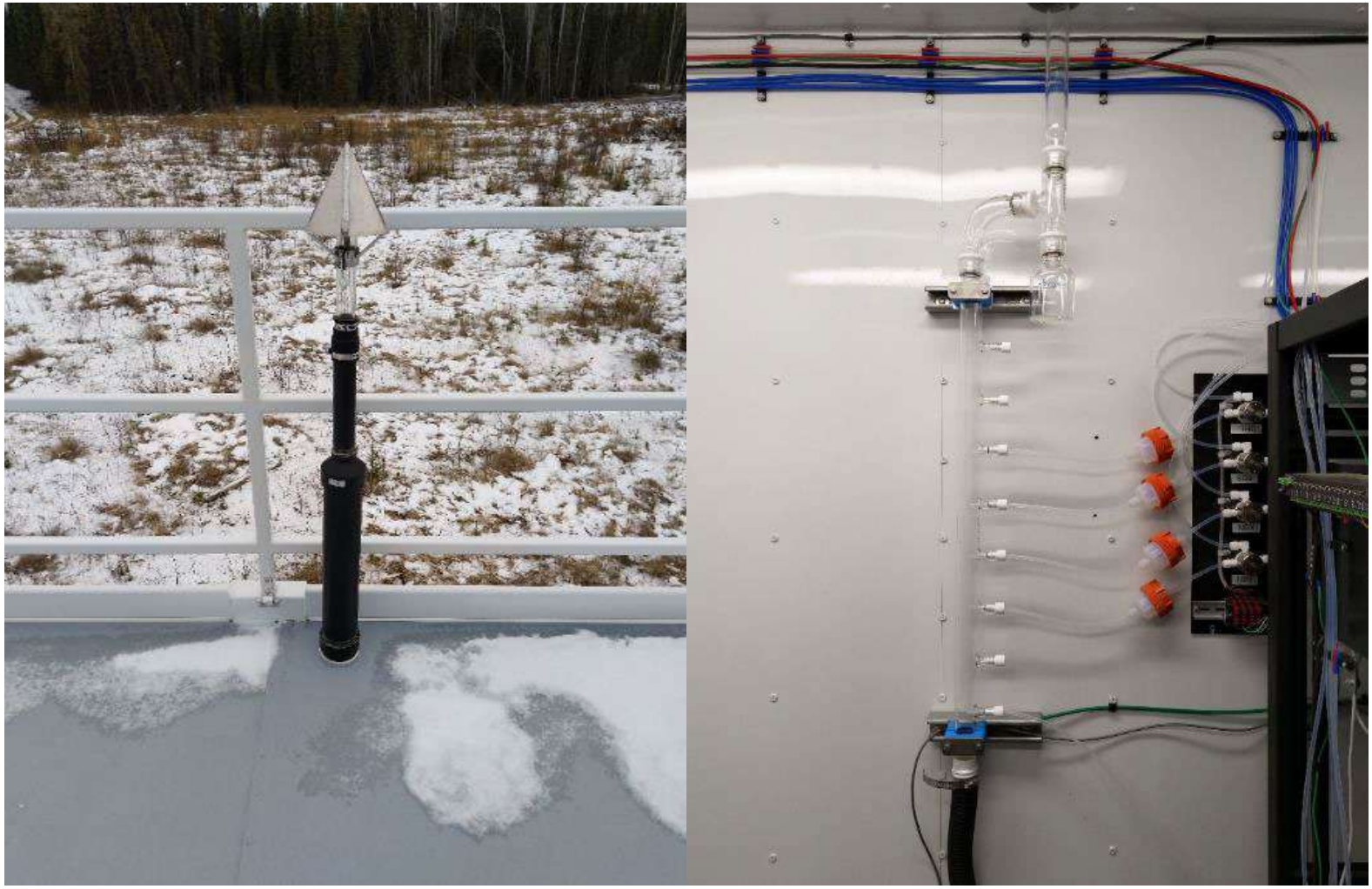

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

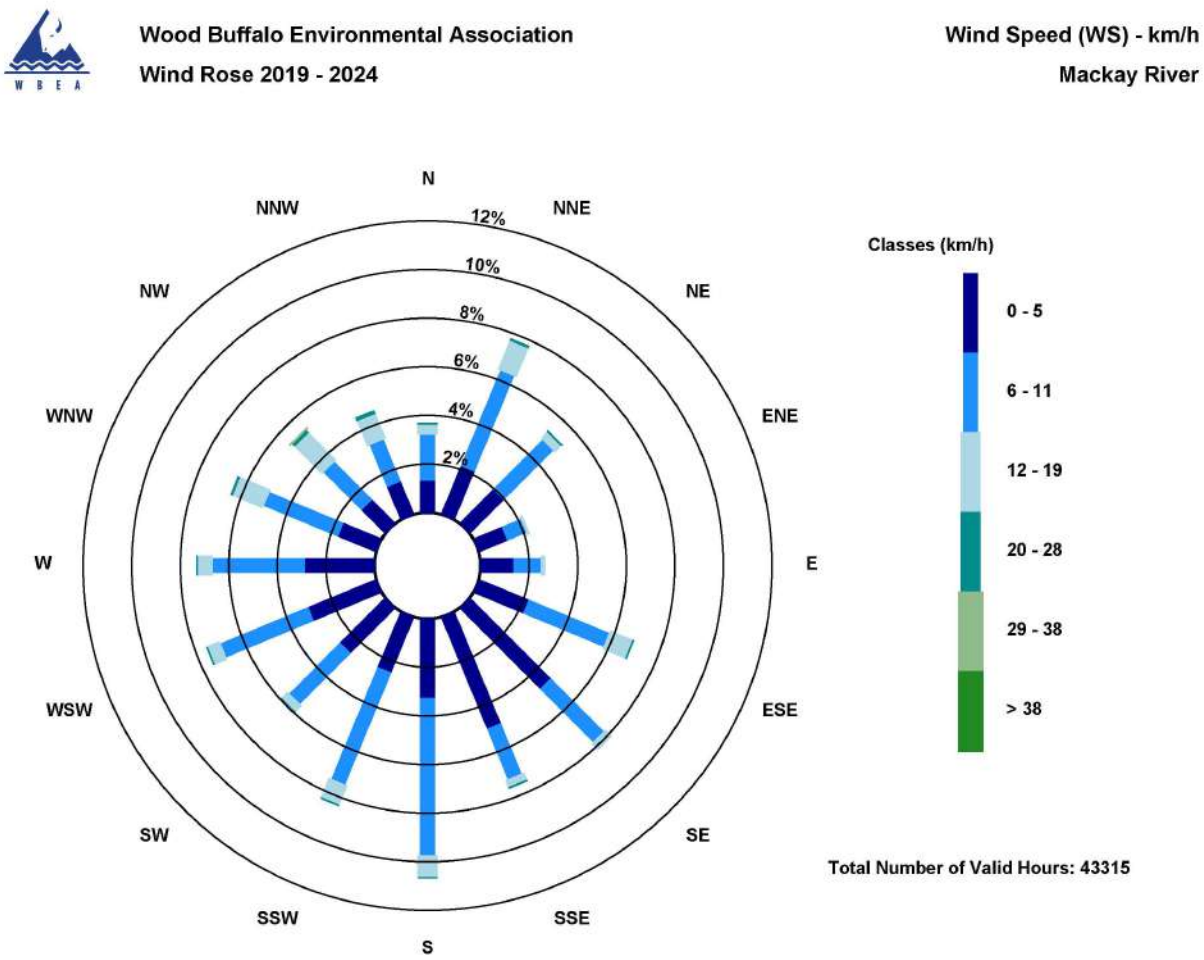

Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Conklin

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 21
Station name	Conklin
Date station established	April 01, 2016

Location

Station street address	Father Mercredis Trail
Legal land description	15-31-076-07 W4
Latitude	55.632330
Longitude	-111.078877
UTM East	495034
UTM North	6165163
Elevation	559.9
Nearest community	Conklin
Community population	185
Census Year	2016

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Name of Approval Holder	NA
Approval number	NA
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3 – 805 Memorial Drive, Fort McMurray, AB
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Forest and Residential
	91 – 180 degrees	Forest and Residential
	181 – 270 degrees	Forest and Residential
	271 – 360 degrees	Forest and Residential
Site elevation (above sea level)	562	
Angle of elevation to nearby buildings	Greatest angle	0 degree
	Building direction	South – CRDAC office
Airflow restrictions	North	Trees
	East	None
	South	None
	West	Conklin Rec center, about 2 km west

Sample manifold	Type	All glass
	Inlet height above roof	1 meter
Wind Sensors	Type	Cup and vane
	Height above ground	10 m
	Distance from station	Attached to north site of the station

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Wetlands	20	Peat bog / Marshes – Variety of reeds and grasses.
Admin building	20	Conklin Resource Development Advisory Committee Office
Shipping Container	20	SEA-CAN
Free-Standing Structure	20	Gazebo – made of wood.
Watercraft	20	Speed Boat

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Gravel	Medium	50	Father Mercredis Trail – Access Road
Paved	Medium	200	Northland Drive

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Meg Energy	Oil and Gas	25	NE
Cenovus Energy	Oil and Gas	14	SE

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Environmental	43i	1428701363	2016	April, 2016
TRS	Thermo Environmental	43i-LTE	1236656116	2016	April, 2016
TRS	CD Nova	CDN-101	NA	2016	
$NO/NO_x/NO_2$	Thermo Environmental	42i	1501663731	2016	April, 2016
$THC/CH_4/NMHC$	Thermo Environmental	55i	1193585649	2023	April, 2016
O_3	Thermo Environmental	49i	1501663734	2016	April, 2016
$PM_{2.5}$	Teledyne/API	T640	326	2022	April, 2016
Time-Integrated					
$PM_{2.5}$	Thermo Environmental	2000i	2000iW208842002	2020	-
$PM_{2.5}$	Thermo Environmental	2000i	2000iW208822002	2020	-
PM_{10}	Thermo Environmental	2000i	2000iW208812022	2020	-
PM_{10}	Thermo Environmental	2000i	2000iW208832002	2020	-
VOC	Tisch Environmental	TE-123	1019	2020	-
PAH	Tisch Environmental	TE-PUF	1001100	2020	-
Dustfall	Advantage Manufacturing	-	-	2022	-

Meteorolgical Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	S3550333	3	2016	April, 2016
WD	Met One	010C-1	P22886	2	2020	April, 2016
WS	Met One	020C-1	J4337	2	2016	April, 2016

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9628
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3810
Zero air generator	Zero Air Generator	Teledyne/API	T701H	691
Shelter / Building	Air monitoring portable	ITB	10x20 trailer	ITB-14-16423
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA
Tower	10 Tower	Aluma	T-135	AT-215036-AA-5-3
Deck	Wooden Deck	NA	10x20	NA

Figure 1 – Area Topographic map showing AMS 21

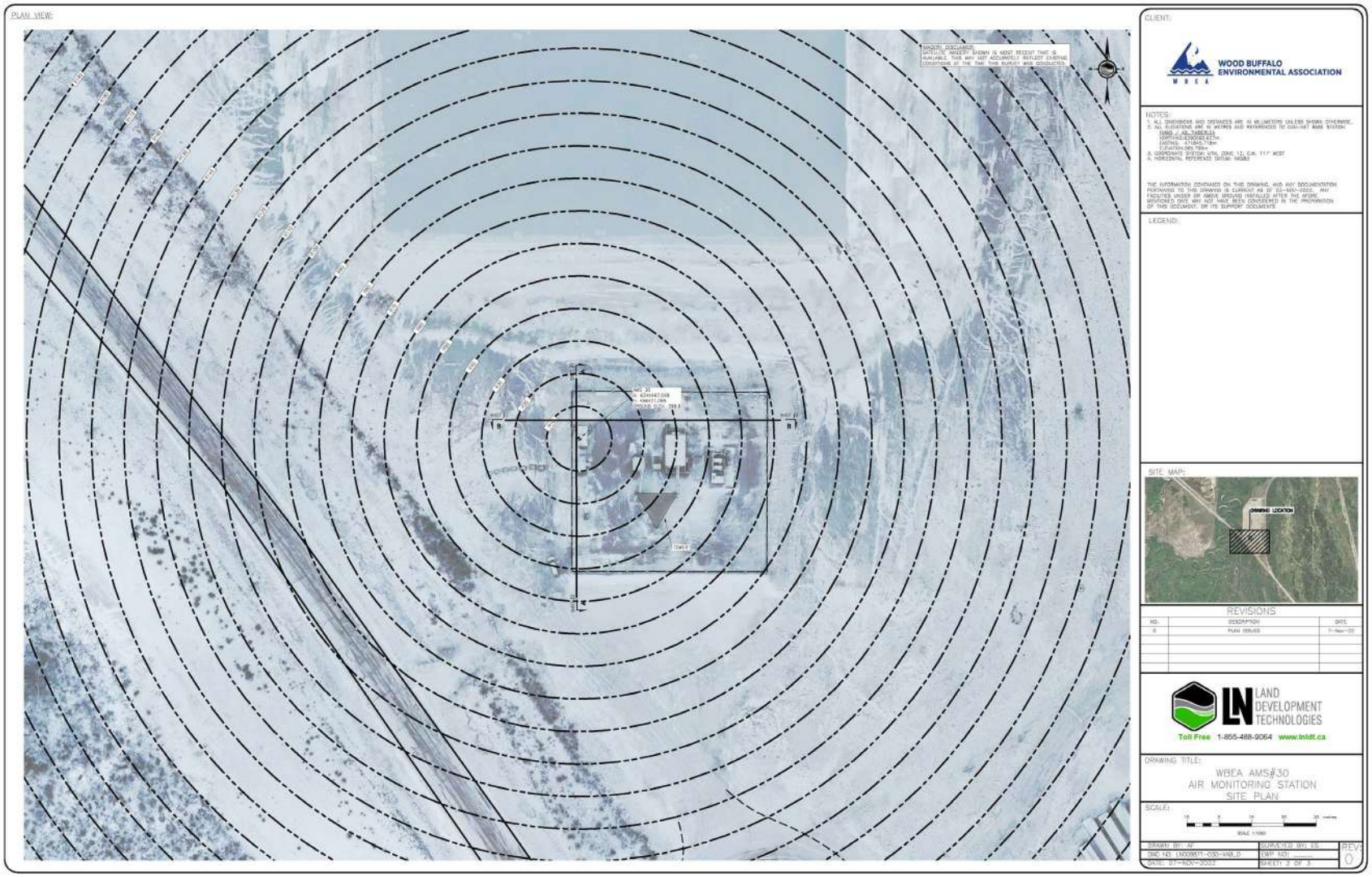

Figure 2 – Plan view sketch for AMS 21 site

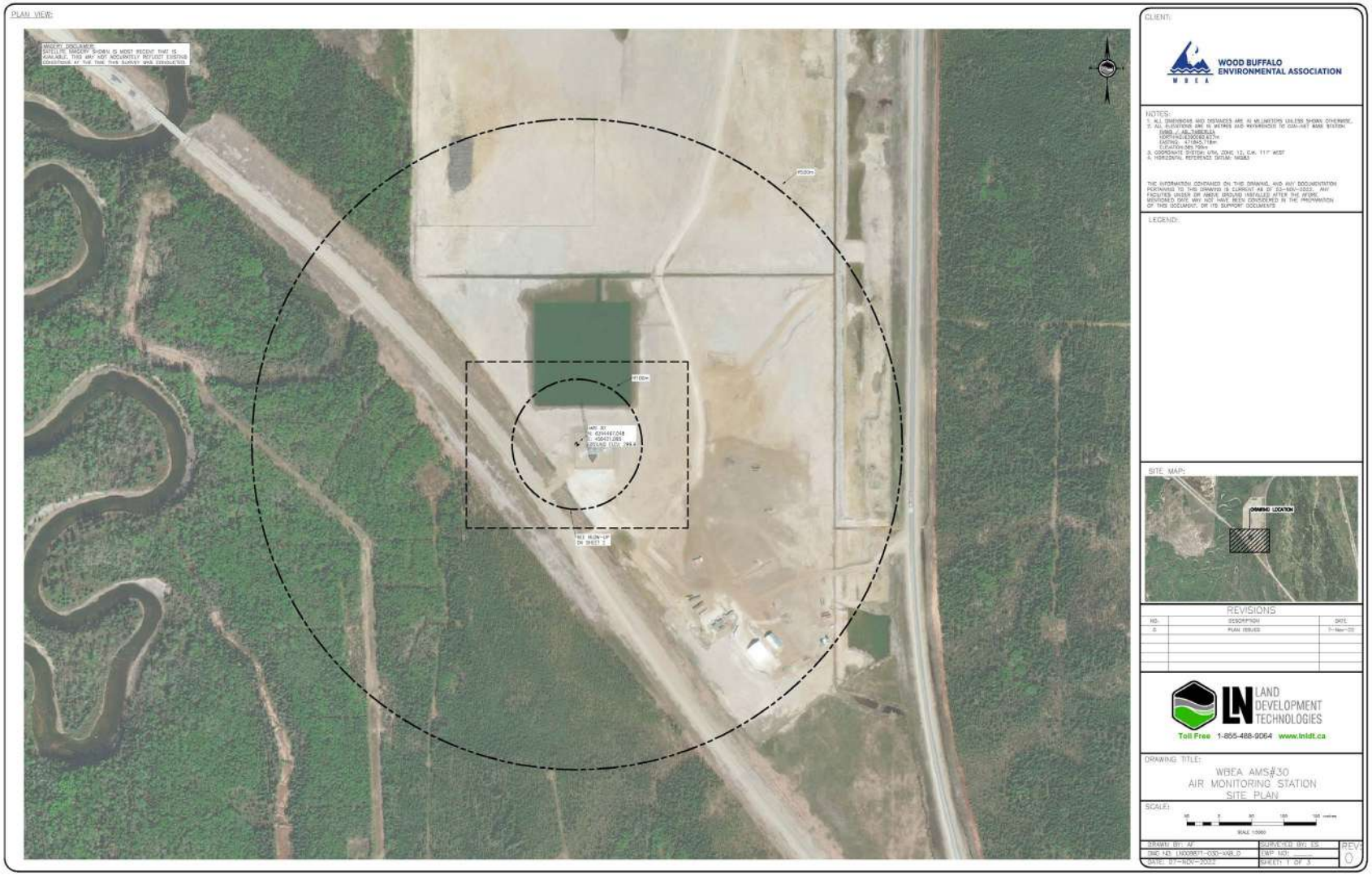

Figure 3 – Aerial photo showing AMS 21

Figure 4 – Cross Section Elevation Drawing of AMS 21

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment Looking North

Figure 6 – Environment Looking East

Figure 7 – Environment looking South

Figure 8 – Environment Looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold.

Figure 11 – Curb shot of the monitoring station.

Figure 12 –Photo of front and back of instrument rack

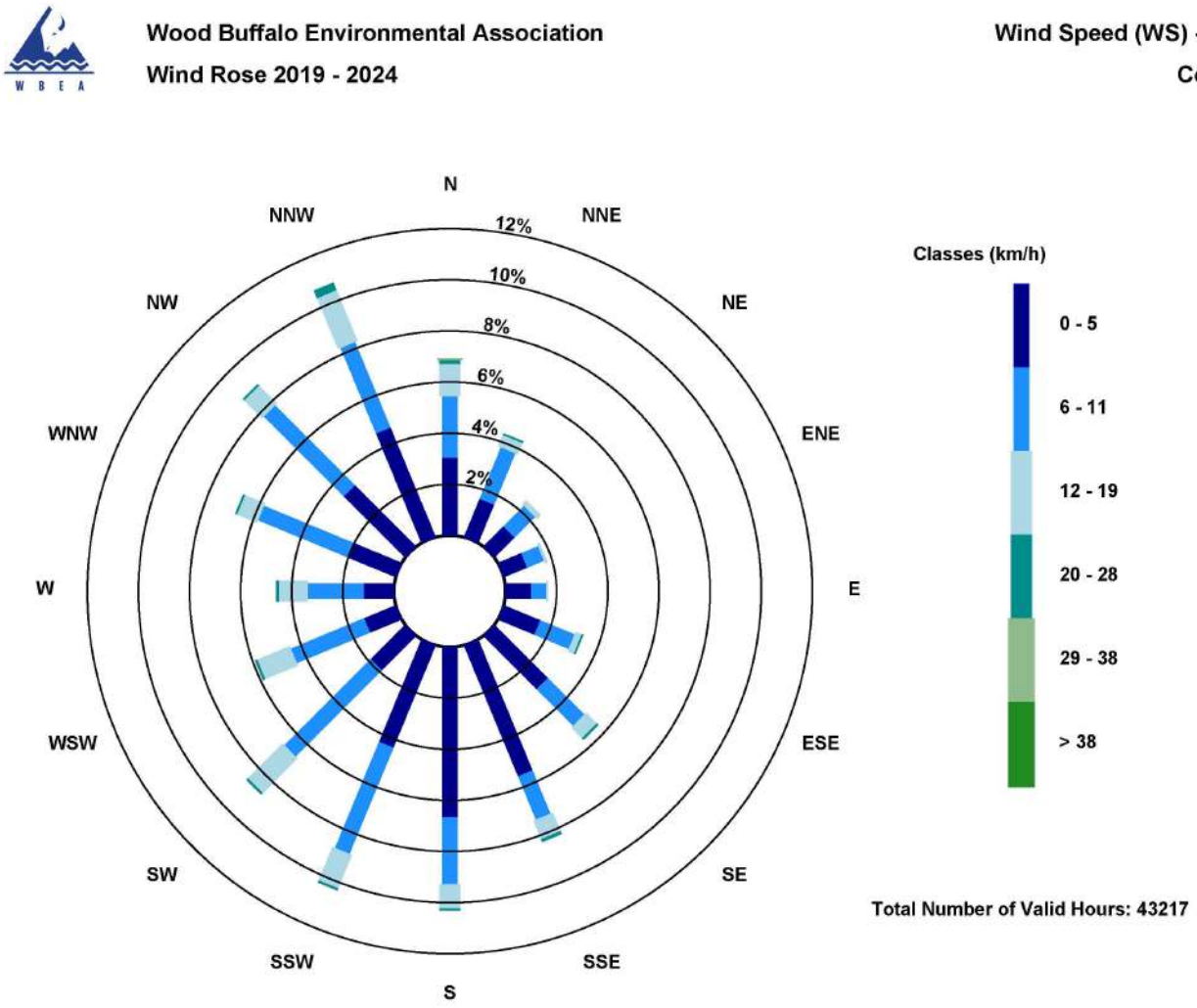

Figure 13 – Windrose (Five Year)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Janvier

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 22
Station name	Janvier
Date station established	October 2016

Location

Station street address	Block 4; Lot 135 - Adjacent to Nokohoo Road between Teed Ave and Lapouse Ave.
Legal land description	6-05-80-05-W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.903242
Longitude	-110.749744
UTM East	515647
UTM North	6195323
Nearest community	Janvier
Community population	437
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	NA
Approval number	NA
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Trees
	91 – 180 degrees	Main road
	181 – 270 degrees	Main road
	271 – 360 degrees	Trees and House
Site elevation (m) (above sea level)	471	
Angle of elevation to nearby buildings	Greatest angle	10°
	Building direction	SE
Airflow restrictions	North	None

	East	None
	South	None
	West	Trees (45 m from station, 17 m high)
Distance to nearest trees (m)	North	80 m from station, 17 m high
	East	80 m from station, 15 m high
	West	45 m from station, 17 m high
	South	None
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	20 m
	Distance from station (m)	2 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Vehicles	20 m west	Gravel road

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Main access road	low	25 m	Paved

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
ConocoPhillips	SAGD	33.38	NW
Tervita	Landfill	11 kms	NW

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Scientific	43i	1152430006	2016	January, 2017
TRS	Thermo Scientific	43i-TLE	1151680031	2021	January, 2017
$NO/NO_x/NO_2$	Teledyne/API	T200	833	2022	January, 2017
$THC/CH_4/NMHC$	Thermo Scientific	55i	1317958219	2024	January, 2017
O_3	Teledyne/API	T400	7046	2023	January, 2017
$PM_{2.5}$	Teledyne/API	T640	325	2018	January, 2017
Time-Integrated					
$PM_{2.5}$ A	Thermo Scientific	2000i	2000i 20388 1308	2019	-
$PM_{2.5}$ B	Thermo Scientific	2000i	2000i 20489 1408	2019	-
PM_{10} A	Thermo Scientific	2000i	2000i 20523 1411	2020	-
PM_{10} B	Thermo Scientific	2000i	2000i 20383 1308	2020	-
PAH	Tisch	TE-PUFPLUSBL	1001108	2021	-
VOC	Tisch	TE-123	1018	2021	-
Dustfall	Advantage Manufacturing	-	-	2022	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G4330042	Class 3	2018	January, 2016
WS 20m	Met One	010C-1	D16121	Class 3	2021	October, 2021
WD 20m	Met One	020C-1	D14528	Class 3	2021	October, 2021

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2586
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3806
Zero air generator	Zero Air Generator	Teledyne/API	T701	691
TRS converter	Thermal oxidizer	CD Nova	CDN-101	587
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB-15-16494
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	314P143189505-02

Deck	10x20	NA	NA	NA

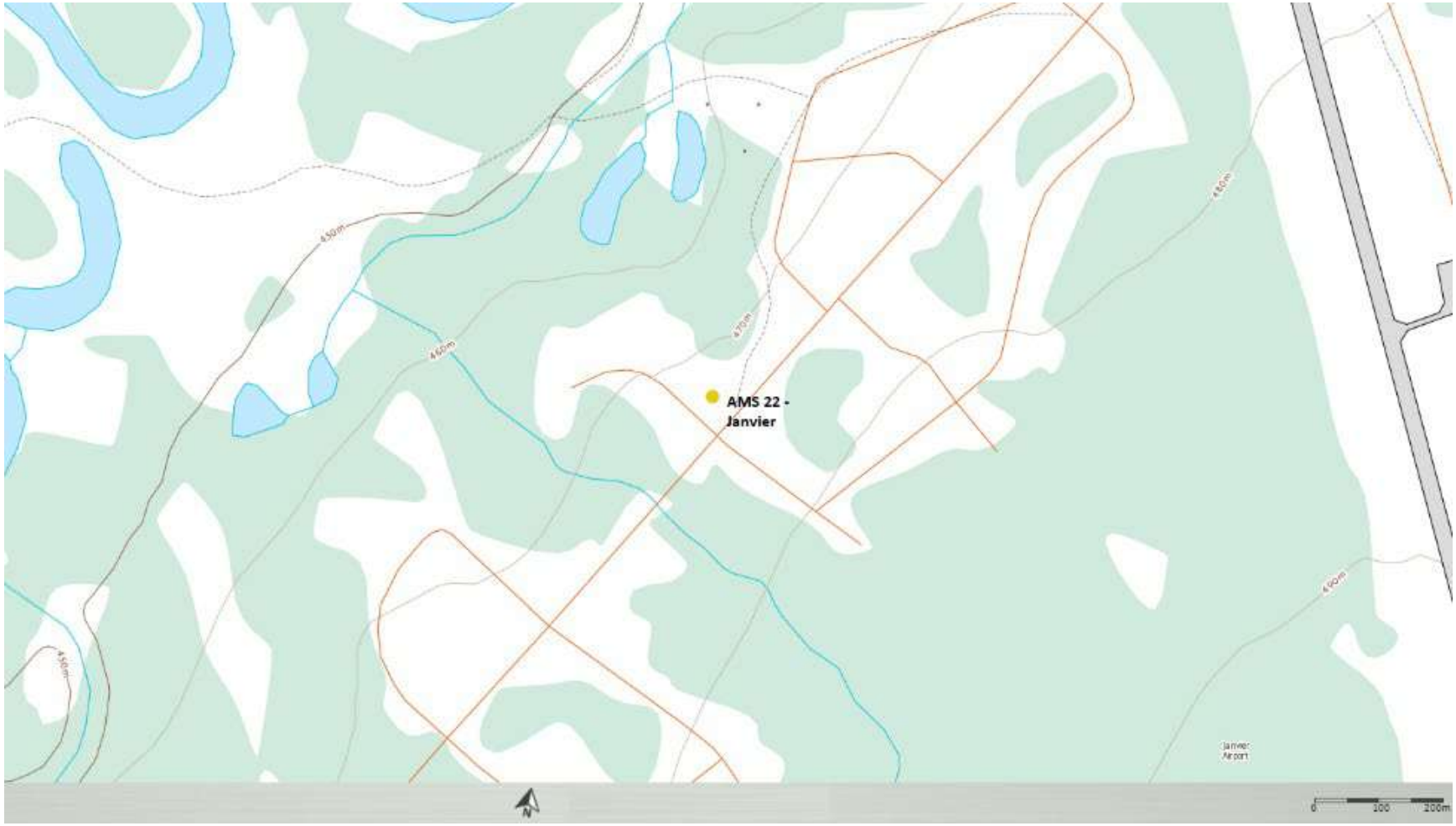

Figure 1 – Area topographic map showing AMS 22

Figure 2 – Aerial photo showing AMS 22

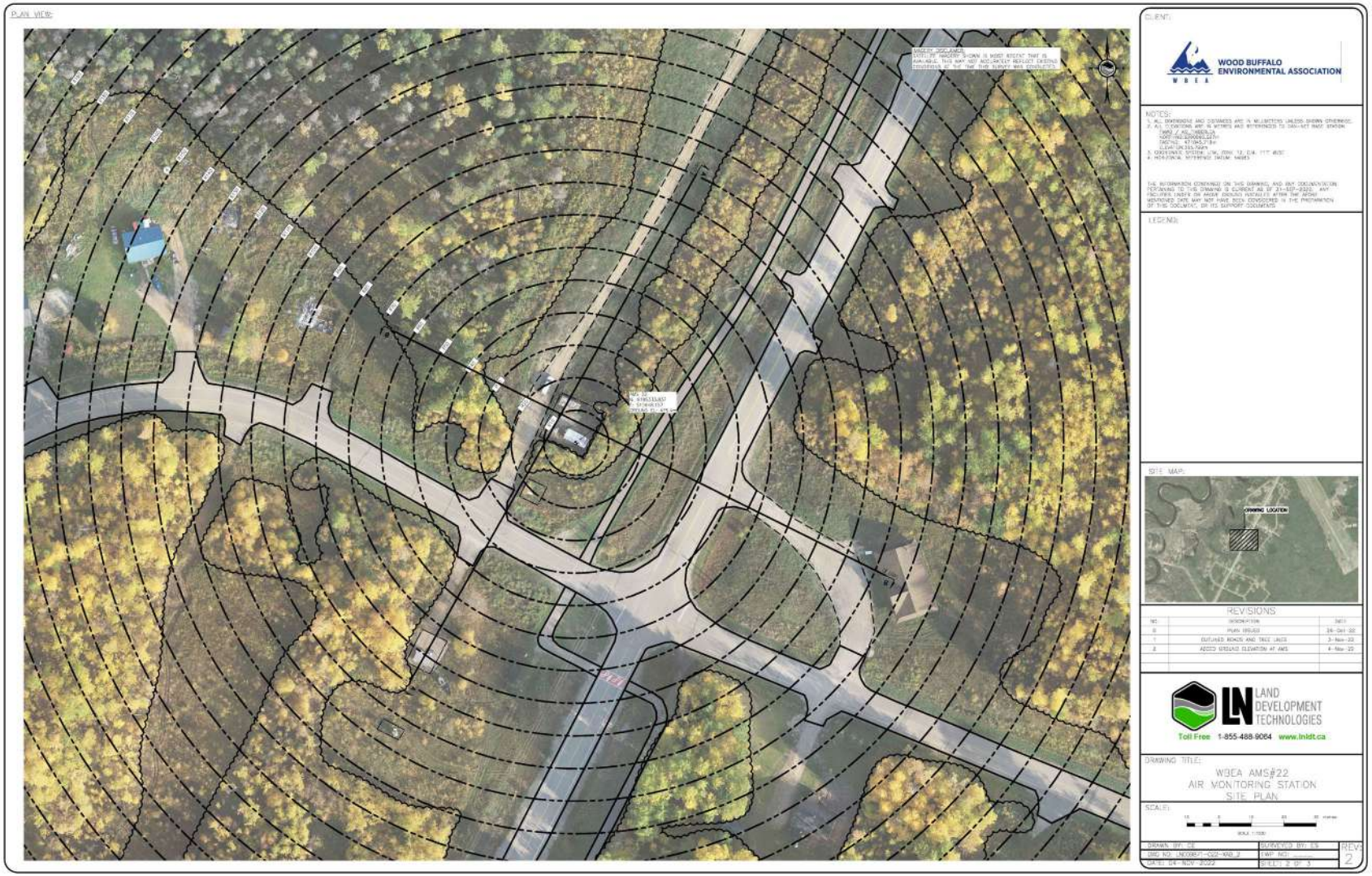

Figure 3 – Plan view sketch for AMS 22 site

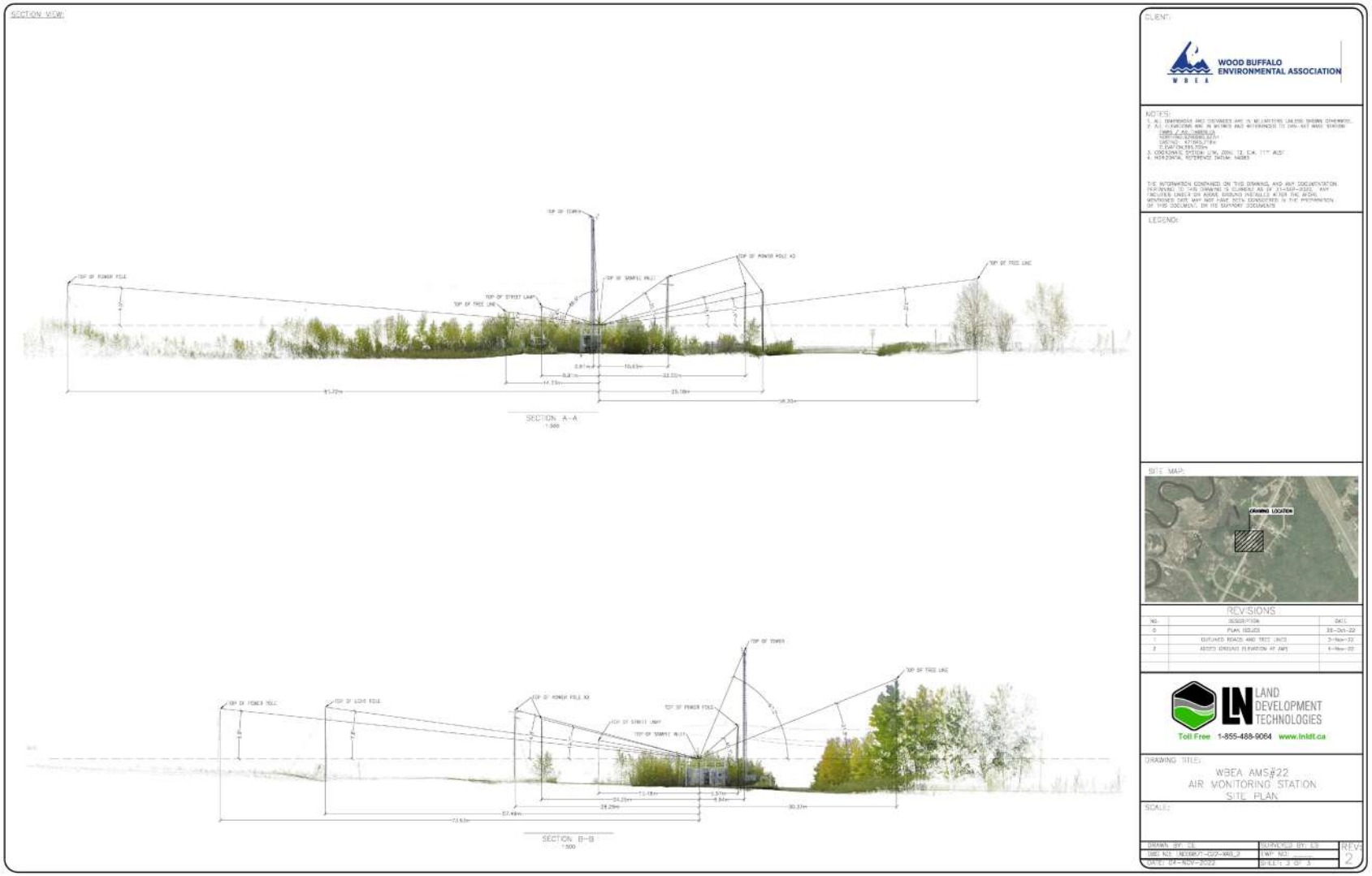

Figure 4 – Elevation view image for AMS 22 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

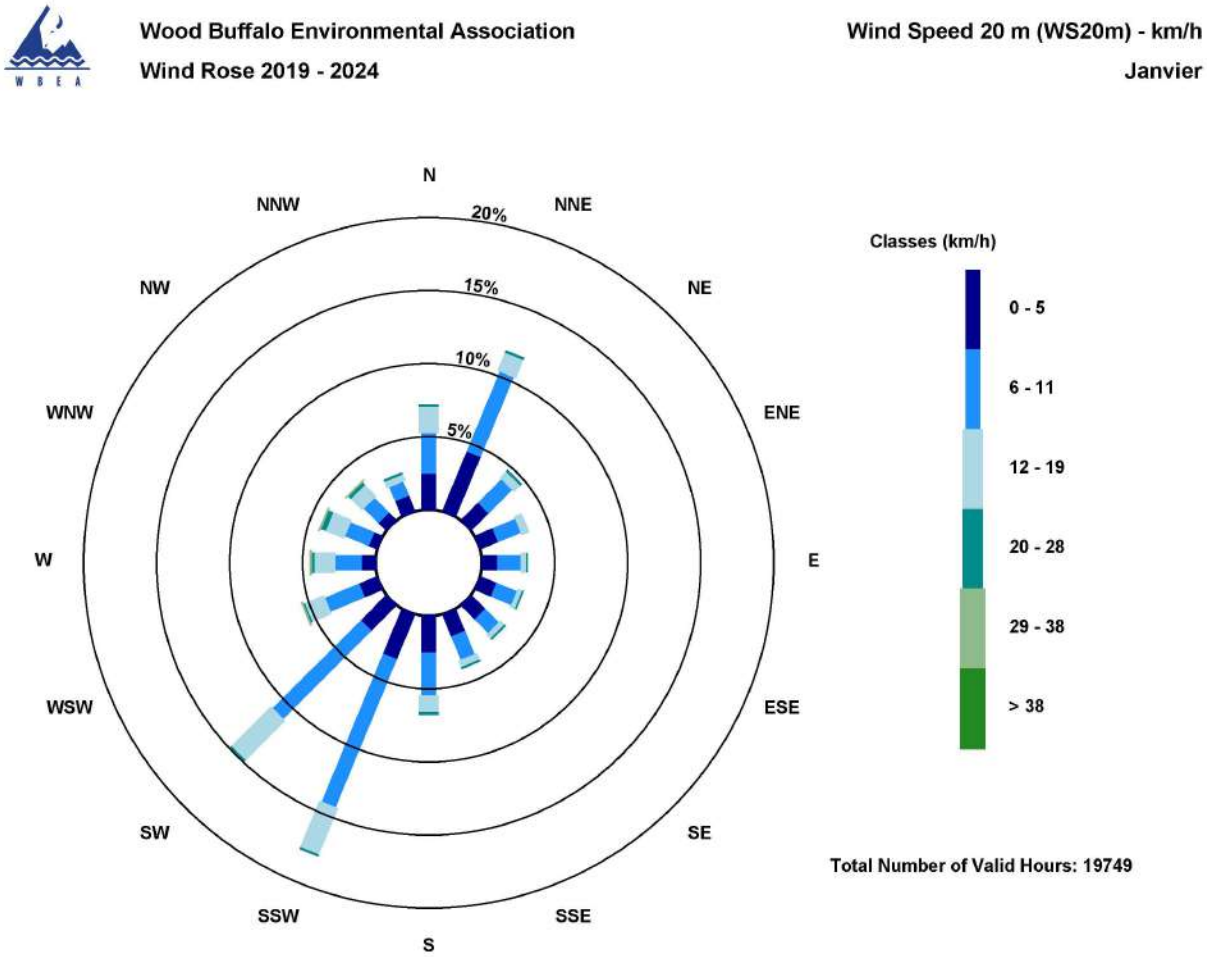

Figure 13 – Windrose (five year)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Fort Hills

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 23
Station name	Fort Hills
Date station established	March 2017

Location

Station street address	Located North of the Southwest Raw Water Pond
Legal land description	15-24-096-11 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57.3489012253
Longitude	-111.639688536
UTM East	461505
UTM North	6356406
Nearest community	Fort McKay
Community population	757
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3 - 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Fort Hills Energy Corporation
Approval number	151469-01-00
Contact Name	Ty Callioux
Address	P.O. Box 4001 Fort McMurray, Alberta, T9H 3E3
Phone number	780-743-7780 (business hours); 780-762-4200 (non-business hours)
Email address	tcallioux@suncor.com

Site Description

Land use by sector	0 – 90 degrees	Water treatment building
	91 – 180 degrees	Raw Water Pond
	181 – 270 degrees	Raw Water Pond
	271 – 360 degrees	Access road, drilling lay down yard
Site elevation (m) (above sea level)	283m	
Angle of elevation to nearby buildings	Greatest angle	20°
	Building direction	West
Airflow restrictions	North	N/A

	East	N/A
	South	N/A
	West	N/A
Distance to nearest trees (m)	North	N/A
	East	N/A
	West	N/A
	South	N/A
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10m
	Distance from station (m)	0m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Raw water pond	20m	Storage pond for raw process water

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Gravel Road	Low	100	Mine access road used by pickup trucks and heavy equipment

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Fort Hills	Oil Sands Plant	0	N/A
CNRL Horizon	Oil Sands Plant	10	Southwest
CNRL Albian	Oil Sands Plant	15	South

Station Equipment

Equipment Owner: Suncor – Fort Hills

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Scientific	43i	1160290012	December, 2021	June, 2017
TRS	Thermo Scientific	43i-TLE	1300156232	December, 2021	June, 2017
$NO/NO_x/NO_2$	Thermo Scientific	42i	1152430007	December, 2021	June, 2017
$THC/CH_4/NMHC$	Thermo Scientific	55i	1193585648	December, 2021	July, 2017
$PM_{2.5}$	Teledyne API	T640	1546	December, 2021	June, 2017
Time-Integrated					
PM_{10} A	Thermo Scientific	2000i-A-N	2000I2-0382-308	December, 2021	-
PM_{10} B	Thermo Scientific	2000i-A-N	2000IW 20930 2108	December, 2021	-
VOC	Global Analyzer Systems	G170	2023-234	2023	-

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Instrument Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	T2950501	Class 3	December, 2021	June, 2017
WS	Met One	010C-1	P19837	Class 3	December, 2021	June, 2017
WD	Met One	020C-1	B14267	Class 3	December, 2021	June, 2017

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	7882
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	451
Zero air generator	Zero Air Generator	Teledyne/API	T701	5611
Shelter / Building	Air monitoring portable	ITB	8 x 14 trailer	2C9CSC2G7M1044018
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	12345
TRS Converter	Thermal Oxidizer	CD Nova	CDN-101	594
H2Generator	Hydrogen Generator	Parker Hannifin	63-0100	14950646

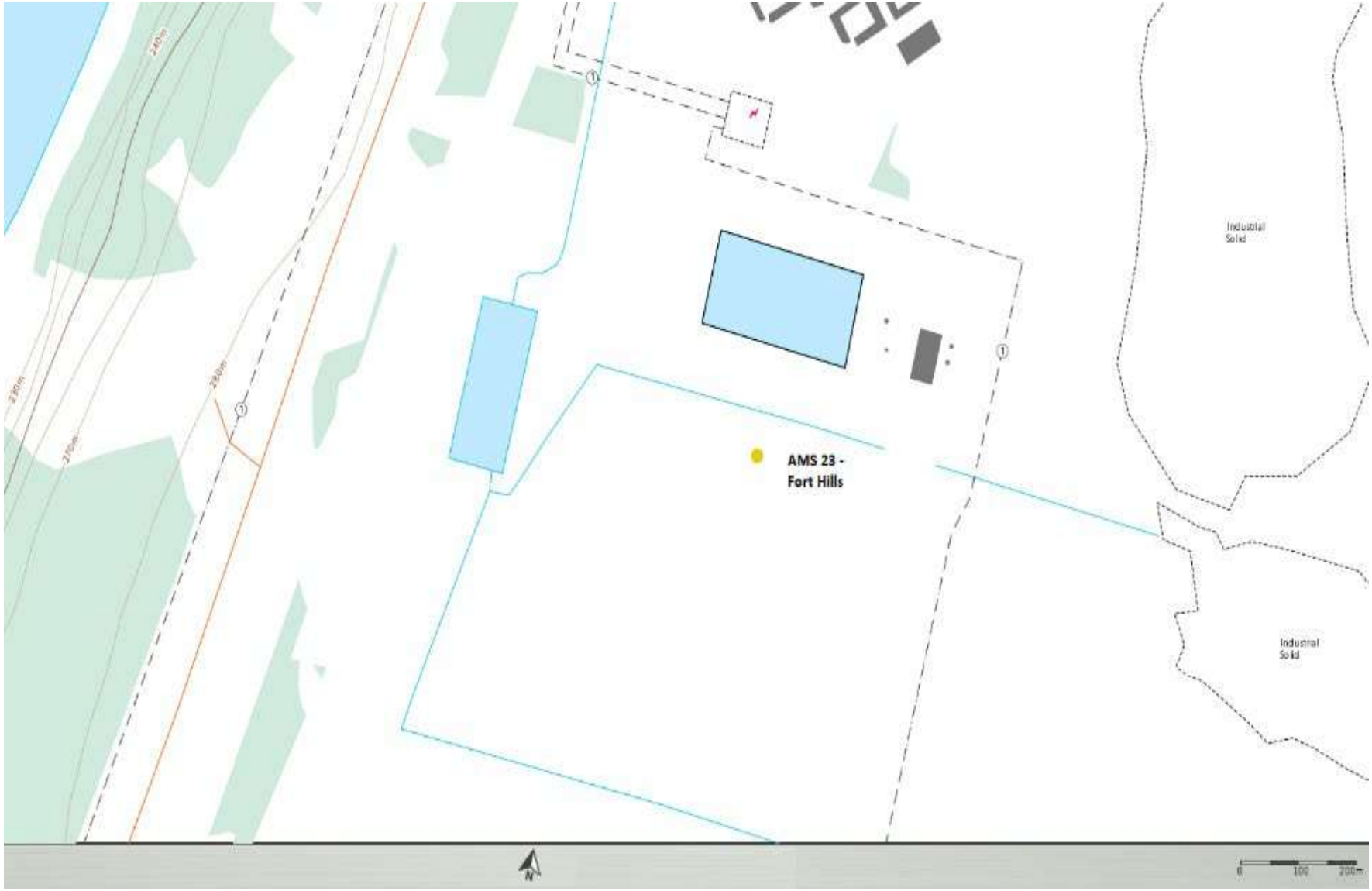
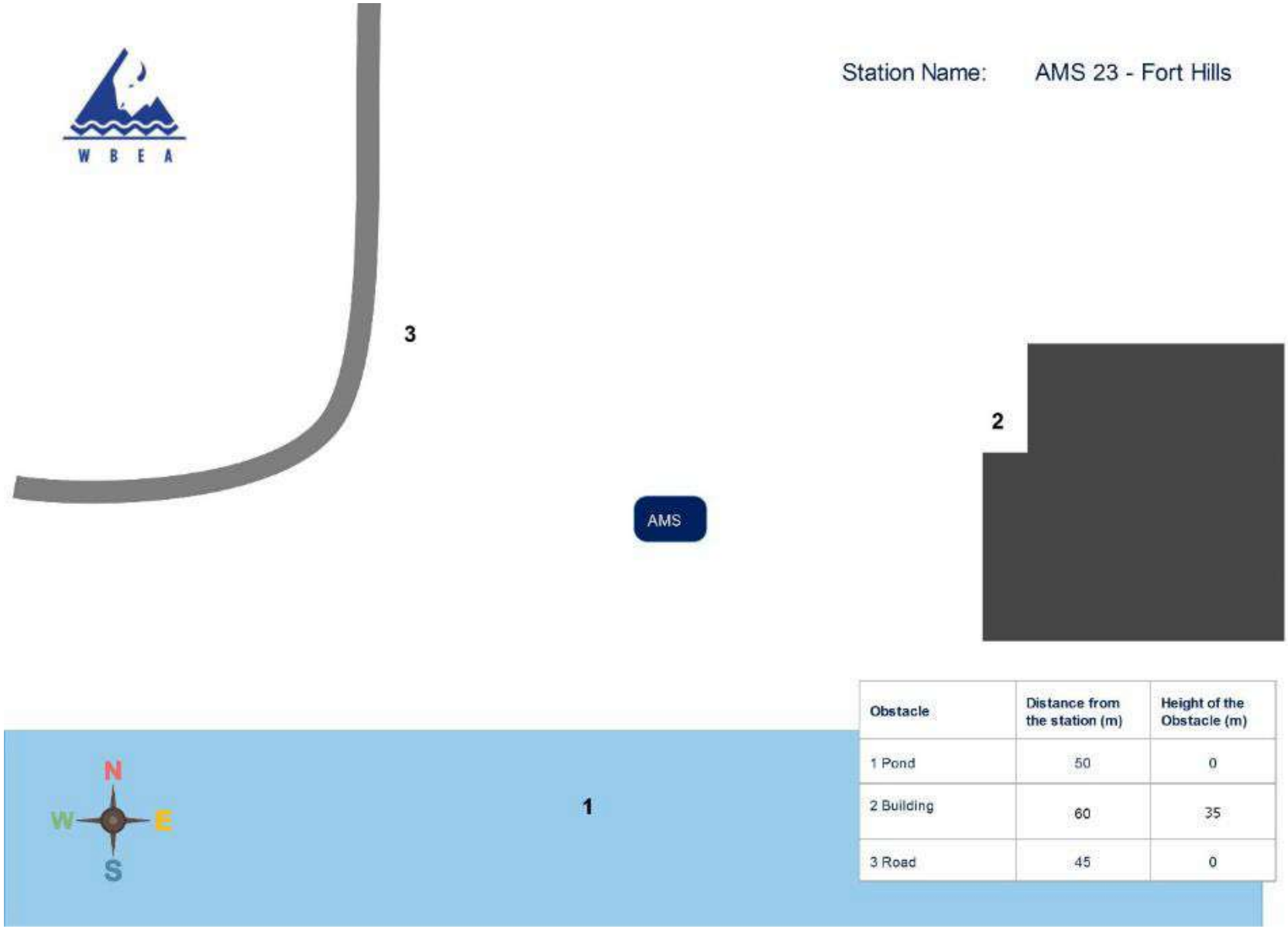


Figure 1 – Area topographic map showing AMS 23

Figure 2 – Aerial photo showing AMS 23



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Pond	50	0
2 Building	60	35
3 Road	45	0

Figure 3 – Plan view sketch for AMS 23 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 4 – Environment looking North

Figure 5 – Environment looking East

Figure 6 – Environment looking South

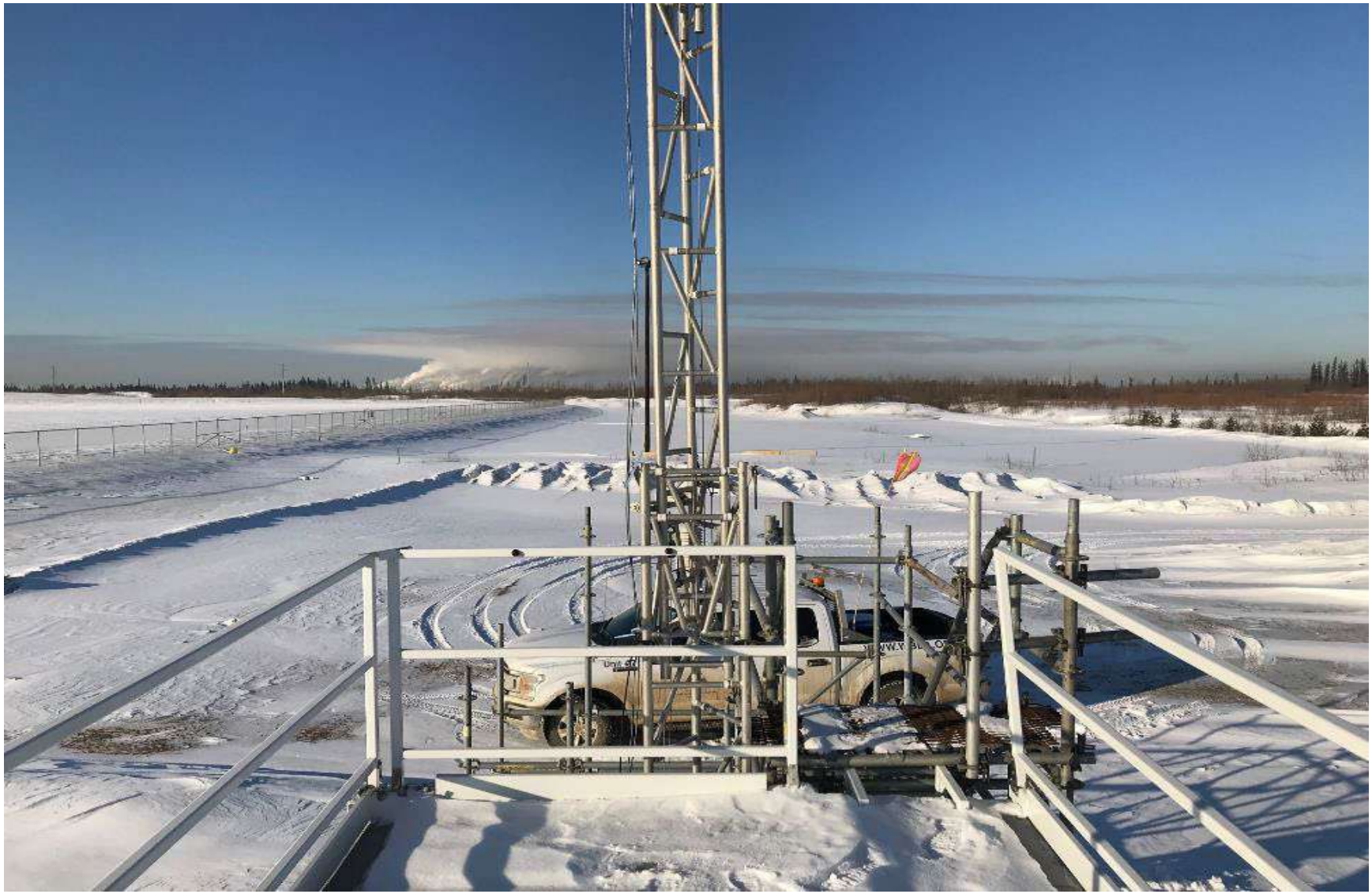


Figure 7 – Environment looking West

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

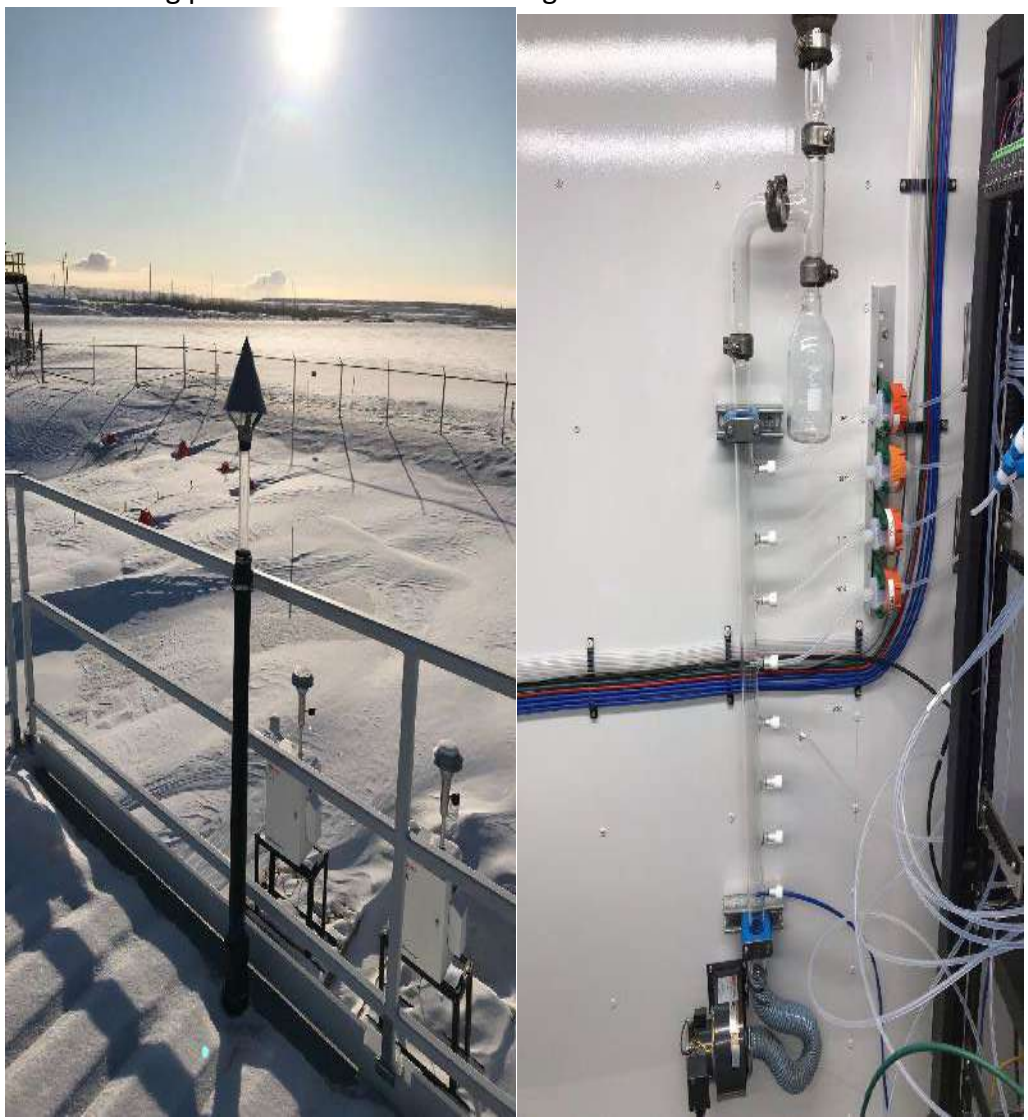


Figure 9 – Photo showing the inlet and sample manifold

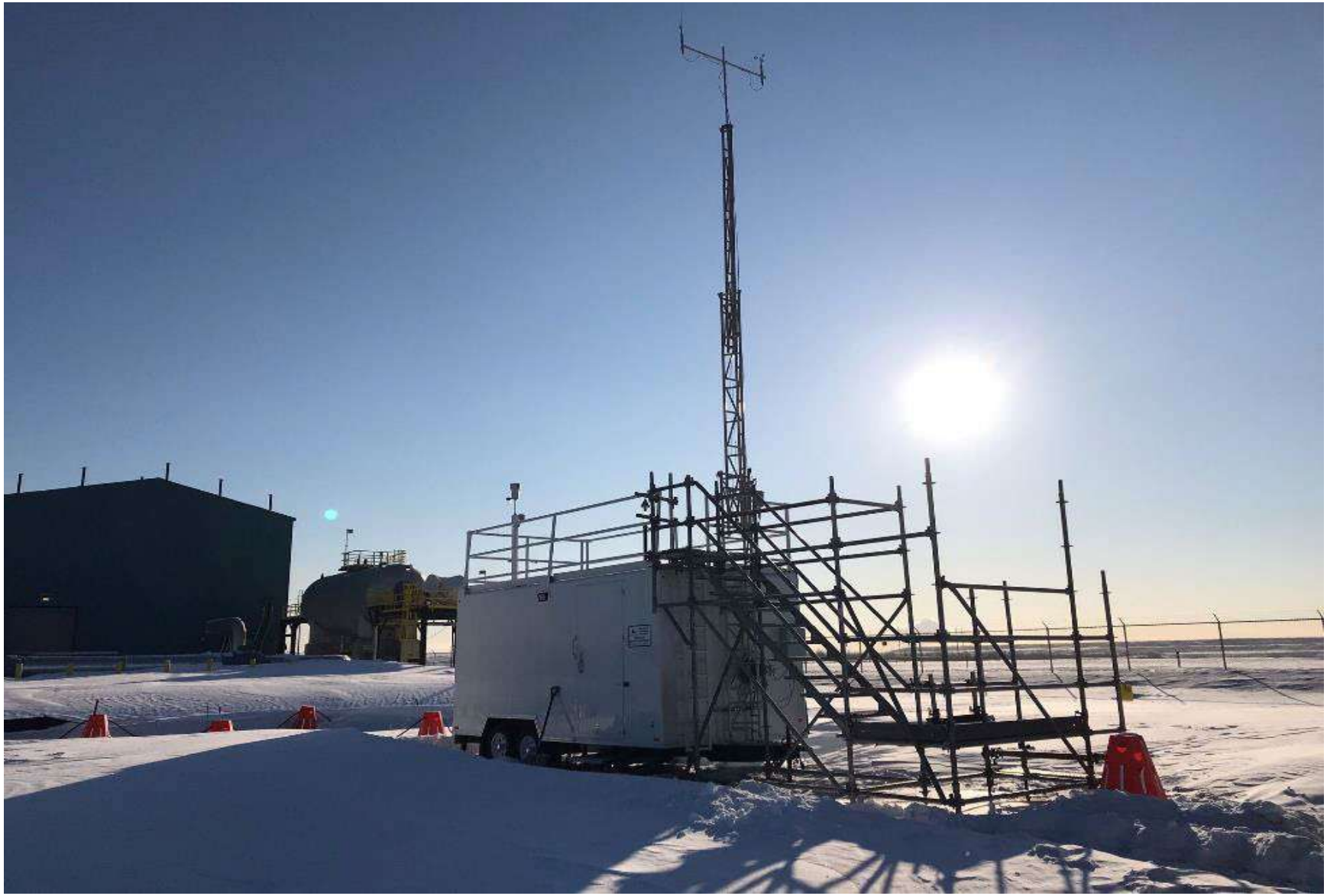


Figure 10 – Curb shot of the monitoring station

Figure 11 –Photo of the front and the back of instrument rack

Figure 12 –Photo of the T640 PM monitor and inlet

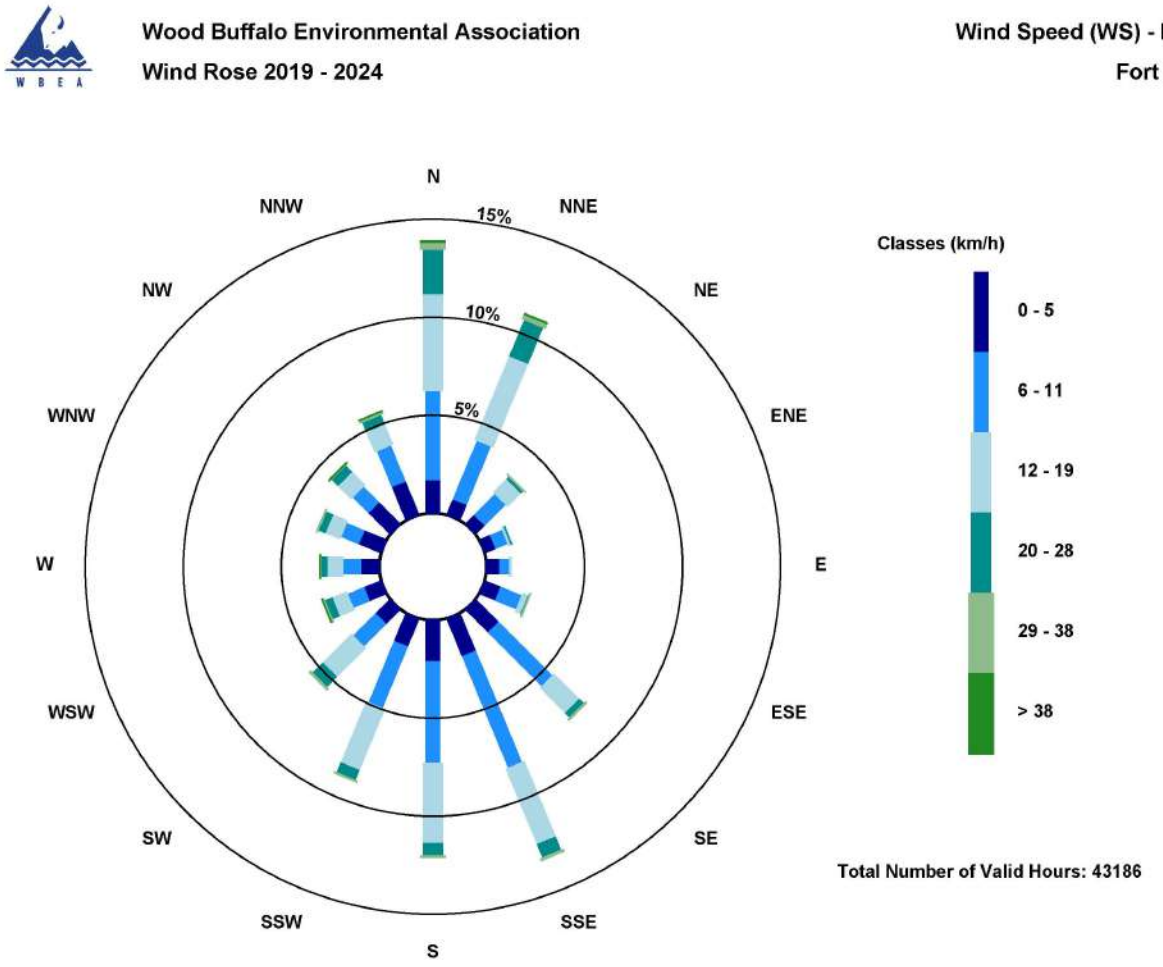


Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Waskōw ohci Pimâtisiwin

LAST UPDATED: MARCH 28, 2024

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Figure 13 – Windrose (2019-2024) 19

General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 25
Station name	Waskōw ohci Pimâtisiwin
Date station established	July 2017

Location

Station street address	Environment and Climate Change Canada Oski Otin compound
Legal land description	5-25-94-11 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	57°11’1.21” N
Longitude	111°38’21.94” W
UTM East	461350.886
UTM North	6337994.691
Nearest community	Fort Mackay
Community population	742
Census Year	2016

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	N/A
Approval number	N/A
Contact Name	Wood Buffalo Environmental Association
Address	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Phone number	780-799-4420
Email address	info@wbea.org

Site Description

Land use by sector	0 – 90 degrees	Wooded Area
	91 – 180 degrees	Wooded Area
	181 – 270 degrees	Oski-otin Compound
	271 – 360 degrees	Oski-otin Compound, gravel access road
Site elevation (m) (above sea level)	261.6 m	
Angle of elevation to nearby buildings	Greatest angle	N/A
	Building direction	N/A
Airflow restrictions	North	None

	East	None
	South	None
	West	House
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Meteorological Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Main roadway	Low	30	Main roadway used by residential vehicles

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNRL Albian	Oil Sands Plant	10	Northeast
Syncrude	Oil Sands Plant	15	South
CNRL Horizon	Oil Sands Plant	20	Northwest

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43i	1118148497	2017	August, 2017
TRS	Thermo Scientific	43iQ-LTE	1200025752	2020	October, 2020
TRS	CD-Nova	CDN-101	461	2020	October, 2020
H_2S	Thermo Scientific	43i-LTE	1170050146	2019	August, 2017
H_2S	Global Analyzer Systems	G150	2022-219	2023	August, 2017

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Instrument Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	P3640812	2	-	August, 2017
WS	Met One	010C-1	Y18364	3	-	August, 2017
WD	Met One	020C-1	U11345	3	-	August, 2017

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2632
Datalogger	Datalogger	Campbell Scientific	CR1000	62004
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	747
Zero air generator	Zero Air Generator	Teledyne/API	M701	4765
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB-15-16517
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	-

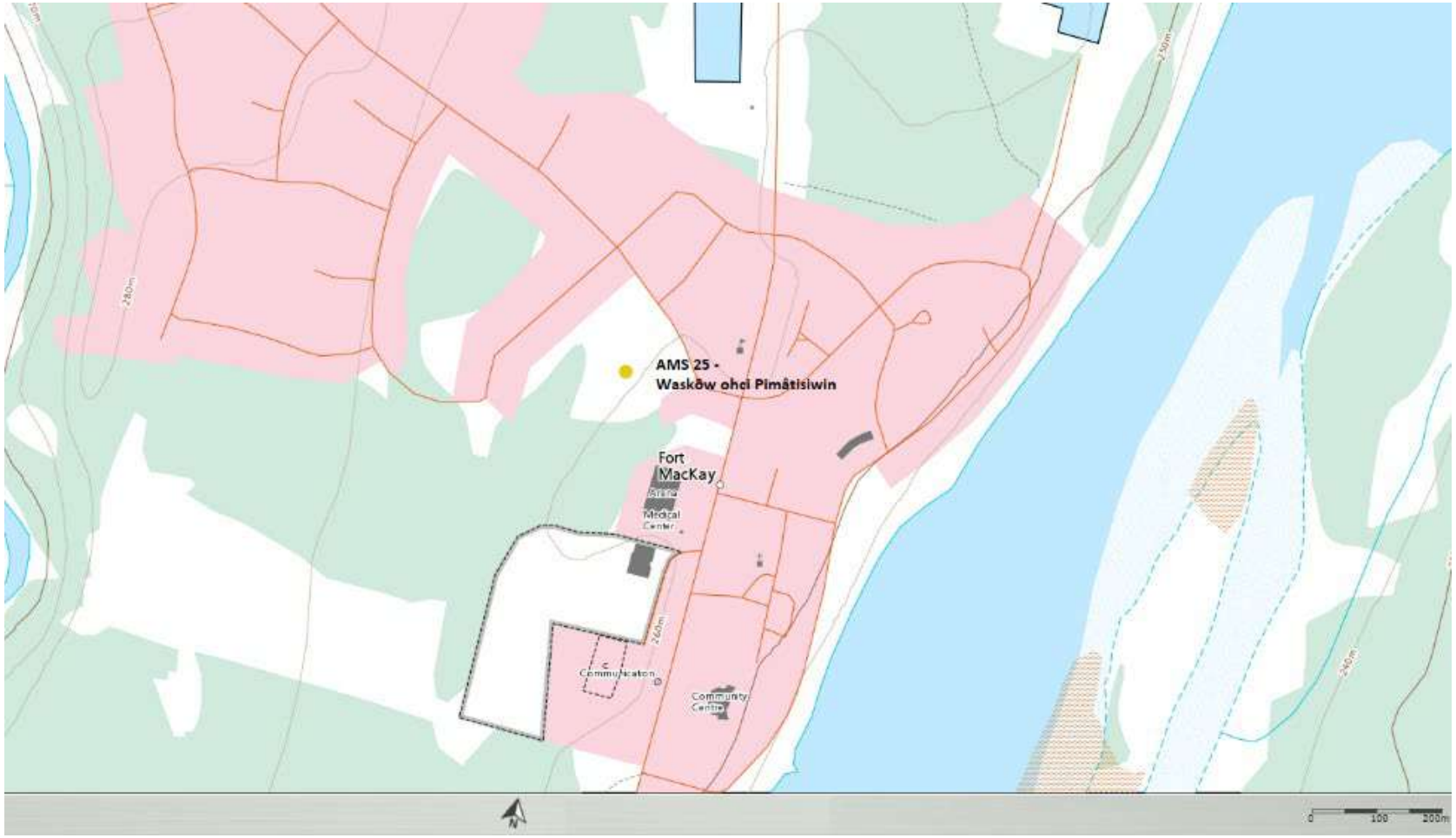

Figure 1 – Area topographic map showing AMS 25

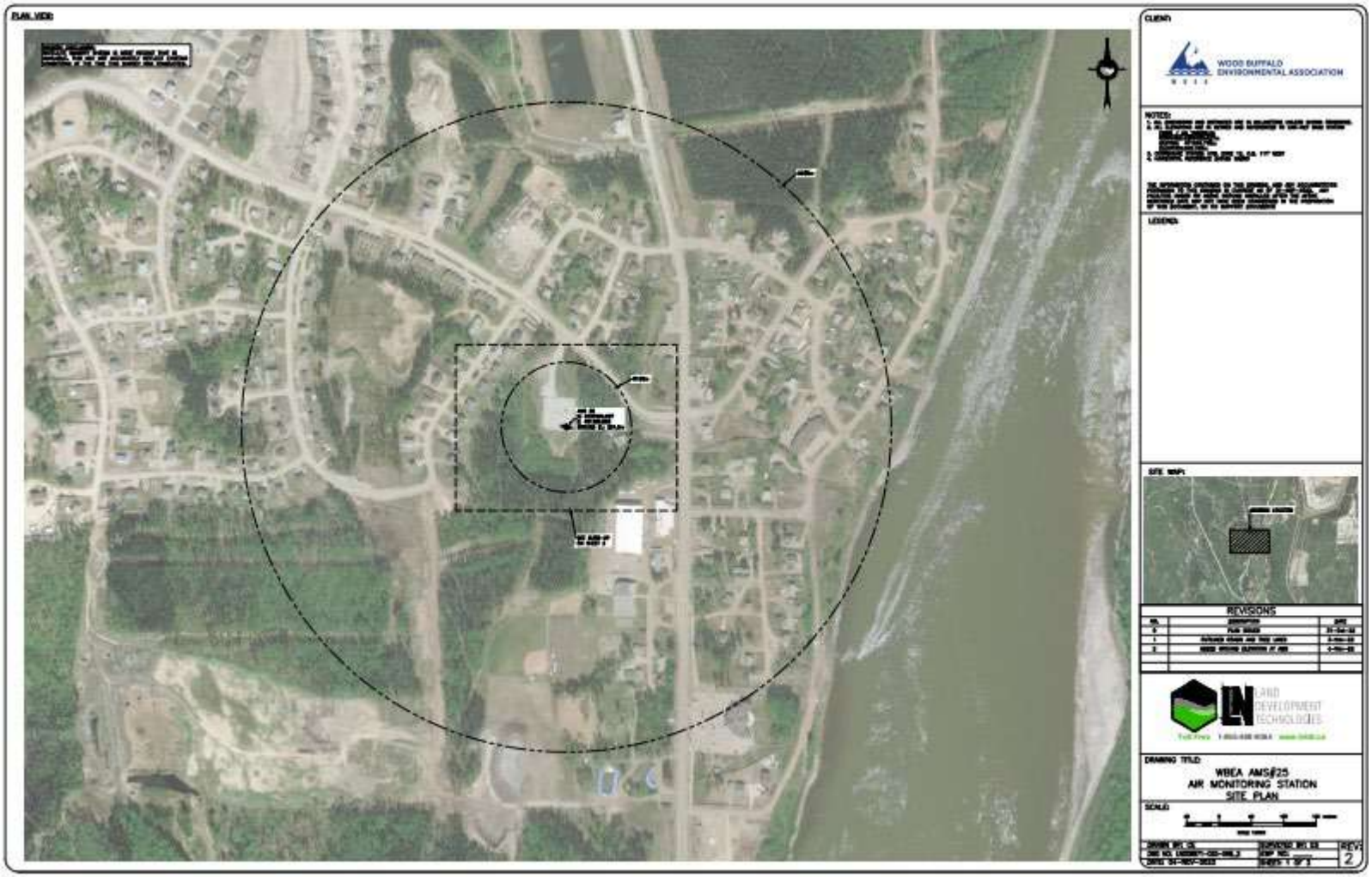

Figure 2 – Aerial image showing AMS 25

Figure 3 – Plan view image for AMS 25 site

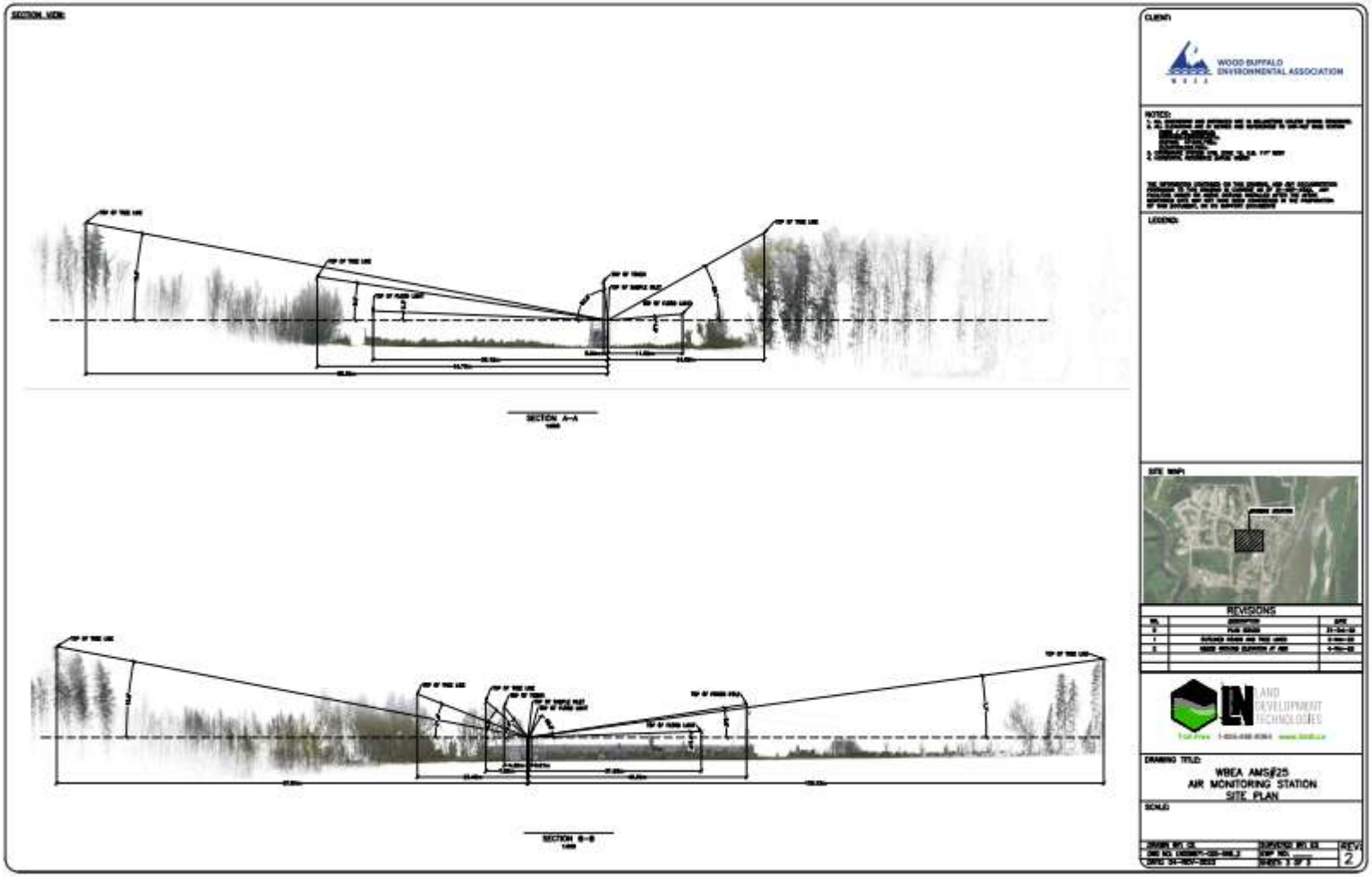

Figure 4 – Elevation view image for AMS 25 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front of instrument rack

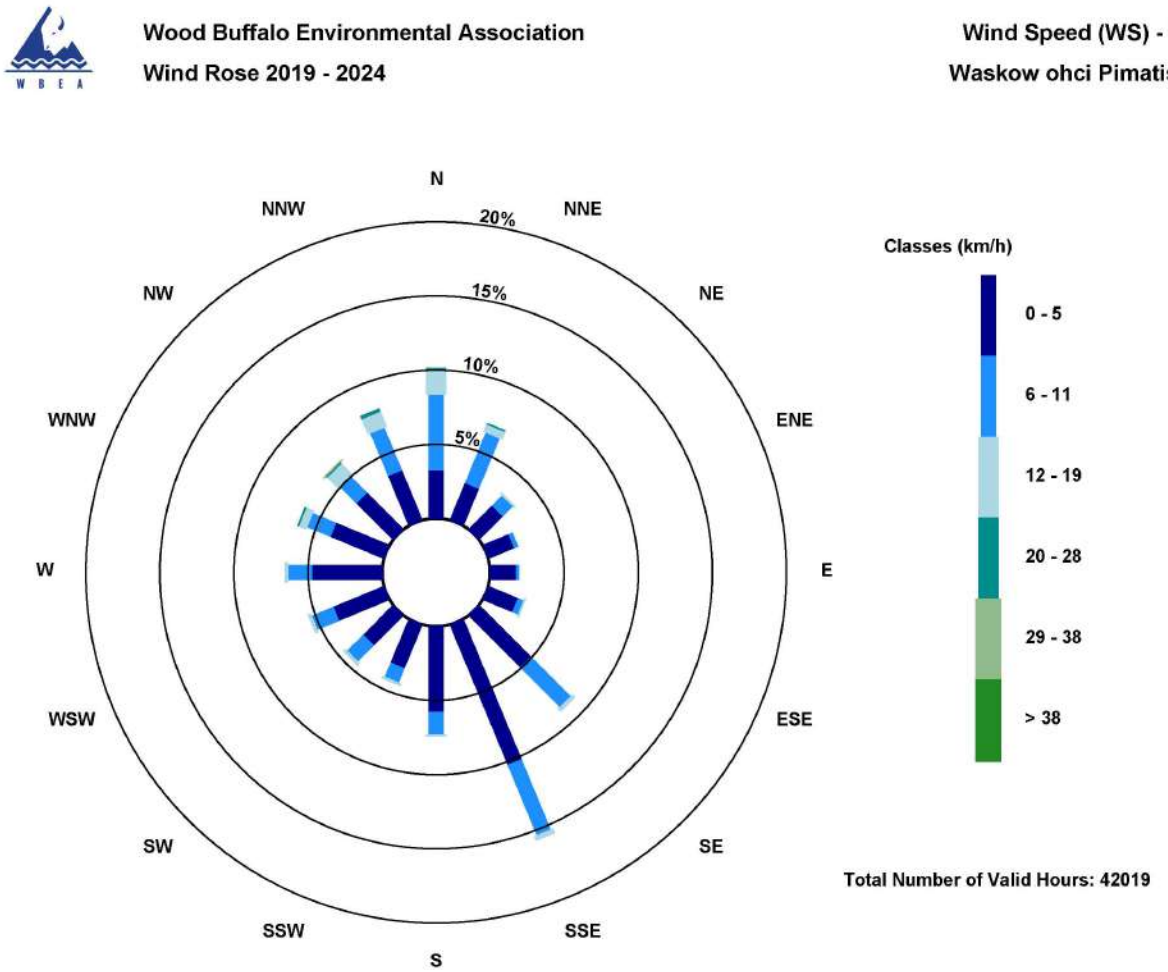

Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Christina Lake

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 26
Station name	Christina Lake
Date station established	May 30, 2018

Location

Station street address	Located close to a non-operational well-pad 3-16 at Cenovus SAGD site
Legal land description	3-16-76-6 W4
Latitude	55.57915315
Longitude	-110.876009033
UTM East	507816.87
UTM North	6159249.07
Nearest community	Conklin
Community population	178

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Name of Approval Holder	Cenovus Energy Inc.
Approval number	48522-02-00
Contact Name	Sean Nichols
Address	500 Centre Street SE Calgary, AB T2P 0M5
Phone number	780-608-7176
Email address	Sean.nichols@cenvous.com

Site Description

Land use by sector	0 – 90 degrees	SAGD Operations
	91 – 180 degrees	SAGD Operations
	181 – 270 degrees	SAGD Operations
	271 – 360 degrees	SAGD Operations
Site elevation (Above sea level)	569.6m	
Angle of elevation to nearby building	Greatest angle	N/A
	Building direction	N/A
Airflow restrictions	North	No
	East	No
	South	No
	West	No
Sample manifold	Type	All glass
	Inlet height above roof	1 meter
Wind Sensors	Type	Cup and vane
	Height above ground	10
	Distance from station	7

Site Influences

Localized Sources

Type	Distance (m)	Description
Well-pad	100	Non-operational well pad. Capped.

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt/gravel	Medium	20	Used by site workers

Major Point Sources

Facility Name	Source Type	Distance from site (m)	Compass direction from site
Cenovus Christina Lake	SAGD Facility	300	N

Station Equipment

Equipment Owner: Cenovus

Analytical Equipment

Parameter	Owner	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Cenovus	Thermo Instruments	43I	1152430005	February, 2024	June, 2018
H_2S	Cenovus	Thermo Instruments	450I	1180030032	May, 2018	June, 2018
$NO/NO_x/NO_2$	Cenovus	Thermo Instruments	42I	1173480006	May, 2018	June, 2018

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G4330034	4	May 30, 2018	June, 2018
WS	Met One	010C-1	W23536	2	May 30, 2018	June, 2018
WD	Met One	020C-1	W23733	2	May 30, 2018	June, 2018

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	7881
Zero air generator	Zero Air Generator	Teledyne/API	701	832
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	NA
Gas Dilution Calibrator	Mass flow controlled gas dilution	Teledyne/API	T700	3253
Tower	10 Meter crank up	Aluma	T-135	217224002

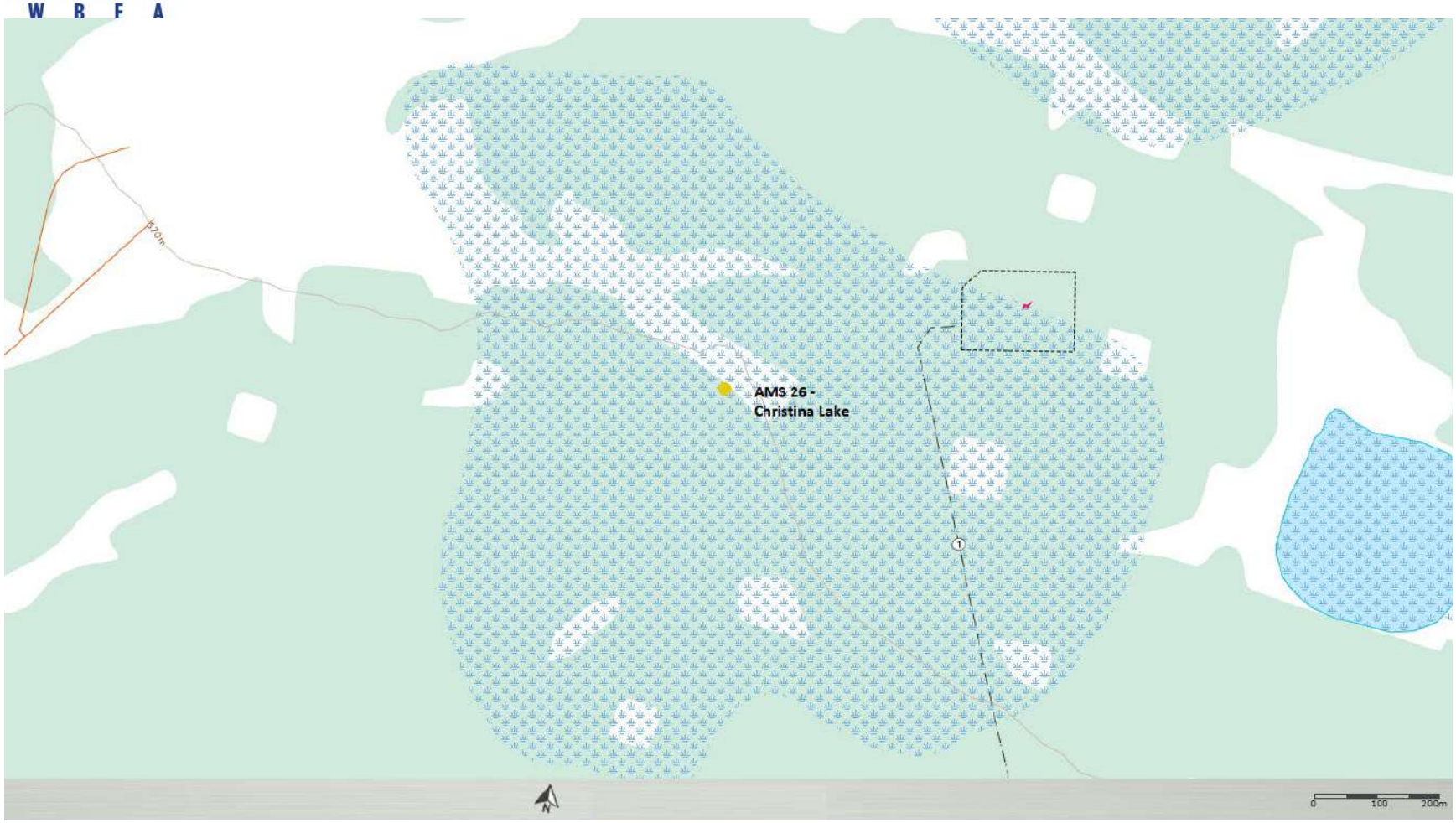

Figure 1 – Area topographic map showing AMS 26.

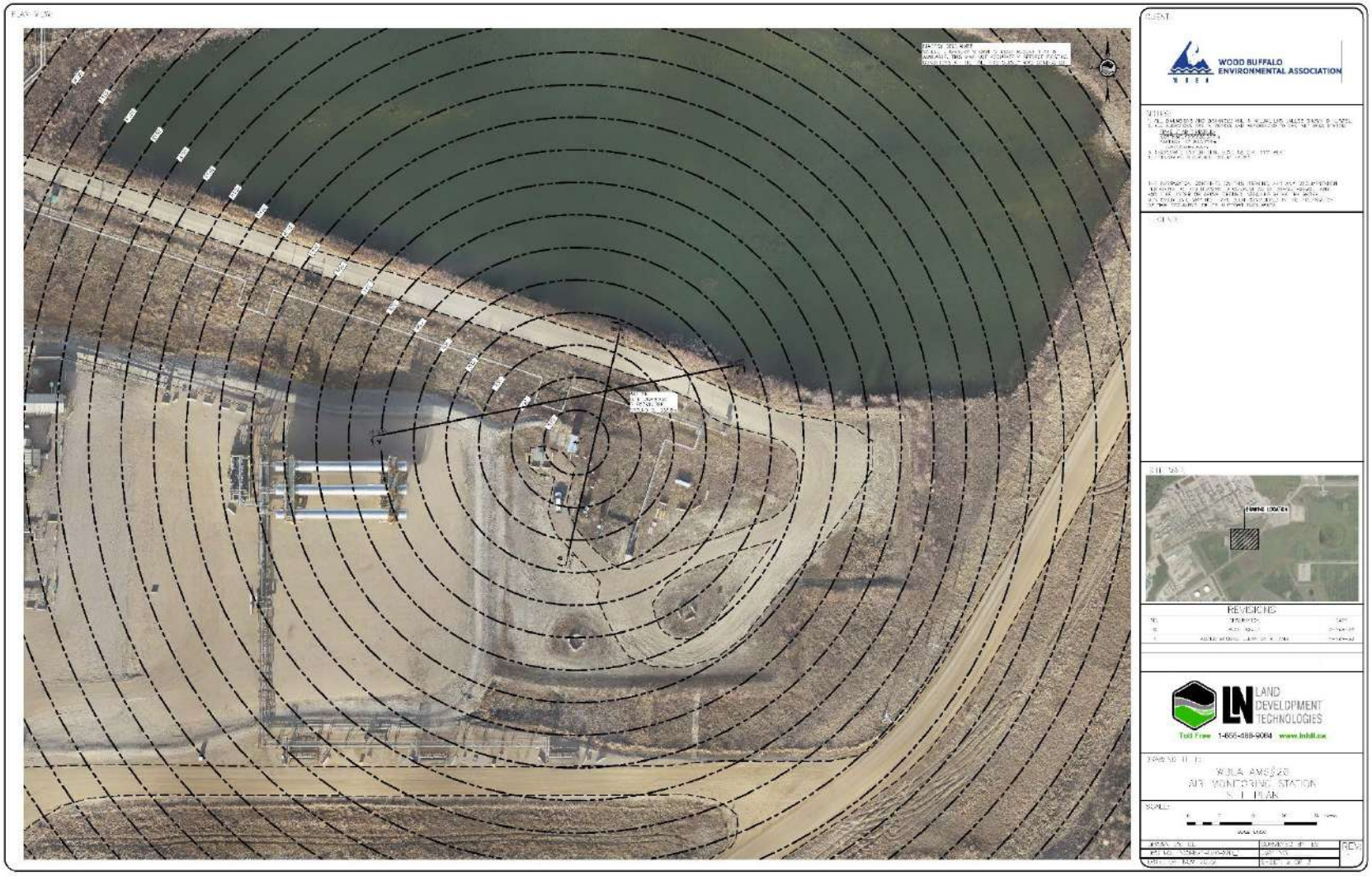

Figure 2 – Plan view image for AMS 26 site.

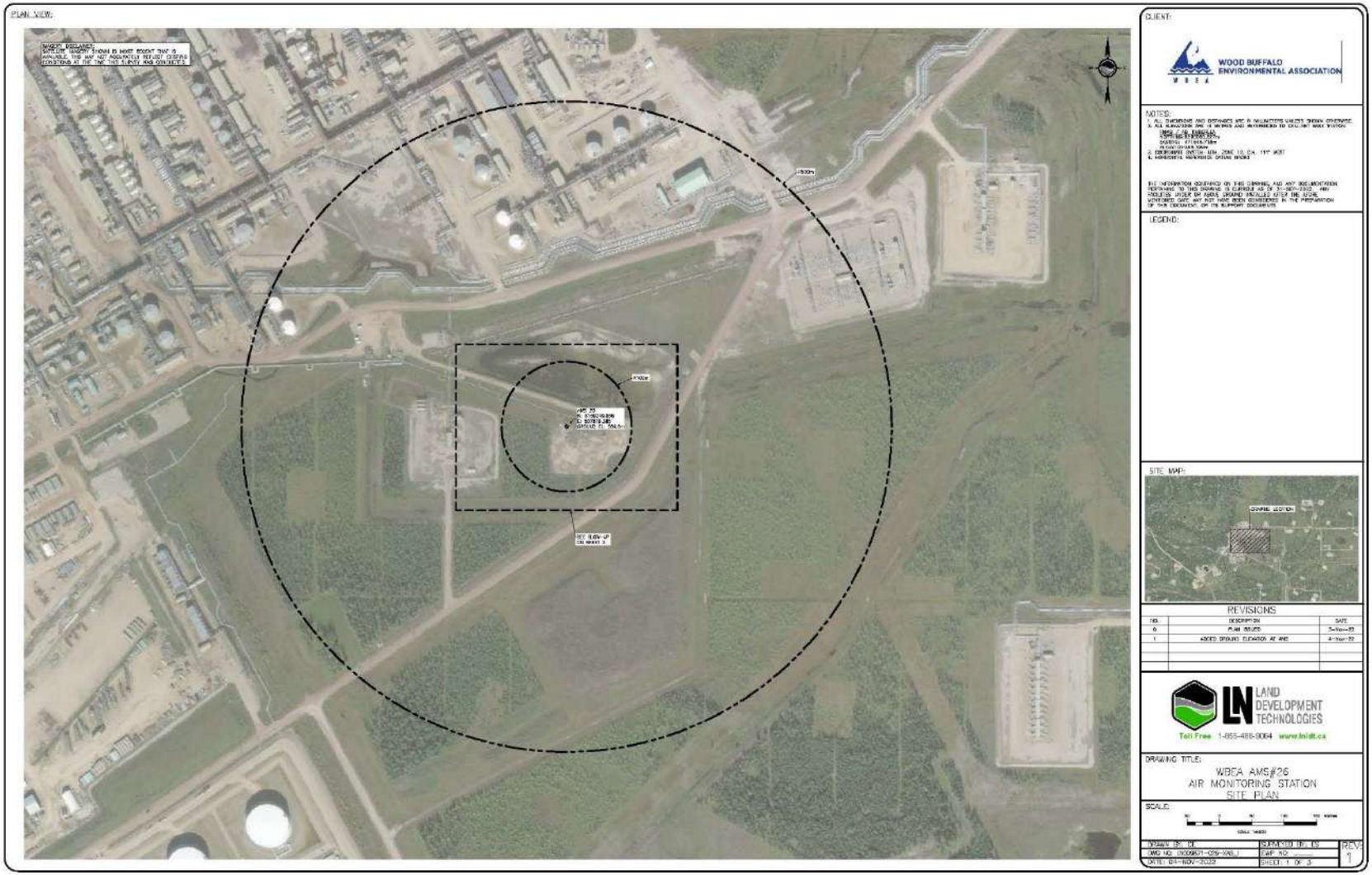

Figure 3 – Aerial photo showing AMS 26.

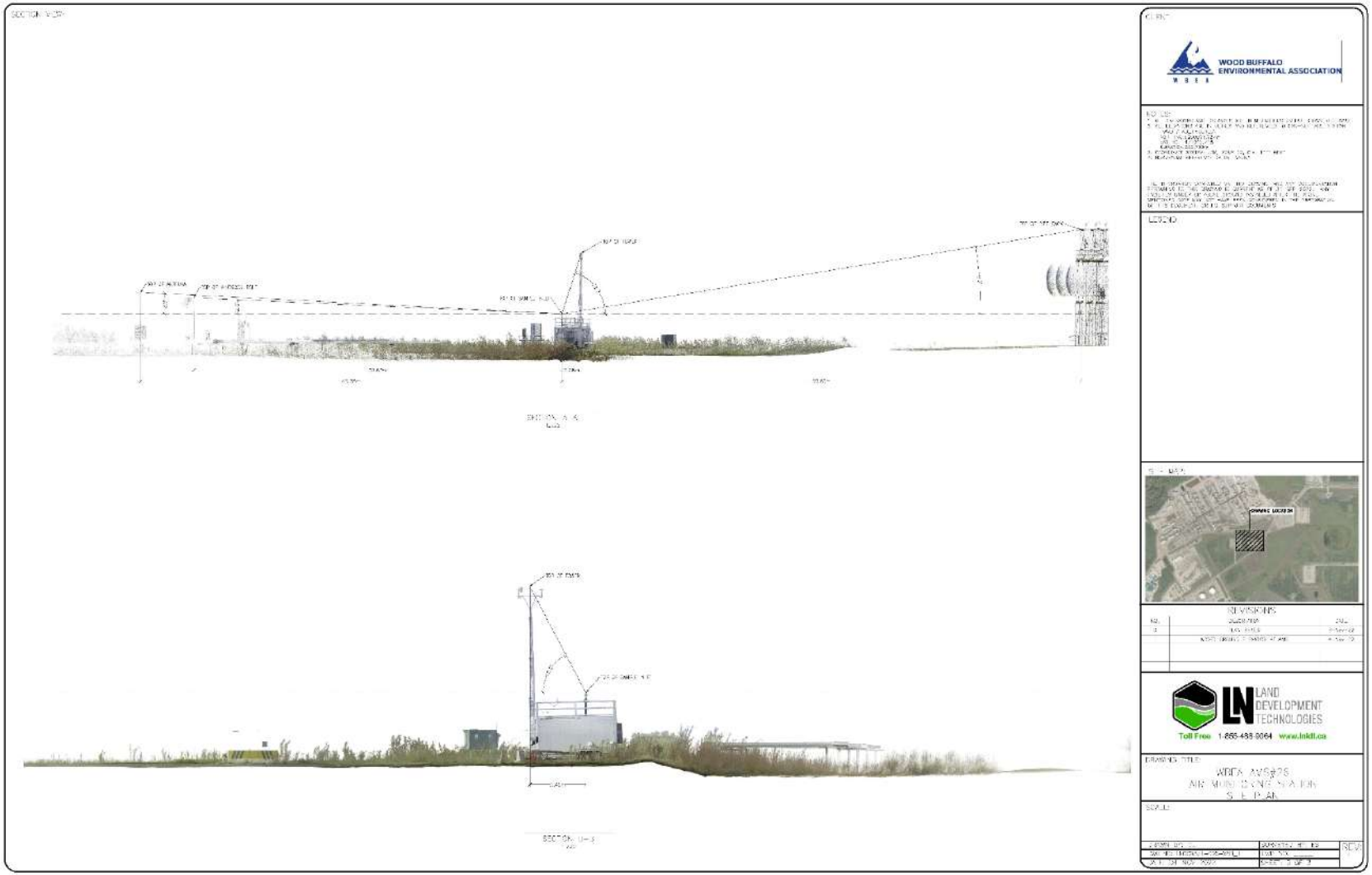

Figure 4 – Elevation view image for AMS 26.

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North.

Figure 6 – Environment looking East.

Figure 7 – Environment looking South.

Figure 8 – Environment looking West.

Figure 9 – Meteorological tower.

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold.

Figure 11 – Curb shot of the monitoring station.

Figure 12 –Photo of front and back of instrument rack.

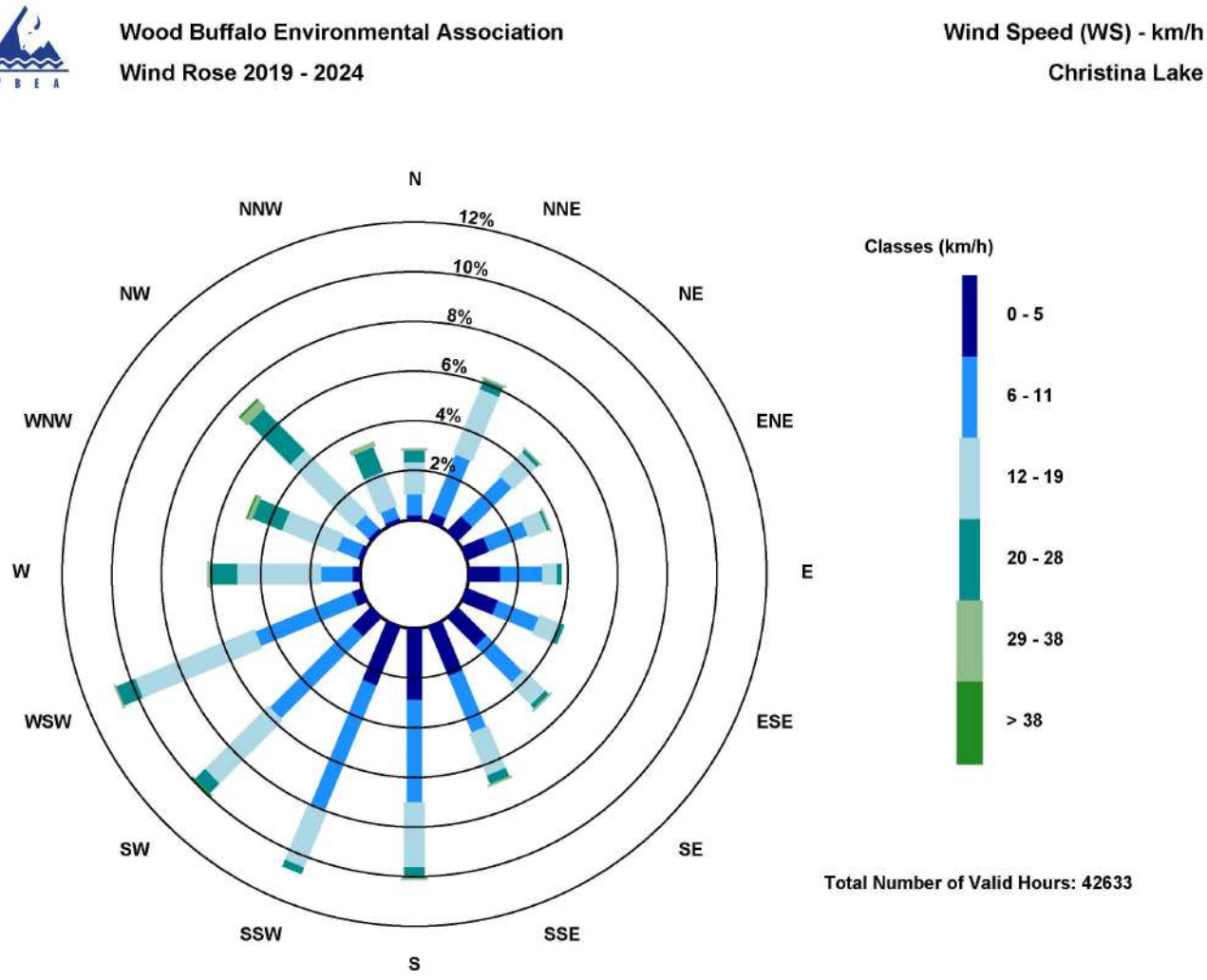

Figure 13 – Windrose (Five Year).

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Jackfish 2/3

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Time Integrated Sampling ..... **Error! Bookmark not defined.**

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 27
Station name	Jackfish 2/3
Date station established	Sep 15, 2018

Location

Station street address	Located southeast of CNRL Jackfish Lodge, left side of the road right after CNRL Energy Plant
Legal land description	15-23-75-7-W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.51870937
Longitude	-110.9759839
UTM East	501516
UTM North	6152516
Elevation	679
Nearest community	Conklin
Community population	154
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Canadian Natural Resources Limited
Approval number	224816-00-00
Contact Name	Shawn Milligan
Address	2100, 855 - 2 Street S.W. Calgary, AB T2P 4J8
Phone number	403-896-3109
Email address	shawn.milligan@cnrl.com

Site Description

Land use by sector	0 – 90 degrees	SAGD Operations
	91 – 180 degrees	SAGD Operations
	181 – 270 degrees	SAGD Operations
	271 – 360 degrees	SAGD Operations
Site elevation (m) (above sea level)	670 m	
Angle of elevation to nearby buildings	Greatest angle	23 degrees
	Building direction	South

Airflow restrictions	North	None
	East	None
	South	None
	West	None
Distance to nearest trees (m)	North	40
	East	45
	West	45
	South	45
Sample manifold	Type	All glass
	Inlet height above roof	1 meter
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt/Gravel	Medium	100	Used by site workers

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Devon Energy	SAGD Plant	1	Northwest
Devon Energy	SAGD Plant	2	East

Station Equipment

Equipment Owner: Canadian Natural Resources Ltd.

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Teledyne/API	43iQ-ANN	12124313138	2022	September, 2018
H_2S	Teledyne/API	T101	621	2018	September, 2018
$NO/NO_x/NO_2$	Teledyne/API	T200	722	2018	September, 2018

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	N2910505	Class 3	2018	September, 2018
WS	Met One	010C-1	X16480	Class 4	2018	September, 2018
WD	Met One	020C-1	X16496	Class 4	2018	September, 2018

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	12310
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3811
Zero air generator	Zero Air Generator	Teledyne/API	701	135
Shelter / Building	Air monitoring portable	ITB	ITB-18-17684	17684-1
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA

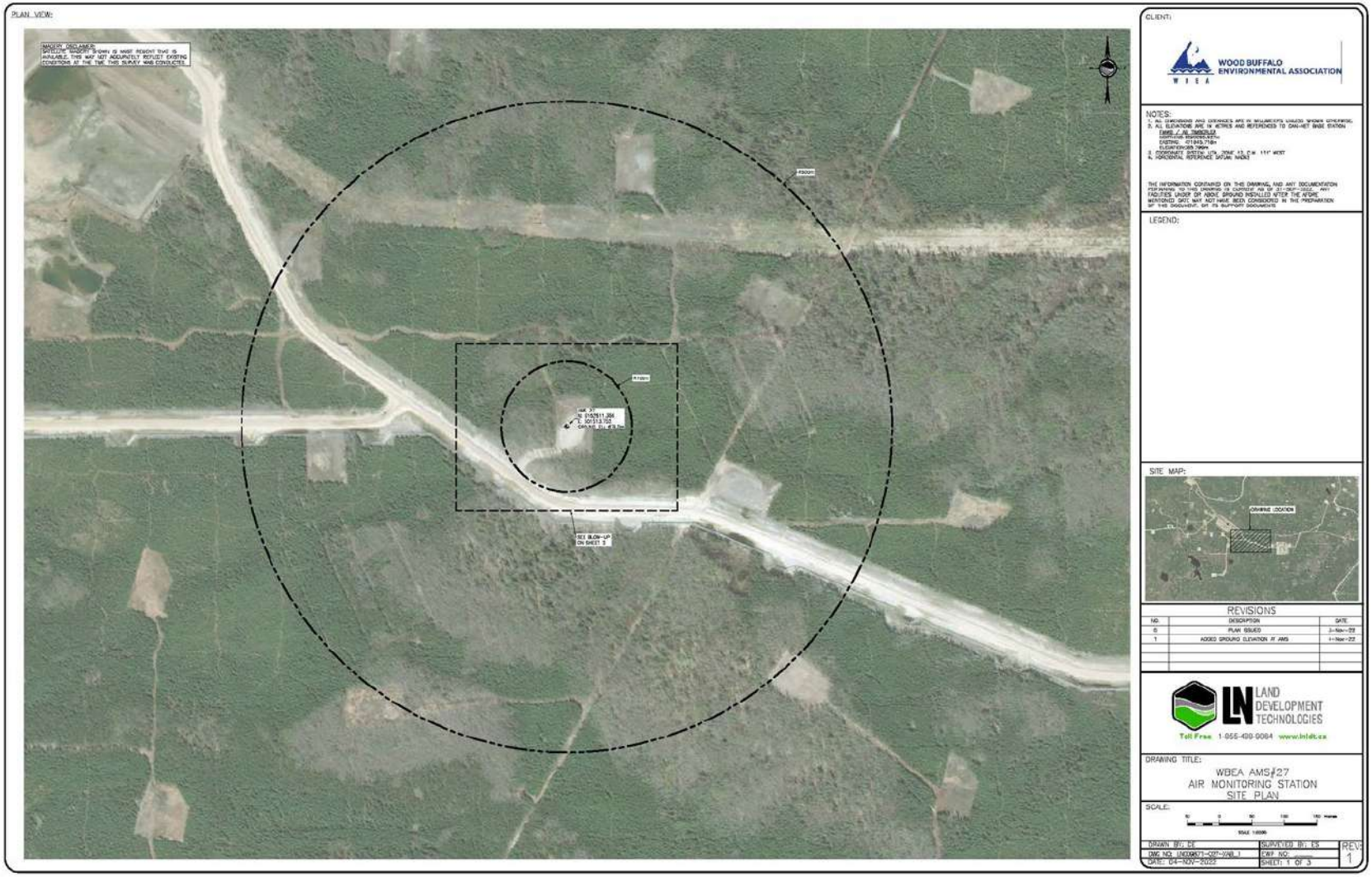

Figure 1 – Aerial photo showing AMS 27.

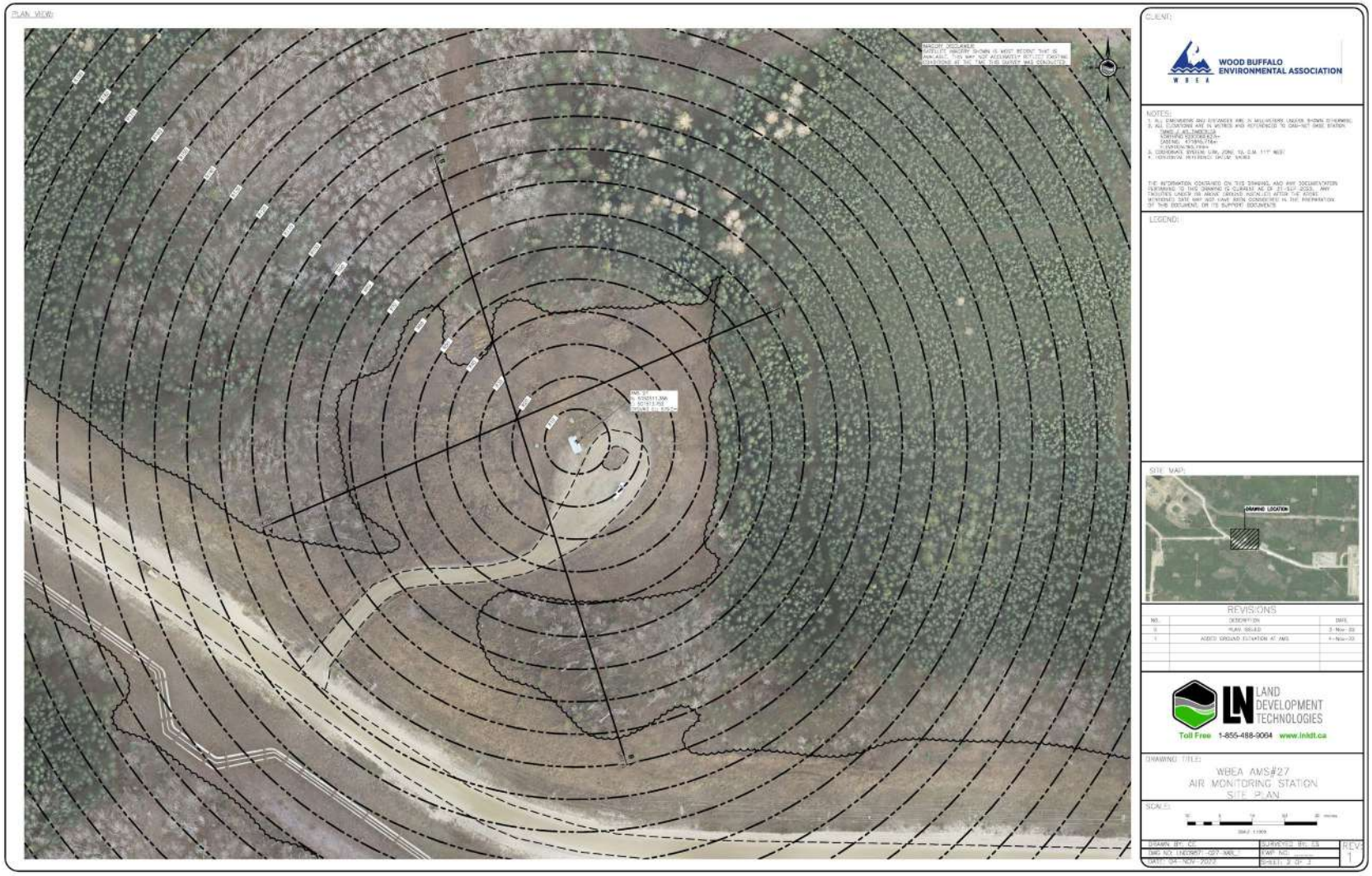

Figure 2 – Plan view sketch for AMS 27.

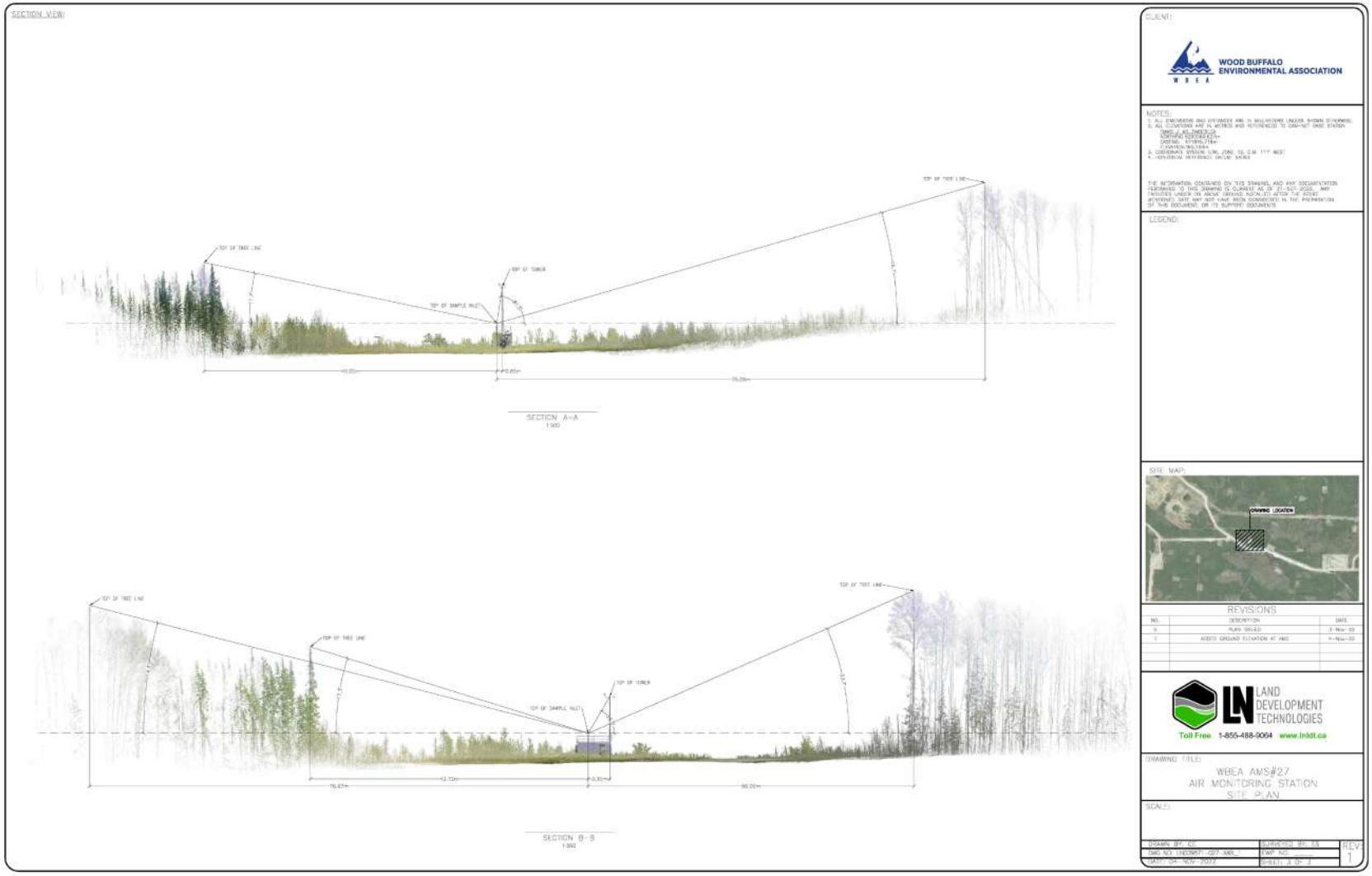

Figure 3 – Cross-Sectional Elevation Drawing of AMS 27.

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 4 – Environment looking North.

Figure 5 – Environment looking East.

Figure 6 – Environment looking South.

Figure 7 – Environment looking West.

Figure 8 – Meteorological Tower.

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 9 – Photo showing the inlet and sample manifold.

Figure 10 – Curb shot of the monitoring station.

Figure 11 –Photo of the front and the back of instrument rack

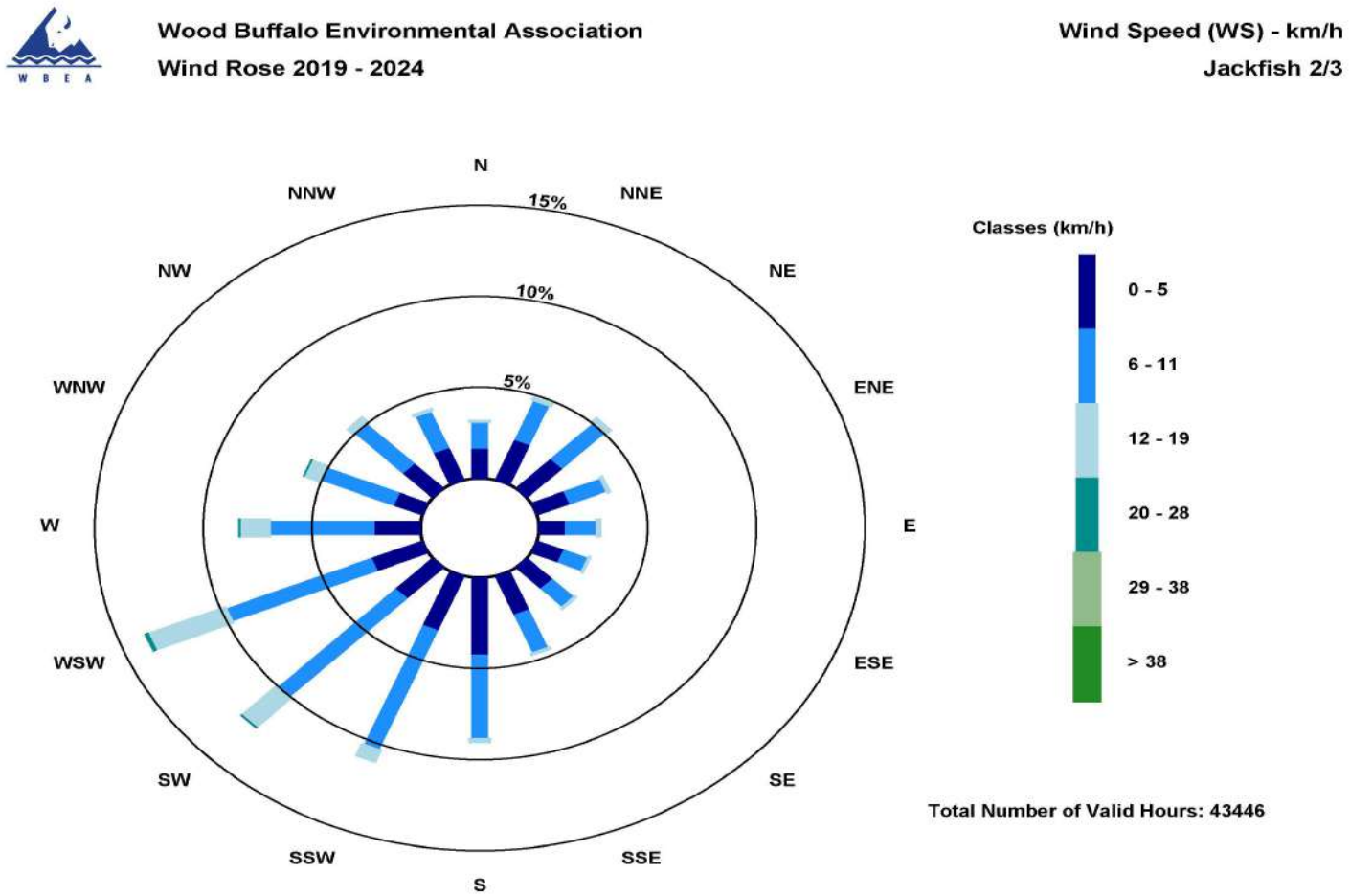

Figure 12 – Windrose (five years).

W B E A

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Surmont 2

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 29
Station name	Surmont 2
Date station established	2019

Location

Station street address	NA
Legal land description	10-20-83-6-W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56.2124224862
Longitude	-110.914925019
UTM East	505285
UTM North	6229755
Nearest community	Anzac
Community population	555
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	ConocoPhillips Canada Resources Corp.
Approval number	48263-01-00
Contact Name	Heather Pitt
Address	401 9 Ave SW, Calgary, Alberta, T2P 3C5
Phone number	780-334-7914
Email address	heather.d.pitt@conocophillips.com

Site Description

Land use by sector	0 – 90 degrees	Trees
	91 – 180 degrees	Trees/shed/potable water access point
	181 – 270 degrees	Trees
	271 – 360 degrees	Trees/ laydown yard
Site elevation (m) (above sea level)	550	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	None

	East	None
	South	None
	West	None
Distance to nearest trees (m)	North	60 m
	East	50 m
	West	100 m
	South	55 m
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Vehicles	20 m NW	Moving vehicles around station

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt/gravel road	low	20	Used by site personnel for accessing various sections around plant.

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
ConocoPhillips	SAGD	0.36 km	NW

Station Equipment

Equipment Owner: ConocoPhillips

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Environmental	43i	1170050150	2016	April, 2019
H_2S	Thermo Environmental	43iQTL	1200326170	2023	April, 2019
$NO/NO_x/NO_2$	Thermo Environmental	42i	1170050148	2016	April, 2019
THC	Thermo Environmental	51i	1170050149	2021	April, 2019
$PM_{2.5}$	Teledyne/API	T640	253	2019	April, 2019

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	G4340046	3	2016	April, 2019
WS	Met One	010C-1	P10039	2	2019	April, 2019
WD	Met One	020C-1	P22885	2	2016	April, 2019

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9037
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	5472
Zero air generator	Zero Air Generator	Teledyne/API	701	4297
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB-17-17154
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA
Tower	10m Tower	Aluma	T-135	AT21403Z32
H2S converter	H2S Converter	Global Analyzer Systems	G150	2022-220

Figure 1 – Area topographic map showing AMS 29

Figure 2 – Aerial photo showing AMS 29

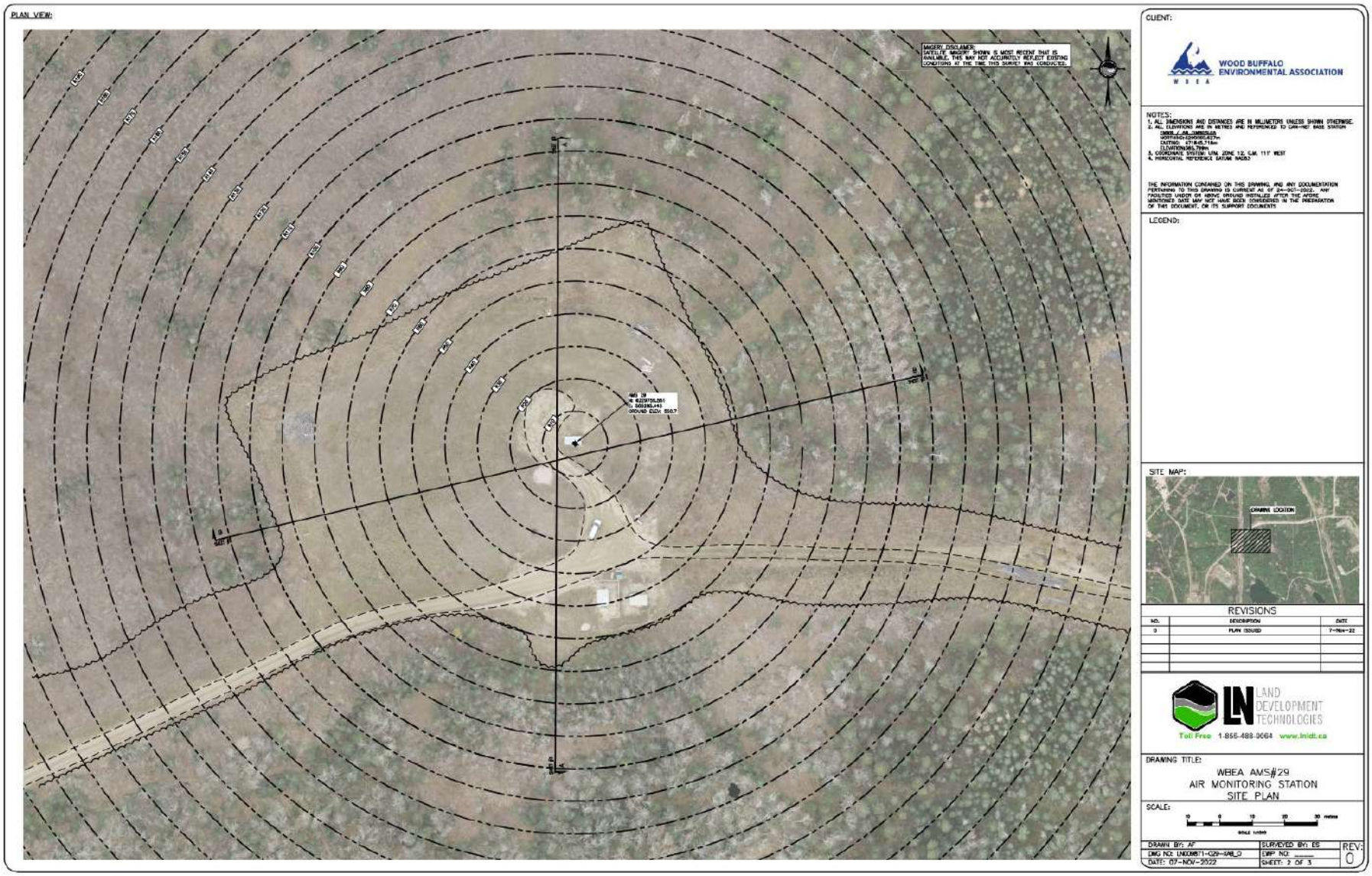

Figure 3 – Plan view sketch for AMS 29 site

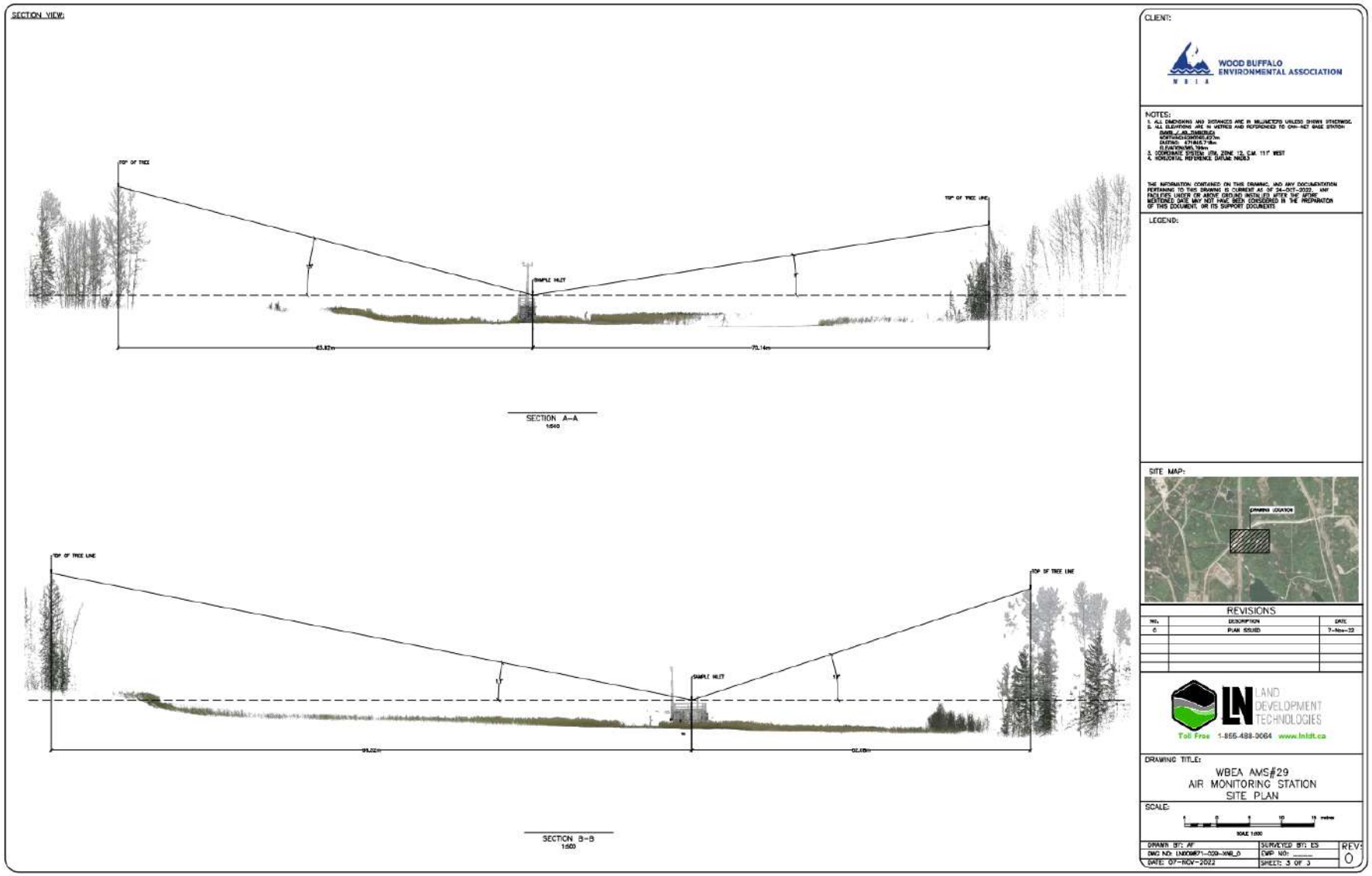

Figure 4 – Elevation view image for AMS 29 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

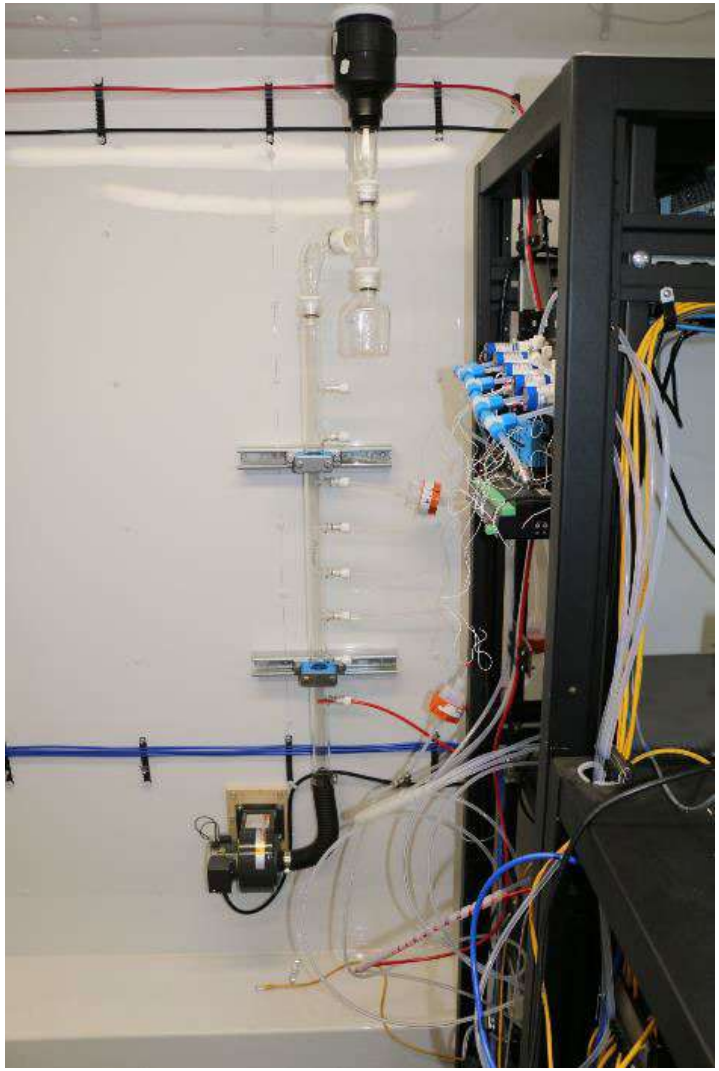

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

Figure 13 –Photo of the T640 Analyzer

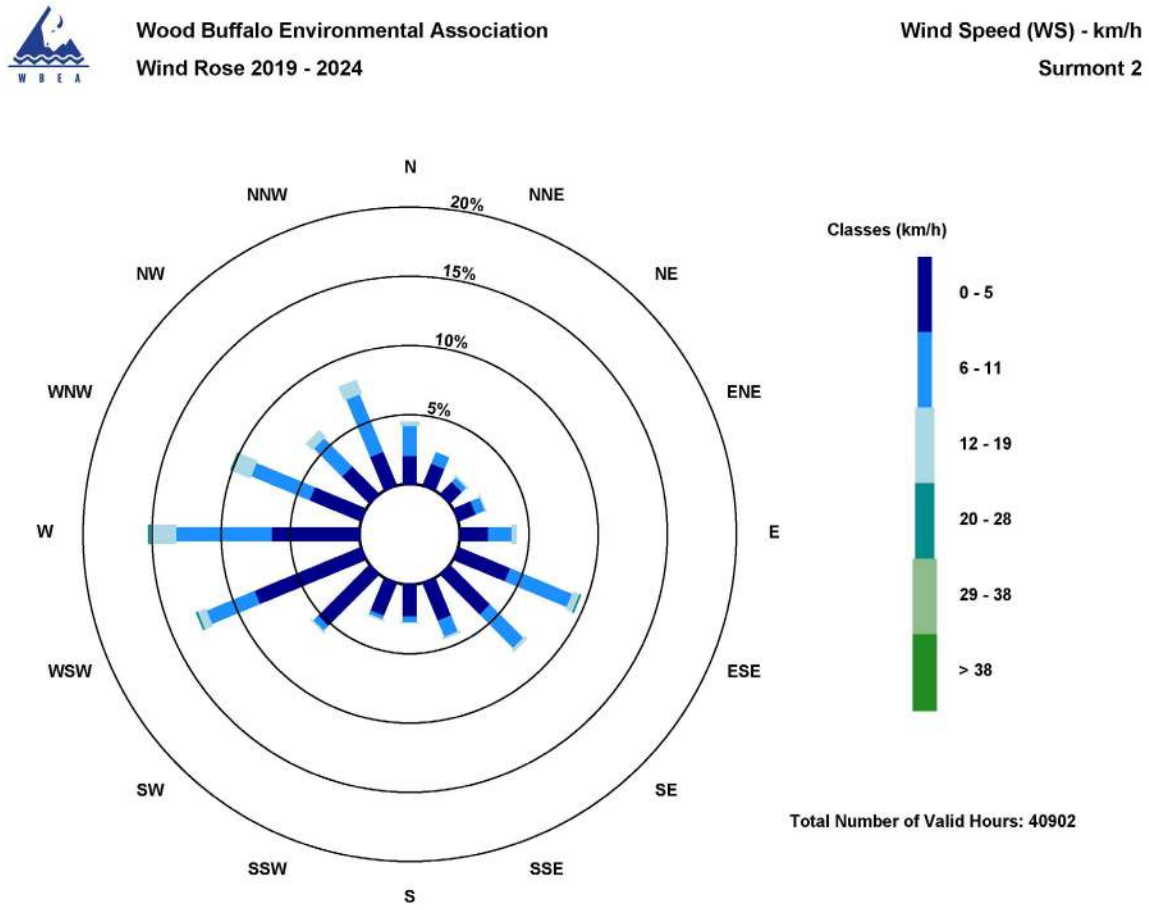

Figure 14 – Windrose (2019 – 2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Ells River

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 30
Station name	Ells River
Date station established	2020

Location

Station street address	Located at about 300 m northwest of the Total Joslyn Camp.
Legal land description	12-04-096-11 W4
Latitude	57.241180
Longitude	-111.722081
Ground Elevation	299.9
UTM East	456424
UTM North	6344478
Nearest community	Fort Mackay
Community population	757

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Name of Approval Holder	Canadian Natural Resources Ltd.
Approval number	149968-01-00
Contact Name	Malathi Velmurugan
Address	2100, 855 – 2 Street SW Calgary, AB T2P 4J8
Phone number	(780) 714-4436
Email address	Malathi.Velmurugan@cnrl.com

Site Description

Land use by sector	0 – 90 degrees	Pond
	91 – 180 degrees	Forest / Highway
	181 – 270 degrees	Forest
	271 – 360 degrees	Forest
Site elevation (above sea level)	304	
Angle of elevation to nearby buildings	Greatest angle	12 degrees
	Building direction	East
Airflow restrictions	North	No
	East	No
	South	No
	West	No
Sample manifold	Type	All glass

	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground	10 metres
	Distance from station	7 metres

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Cell tower compound	14	Compound that holds the equipment for the cell tower to function

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Paved road	Very low	50 M West	Old horizon highway
Paved road	High	250 M East	Horizon highway
Dirt road	Very low	100 M East	Dirt road around the pond

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNRL Horizon Oil Sands	Oil plant	10km	North
CNRL Horizon	Open mining	7km	North

Station Equipment

Equipment Owner: Canadian Natural Resources Ltd.

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
Continuous					
SO_2	Thermo Scientific	43i	1008841397	2021	October, 2020
TRS	Thermo Scientific	43i-TLE	1410661331	2021	October, 2020
$NO/NO_x/NO_2$	Thermo Scientific	42i	0710321429	2021	October, 2020
$THC/CH_4/NMHC$	Thermo Scientific	55i	1181490018	2023	October, 2020
$PM_{2.5}$	Teledyne/API	T640	875	2021	October, 2020
Time-Integrated					
PM_{10} A	Thermo Environmental	2000i	2000I2 204961409	2021	-
PM_{10} B	Thermo Environmental	2000i	2000IW 206011510	2021	-
TSP	Thermo Environmental	2000i	2000IW 209632110	2023	-
VOC	Tisch Environmental	Te-123	1030	2021	-

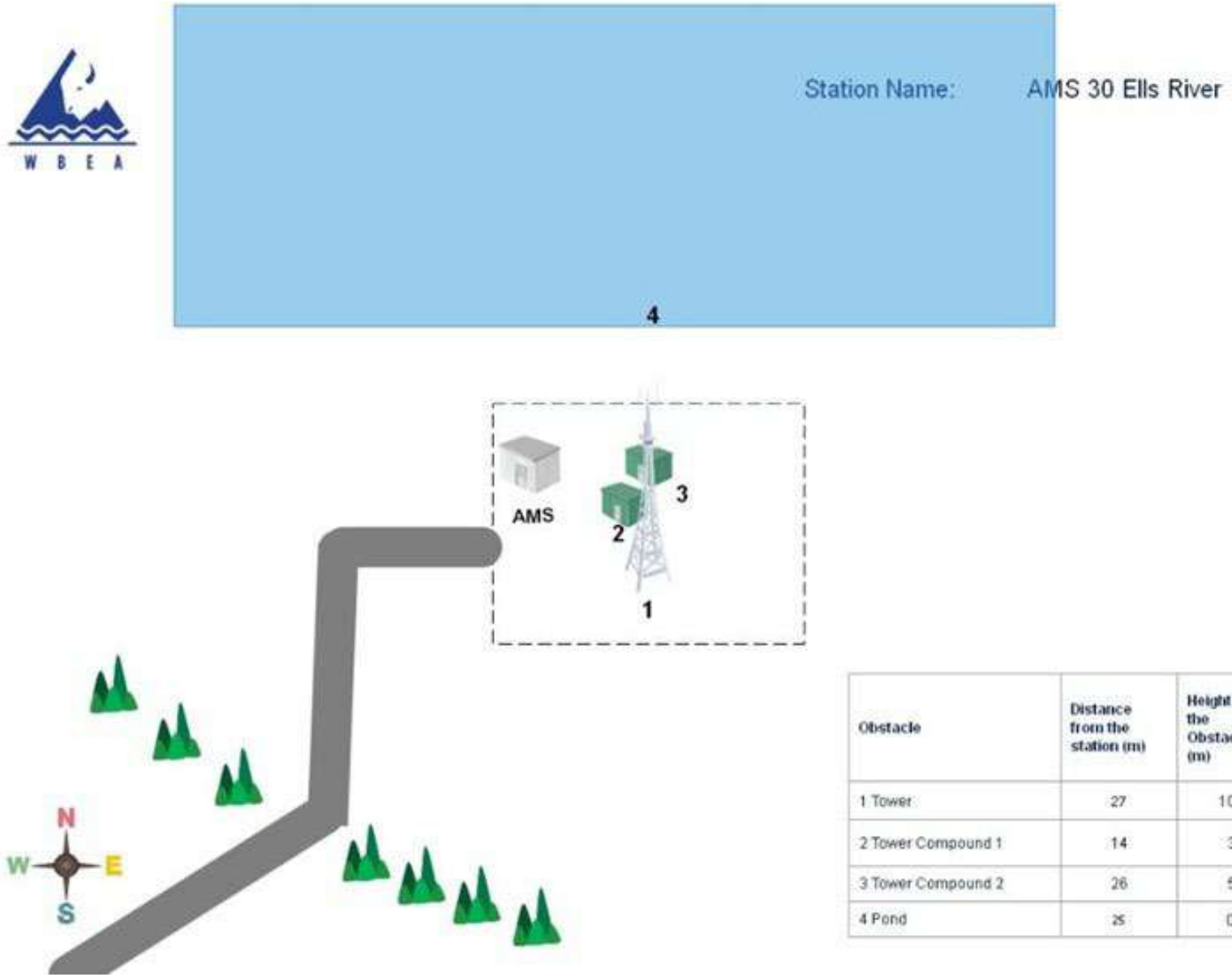
Meteorolgical Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	F5010003	3	2021	October, 2020
WS	Met One	010C-1	A3111	5	2021	October, 2020
WD	Met One	020C-1	J2732	5	2021	October, 2020
GR	Eppley Lab Inc.	8-48	38244	n/a	2021	October, 2020

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	11040
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3061
Zero air generator	Zero Air Generator	Teledyne/API	T701H	358
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	2N9MF73895
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA

Figure 1 – Area Topographic map showing AMS 30



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Tower	27	100
2 Tower Compound 1	14	3
3 Tower Compound 2	26	5
4 Pond	25	0

Figure 2 – Plan view sketch for AMS 30 site

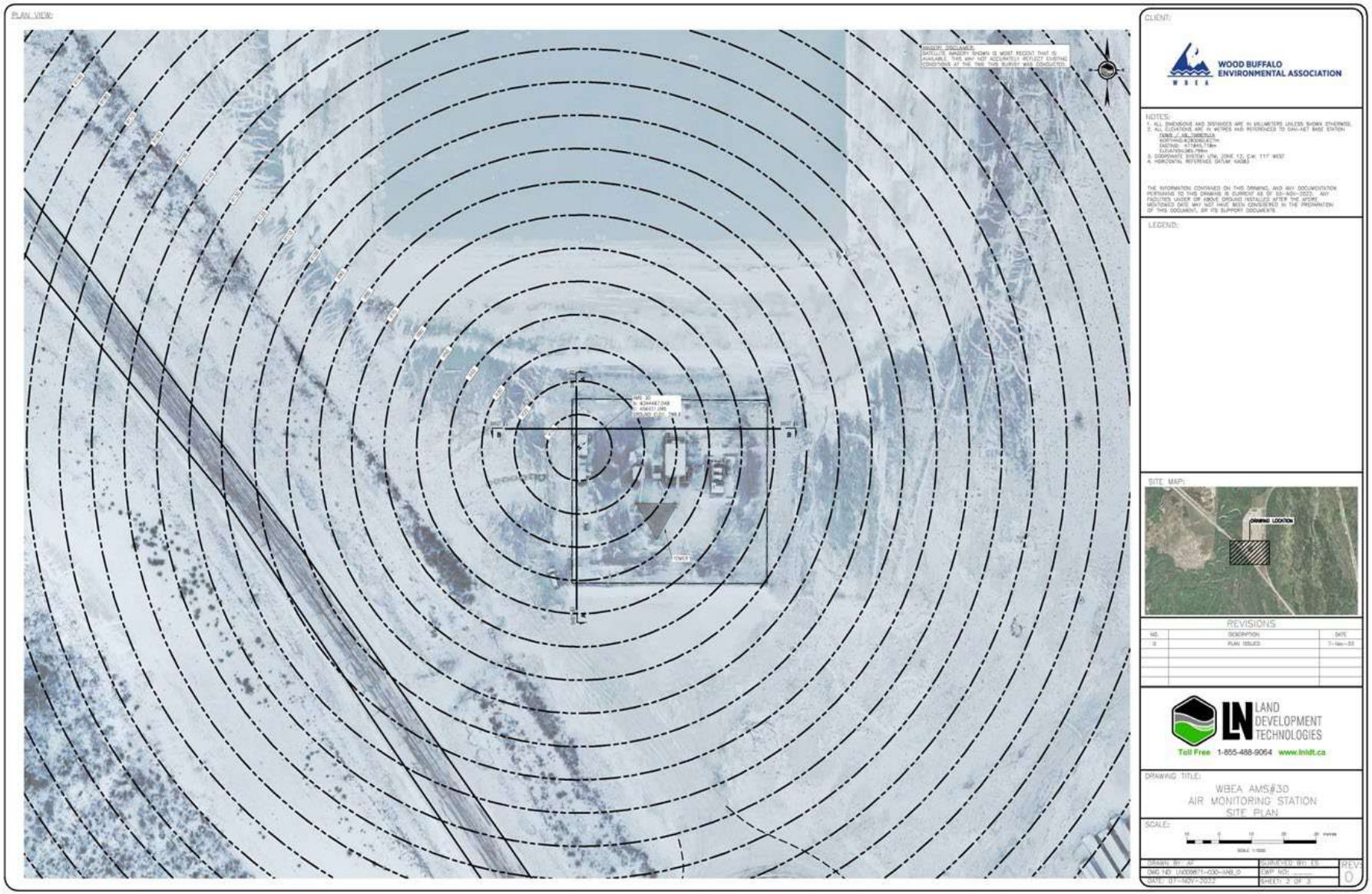


Figure 3 – Aerial photo showing AMS 30

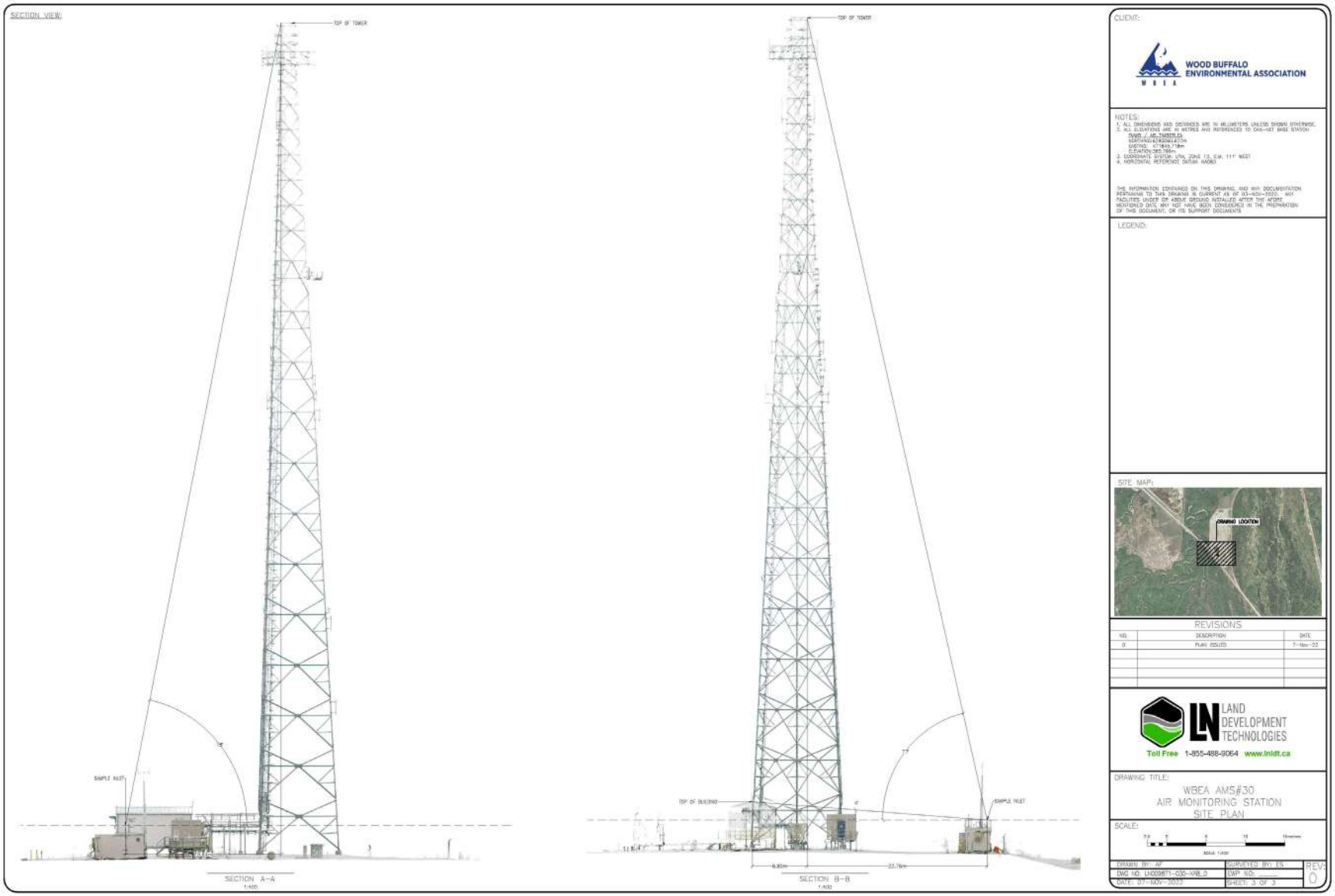


Figure 4 – Cross-Sectional Elevation Drawing of AMS 30

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environ Looking North

Figure 6 – Environ Looking East

Figure 7 – Environ looking South.

Figure 8 – Environ Looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

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Figure 11 – Curb shot of the monitoring station

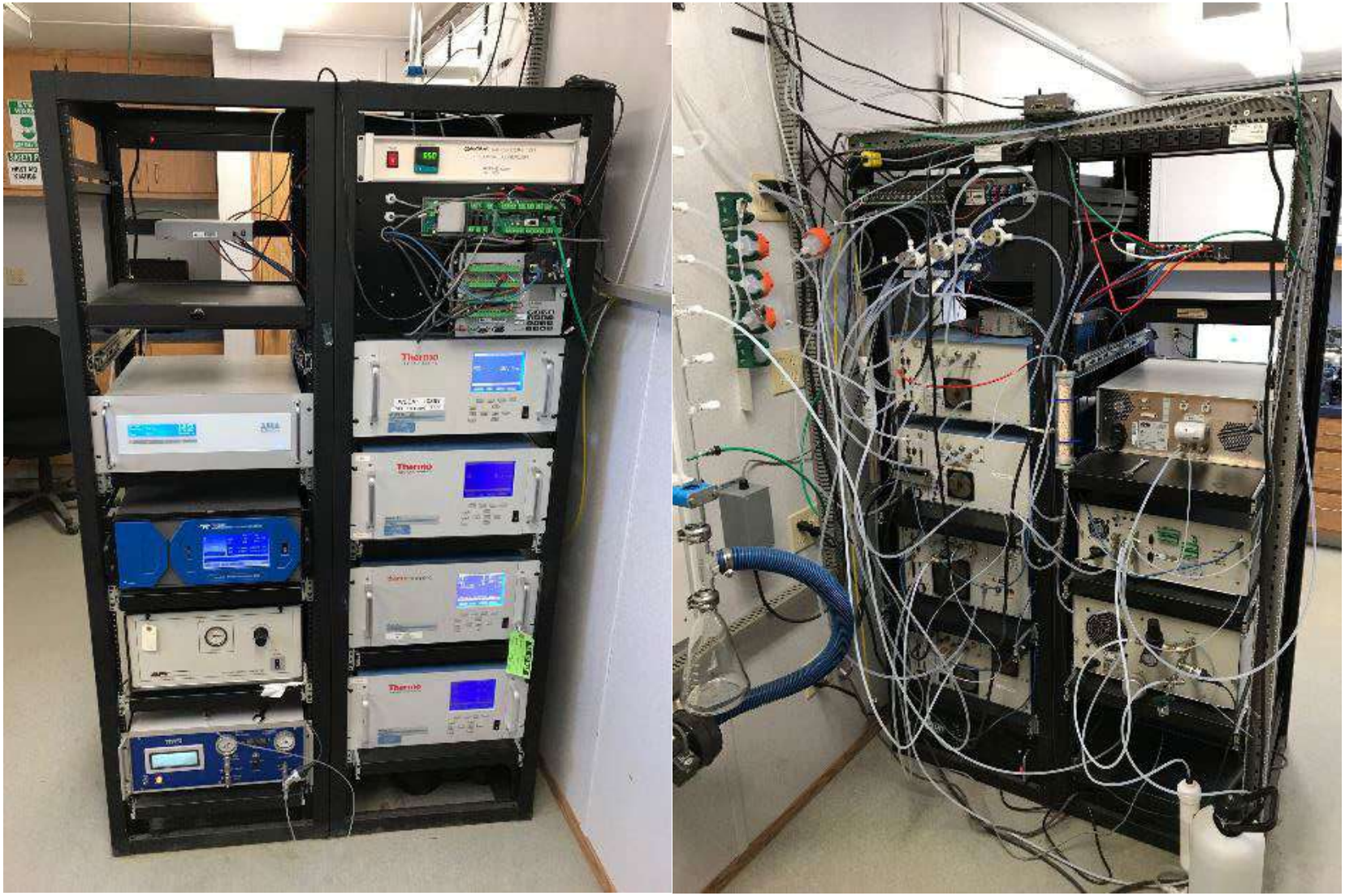

Figure 12 –Photo of front and back of instrument rack

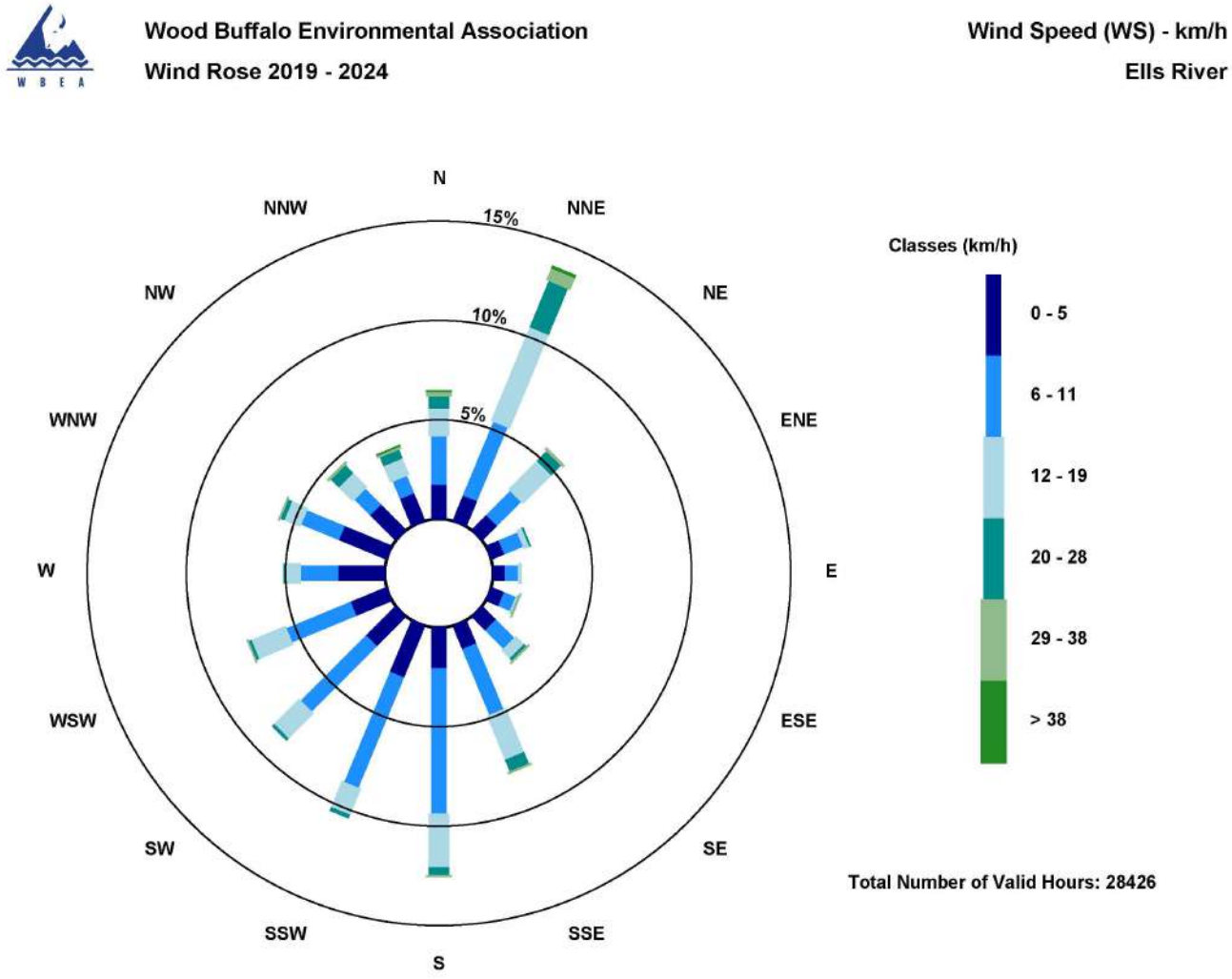

Figure 13 – Windrose (Five Year)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Leismer

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 501
Station name	Leismer
Date station established	June 2013

Location

Station street address	Located at the main gate of the Athabasca Oil Corporation SAGD plant.
Legal land description	4-01-079-10 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.81294255
Longitude	-111.44054535
UTM East	472392
UTM North	6185349
Nearest community	Conklin
Community population	154
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Athabasca Oil Corporation
Approval number	289664-01-00; 241311-01-00
Contact Name	Peter Millman
Address	NA
Phone number	587-233-1382
Email address	pmillman@atha.com

Site Description

Land use by sector	0 – 90 degrees	Gate/Main Road
	91 – 180 degrees	Road/Trees
	181 – 270 degrees	Trees
	271 – 360 degrees	Trees/laydown yard
Site elevation (m) (above sea level)	668 m	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	None

	East	None
	South	None
	West	None
Distance to nearest trees (m)	North	150
	East	150
	West	35
	South	35
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
SAGD operations	100 m	Athabasca Oil SAGD operations

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Roadway	Medium	15 m	Main road access into SAGD plant

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Atha Oil corp.	SAGD	100 m	West

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43i	1160290011	2018	July, 2014
H_2S	Thermo Scientific	43i-TLE	1180540020	2023	July, 2014
$NO/NO_x/NO_2$	Thermo Scientific	42i	1218153356	2018	July, 2014

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	N2910504	Class 3	2021	July, 2014
WS	Met One	010C-1	Y8362	Class 4	2023	July, 2014
WD	Met One	020C-1	R14654	Class 4	2023	July, 2014

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9035
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	2659
Zero air generator	Zero Air Generator	Teledyne/API	701	4427
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB1315940
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA

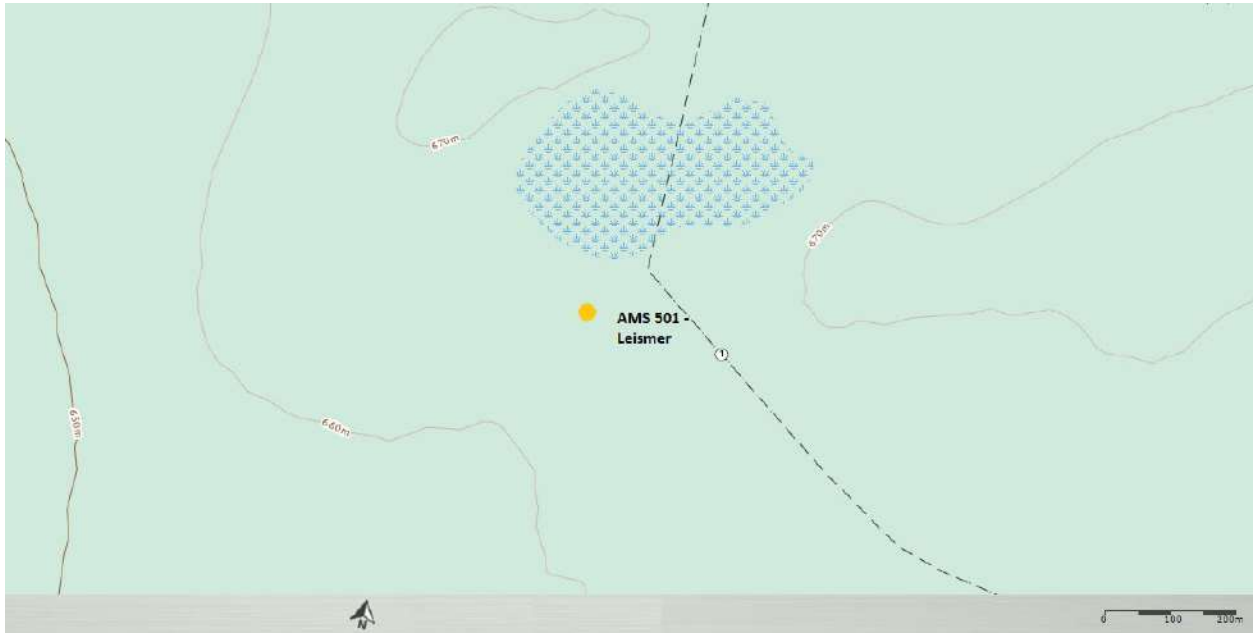
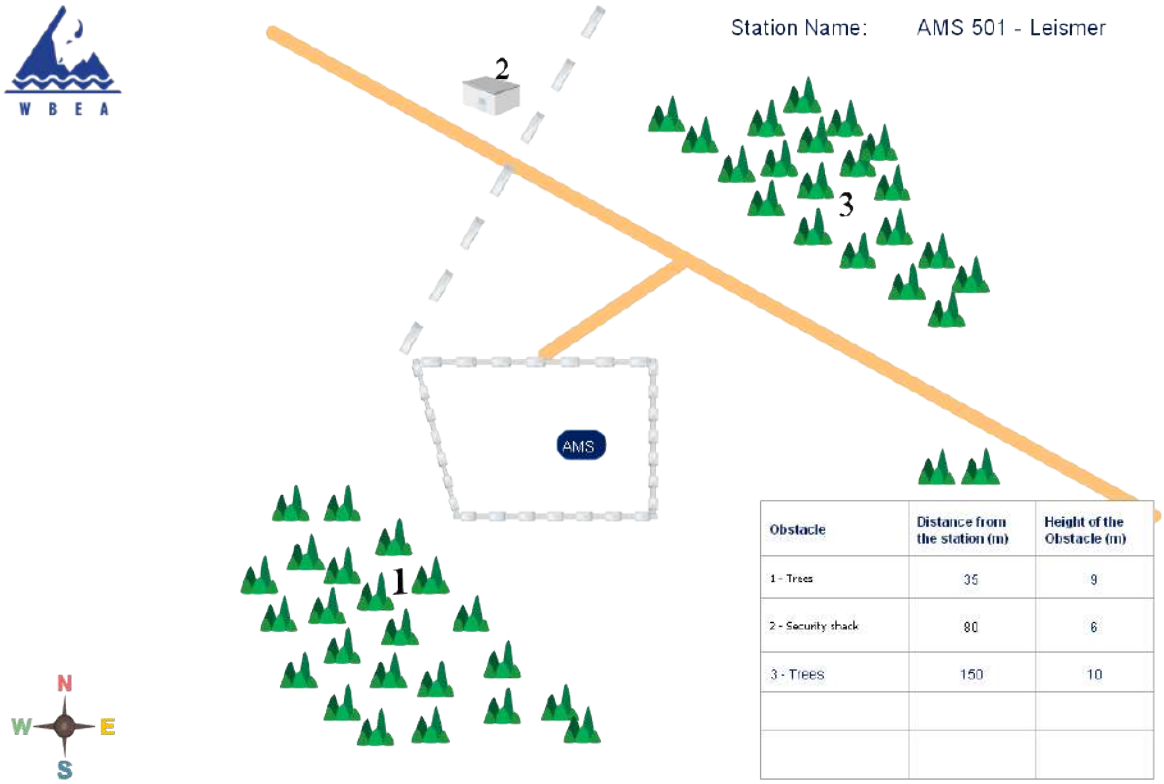


Figure 1 – Area Topographic map showing AMS 501

Figure 2– Aerial photo showing AMS 501



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 - Trees	35	9
2 - Security shack	80	6
3 - Trees	150	10

Figure 3 – Plan view sketch for AMS 501 - Leismer

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 4 – Environment looking North

Figure 5 – Environment looking East

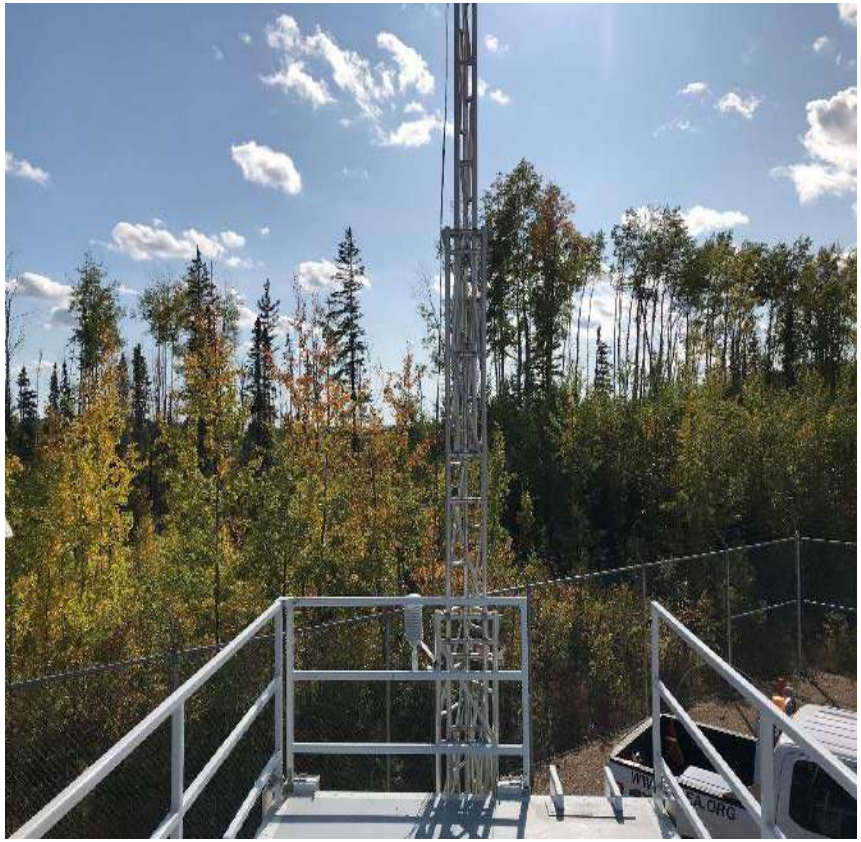


Figure 6 – Environment looking South

Figure 7 – Environment looking West

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 9 – Photo showing the inlet and sample manifold

Figure 10 – Curb shot of the monitoring station

Figure 11 –Photo of the front and the back of instrument rack

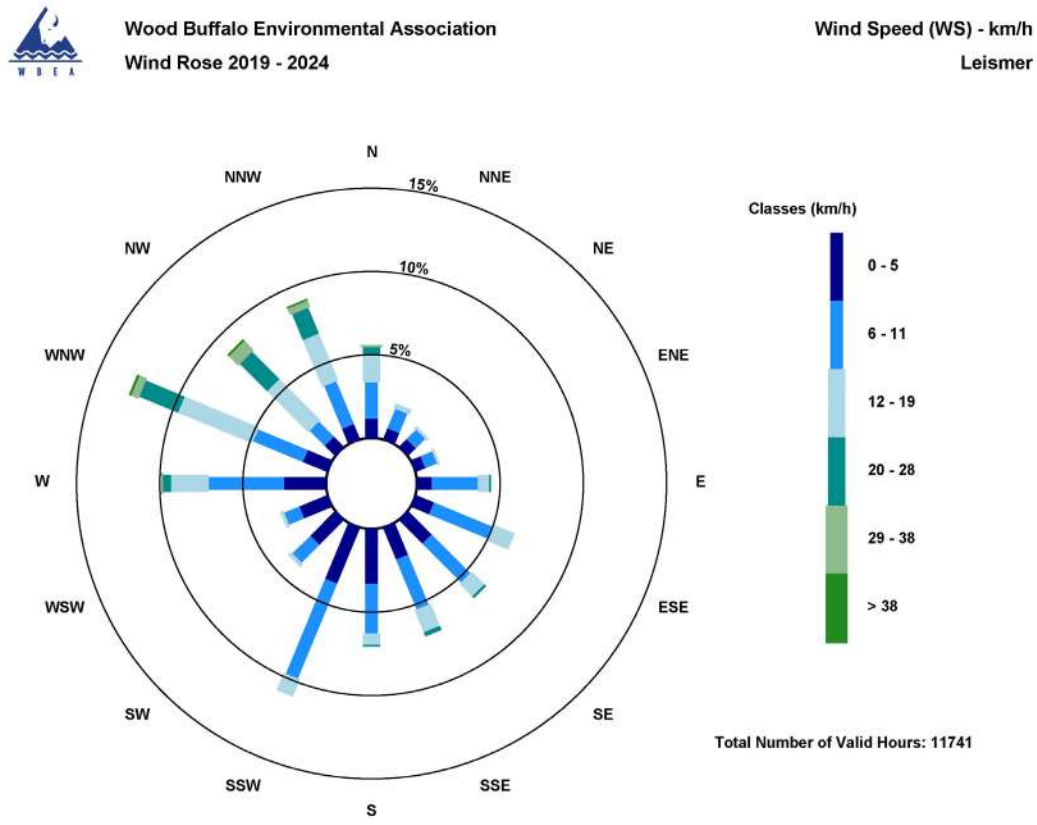


Figure 12 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Sawbones Bay

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 505
Station name	Sawbones Bay
Date station established	June 23, 2021

Location

Station street address	Station located in laydown yard at Christina Lake facility
Legal land description	1-16-77-5 W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.667847
Longitude	-110.705711
UTM East	518511
UTM North	6169152
Nearest community	Conklin
Community population	229
Census Year	2018

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	MEG Energy Corp.
Approval number	00216466-01-00
Contact Name	Natasha Rowden
Address	NA
Phone number	403-770-5558
Email address	Natasha.rowden@megenergy.com

Site Description

Land use by sector	0 – 90 degrees	Forest
	91 – 180 degrees	Forest
	181 – 270 degrees	SAGD operations
	271 – 360 degrees	Forest
Site elevation (m) (above sea level)	471 m	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	None
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	190
	East	75
	West	NA
	South	15
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0 m

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
SAGD Operations	500m W	MEG Energy operations
Laydown yard	100m S	Heavy equipment

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Roadway	Low	100	Gravel access road
Roadway	Low	500	Gravel access road

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
MEG Christina Lake	SAGD operations	500m	West

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43i	710321323	2021	July, 2017
H_2S	Thermo Scientific	43i-QTL	12113311965	2023	July, 2017
$NO/NO_x/NO2$	Teledyne/API	42iQ	12227620777	2023	July, 2017

Meteorological Equipment

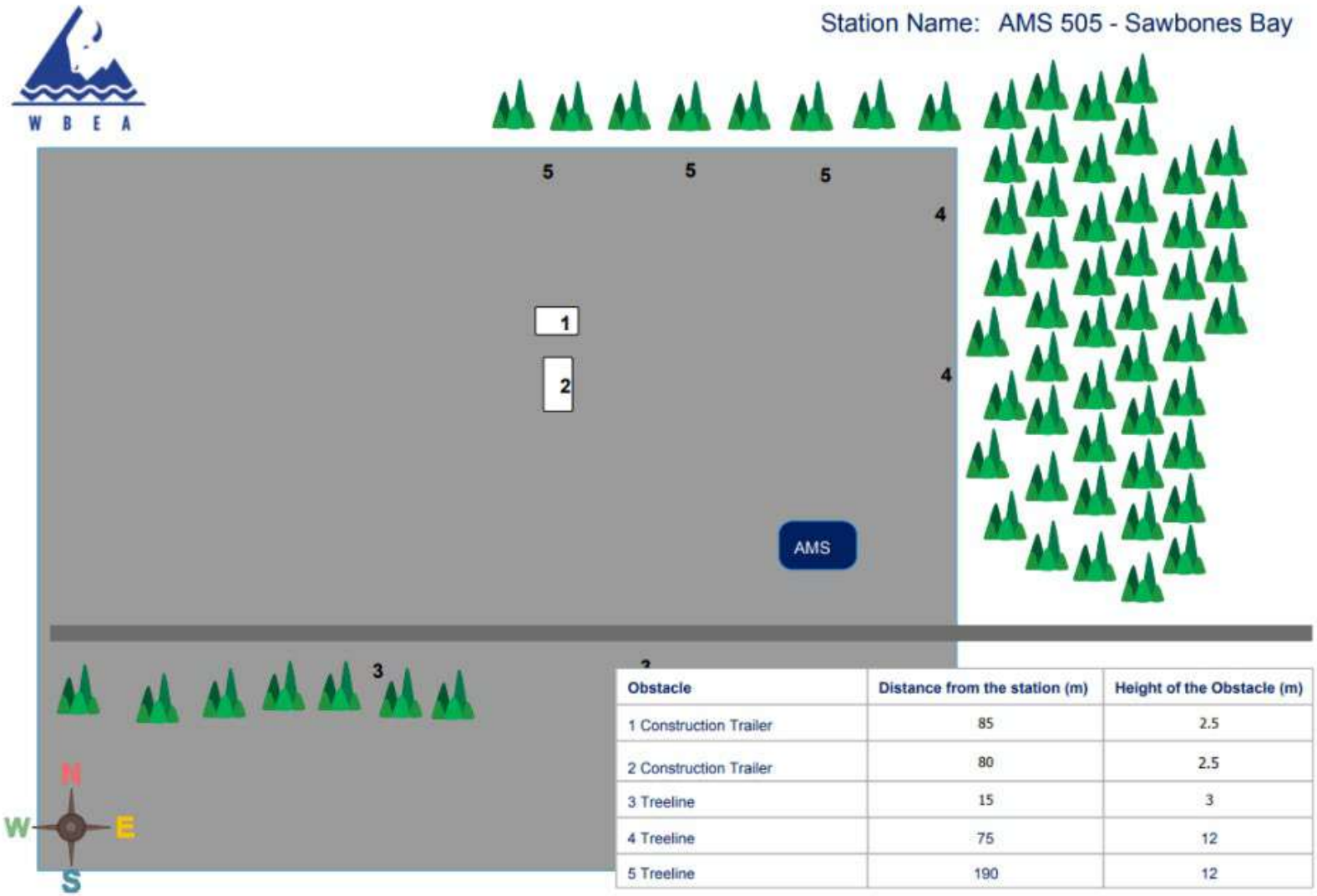
Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	N2910504	Class 3	2021	July, 2017
WS	Met One	010C-1	CA 03845	Class 4	2023	July, 2017
WD	Met One	020C-1	B4693	Class 4	2023	July, 2017

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	6894
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	5112
Zero air generator	Zero Air Generator	Teledyne/API	701	690
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB1315940
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA

Figure 1 – Area Topographic map showing AMS 505

Figure 2 – Aerial image showing AMS 505



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Construction Trailer	85	2.5
2 Construction Trailer	80	2.5
3 Treeline	15	3
4 Treeline	75	12
5 Treeline	190	12

Figure 3 – Plan view sketch for AMS 505 – Sawbones Bay

Site photos

The following photos show the environment surrounding the monitoring station.

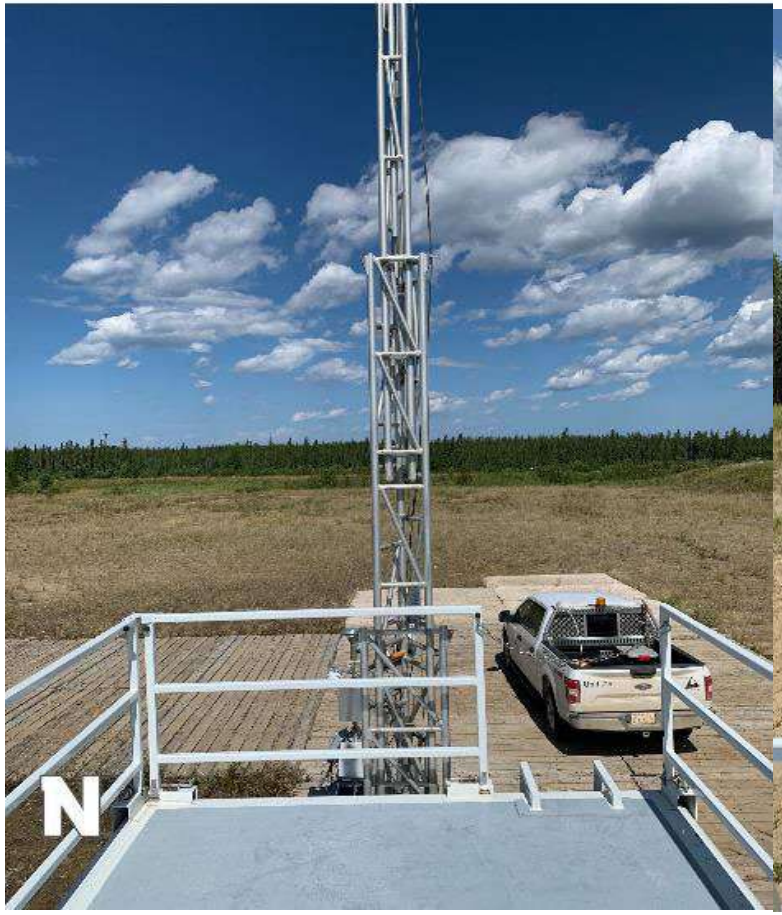


Figure 4 – Environment looking North.

Figure 5 – Environment looking East.

Figure 6 – Environment looking South.

Figure 7 – Environment looking West.

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

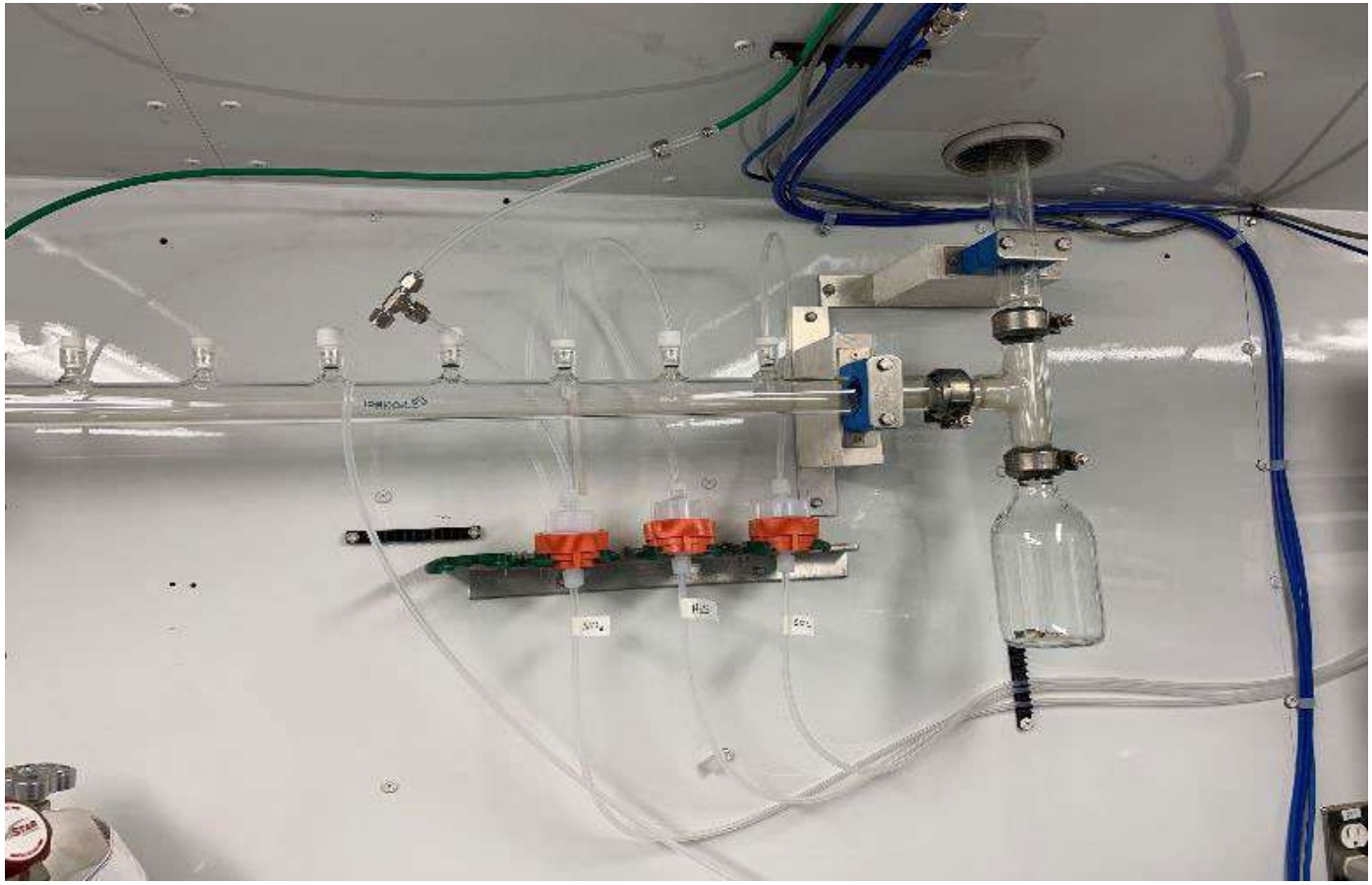


Figure 9 – Photo showing the inlet and sample manifold.

Figure 10 – Curb shot of the monitoring station.

Figure 11 –Photo of the front and the back of instrument rack

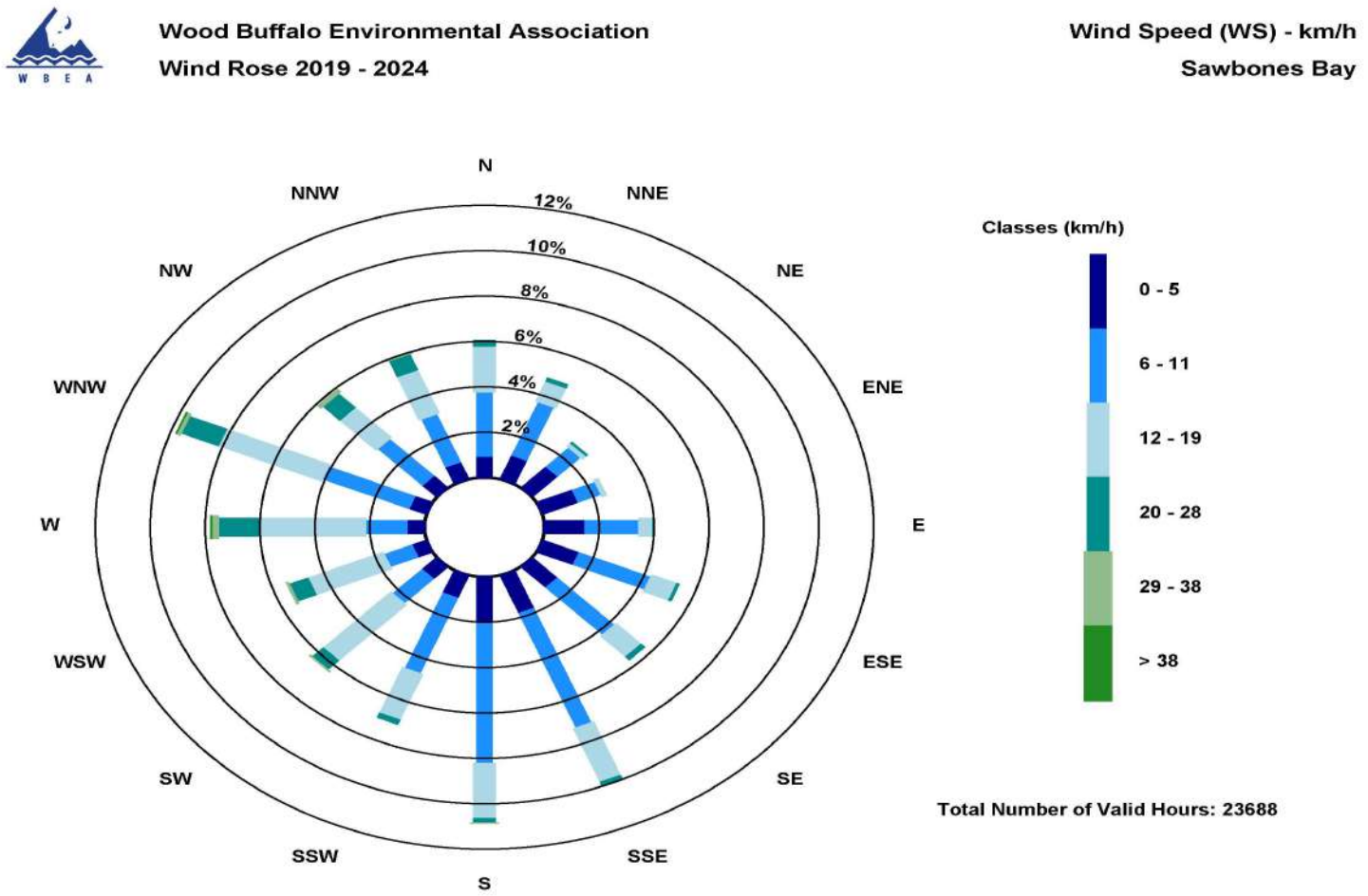


Figure 12 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Jackfish 1

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 506
Station name	Jackfish 1
Date station established	Aug 16, 2018

Location

Station street address	Located SE of Jackfish construction camp
Legal land description	8-28-75-6-W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.523816
Longitude	-110.865345
UTM East	508503
UTM North	6153091
Nearest community	Conklin
Community population	154
Census Year	2016

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Canadian Natural Resources Limited
Approval number	224816-01-00
Contact Name	Shawn Milligan
Address	2100, 855 - 2 Street SW Calgary, Alberta, Canada T2P 4J8
Phone number	403 896-3109
Email address	shawn.milligan@cnrl.com

Site Description

Land use by sector	0 – 90 degrees	SAGD Operations
	91 – 180 degrees	SAGD Operations
	181 – 270 degrees	SAGD Operations
	271 – 360 degrees	SAGD Operations
Site elevation (m) (above sea level)	620	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	Trees
	East	Trees

	South	Trees
	West	Trees
Distance to nearest trees (m)	North	100
	East	75
	West	40
	South	25
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	attached

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
none	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt/gravel	Low	20	Used by site workers

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
CNRL	SAGD Plant	400	N

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Environmental	43i	1160290011	2022	September, 2018
H_2S	Thermo Environmental	43iQ	1180540020	2023	September, 2018
$NO/NO_x/NO2$	Thermo Environmental	42i	1218153356	2022	September, 2018

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	K1720033	Class 3	2022	September, 2018
WS	Met One	010C-1	Y18362	Class 3	2022	September, 2018
WD	Met One	020C-1	R14654	Class 3	2022	September, 2018

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9035
Zero air generator	Zero Air Generator	Teledyne/API	701	4427
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB1315940
Gas Dilution Calibrator	Mass flow controlled gas dilution	Teledyne/API	T700	2659
Tower	10 Metre crank up	Aluma	T-135	AT213029-Y-3-1
H2S converter	H2S converter	Global Analyzer Systems	G150	2022-218

Figure 1 – Area topographic map showing AMS 506

Figure 2 – Aerial image showing AMS 506

Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Electrical panel/w antenna	10.5	0.6
2 Treeline	50	22
3 Treeline	40	25

Figure 3 – Plan view image for AMS 506 site

The elevation view is currently not available for this site.

Figure 4 – Elevation view image for AMS 506 site

Site photos

The following photos show the environment surrounding the monitoring station.

Figure 5 – Environment looking North

Figure 6 – Environment looking East

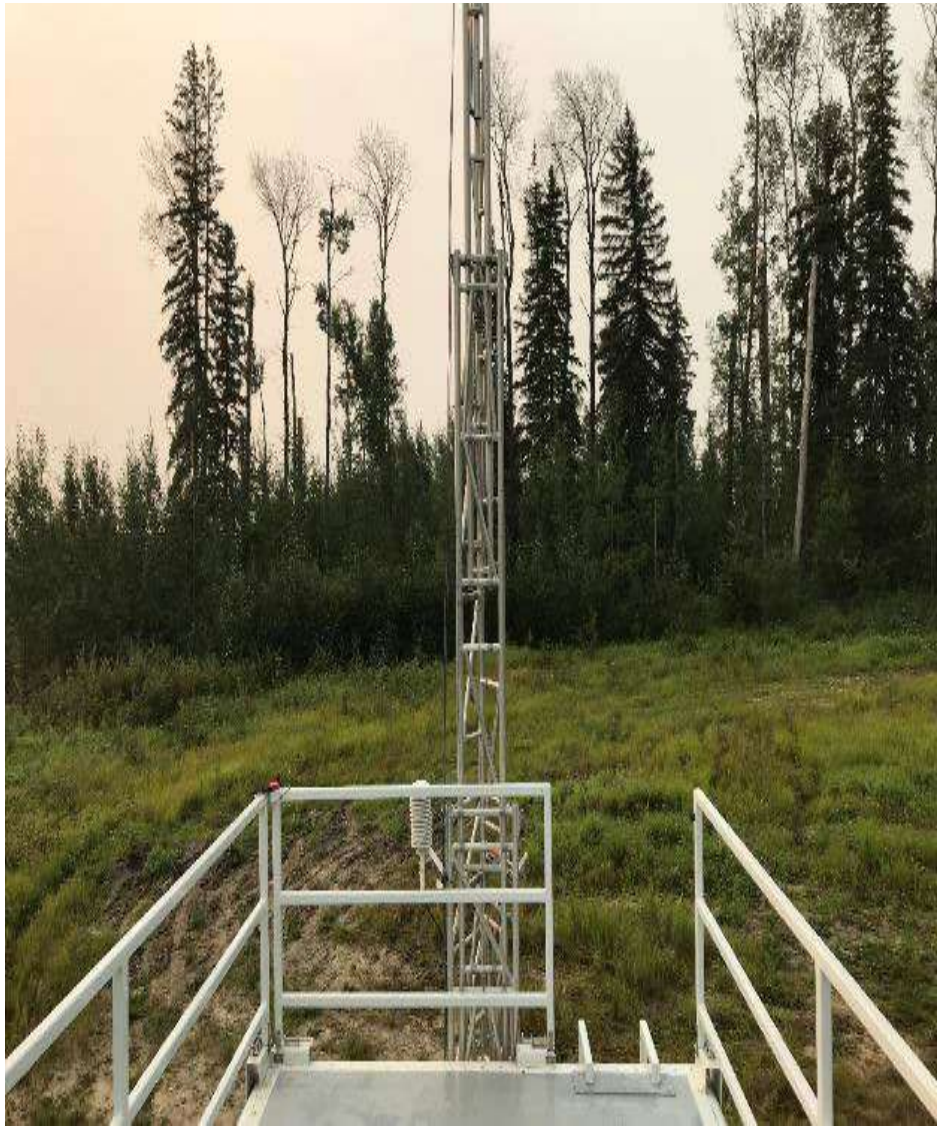

Figure 7 – Environment looking South

Figure 8 – Environment looking West

Figure 9 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 10 – Photo showing the inlet and sample manifold

Figure 11 – Curb shot of the monitoring station

Figure 12 –Photo of the front and the back of instrument rack

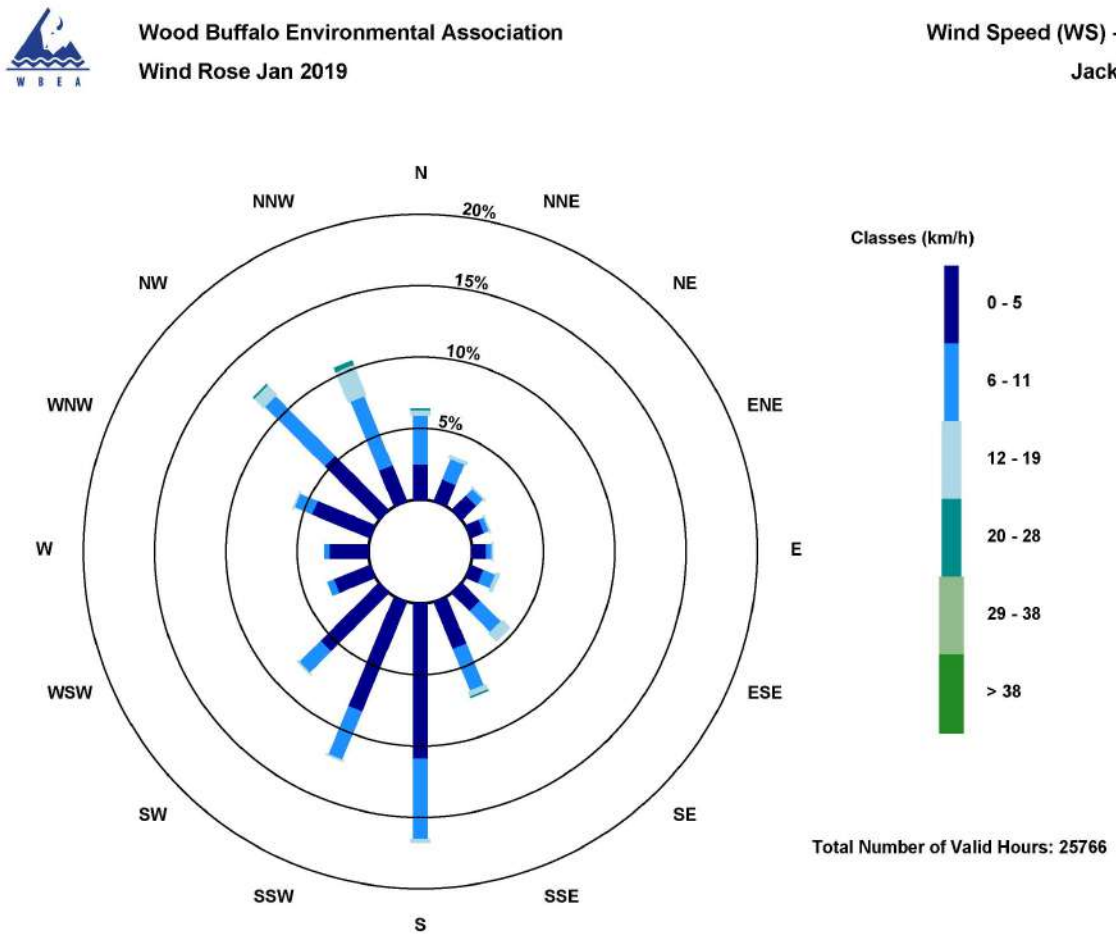

Figure 13 – Windrose (2019-2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Kirby South

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 507
Station name	Kirby South
Date station established	July 1, 2021

Location

Station street address	G-Pad
Legal land description	15-21-73-7-W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.3437334
Longitude	-111.0139229
UTM East	499117.19
UTM North	6133043.08
Nearest community	Conklin
Community population	229
Census Year	2018

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Canadian Natural Resources Ltd.
Approval number	20809-02-00
Contact Name	Shawn Milligan
Address	2100, 855 – 2 st SW. Calgary, AB T2P 4J8
Phone number	403-896-3109
Email address	shawn.milligan@cnrl.com

Site Description

Land use by sector	0 – 90 degrees	SAGD Operation
	91 – 180 degrees	SAGD Operation
	181 – 270 degrees	SAGD Operation
	271 – 360 degrees	SAGD Operation
Site elevation (above sea level)	730m	
Angle of elevation to nearby buildings	Greatest angle	N/A
	Building direction	None
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	250
	East	100
	West	None
	South	100
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground	10 metres
	Distance from station	0 metre

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
SAGD Operation	25	SAGD Oil Pad

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Site Roadway	Low	200m	Roadway used by the site workers

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Kirby South	SAGD Plant	0.5	SW

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Scientific	43iQ	1182340007	July, 2021	January, 2019
H_2S	Thermo Scientific	43i-LTE	1150840012	2023	January, 2019
$NO/NO_x/NO_2$	Thermo Scientific	42iQ	118234006	July, 2021	January, 2019
THC	Thermo Scientific	51i	1182340005	September, 2021	January, 2019

Meteorological Equipment

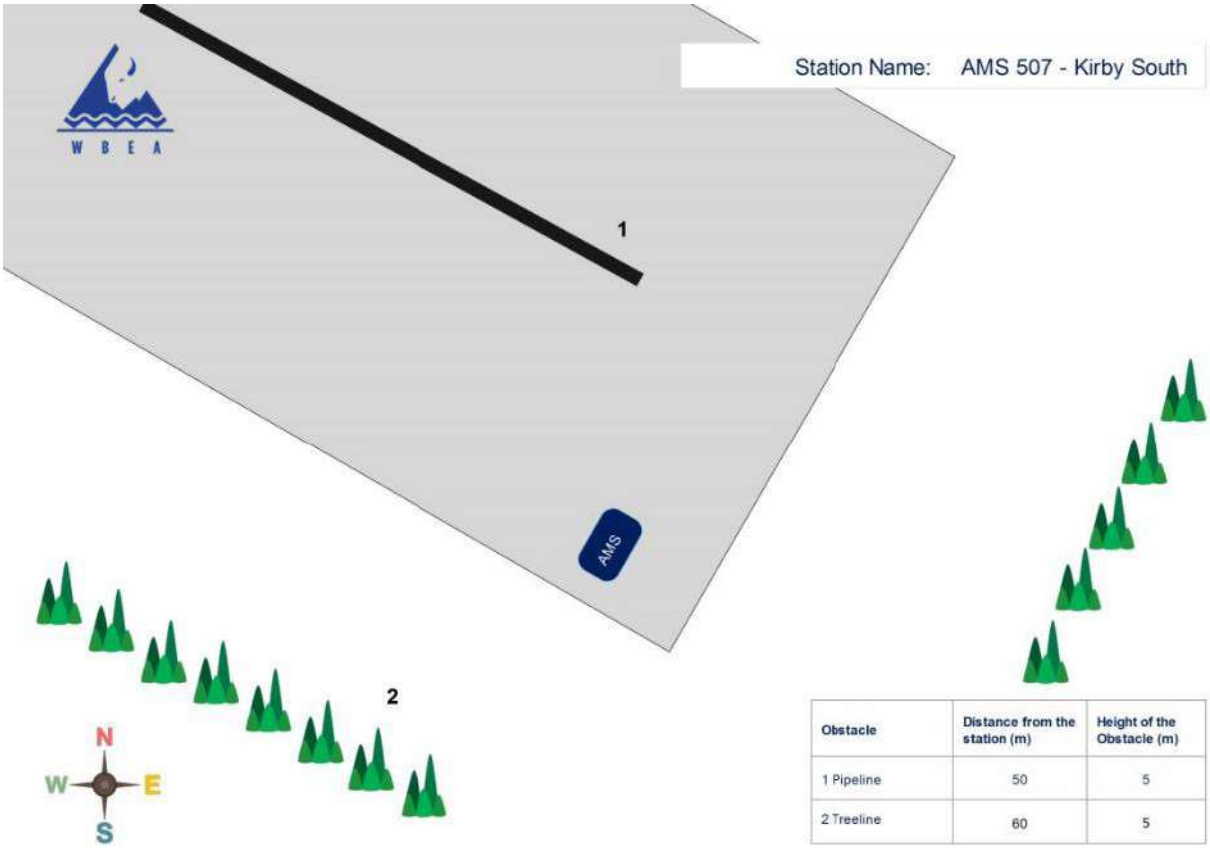
Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Date Start Date
AT/RH	Vaisala	HMP155	G0840083	4	July, 2021	January, 2019
WS	Met One	010C-1	X16479	3	July, 2021	January, 2019
WD	Met One	020C-1	X16495	3	July, 2021	January, 2019

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2372
Zero air generator	Zero Air Generator	Teledyne/API	701H	880
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	-
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	17451-1
Gas Dilution Calibrator	Mass flow controlled gas dilution	Teledyne/API	T700	3804
H2S Converter	H2S converter	Global Analyzer Systems	G150	NA

Figure 1 – Area Topographic map showing AMS 507

Figure 2 – Aerial photo showing AMS 507



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Pipeline	50	5
2 Treeline	60	5

Figure 3 – Plan view sketch for AMS 507 site

Site photos

The following photos show the environment surrounding the monitoring station.

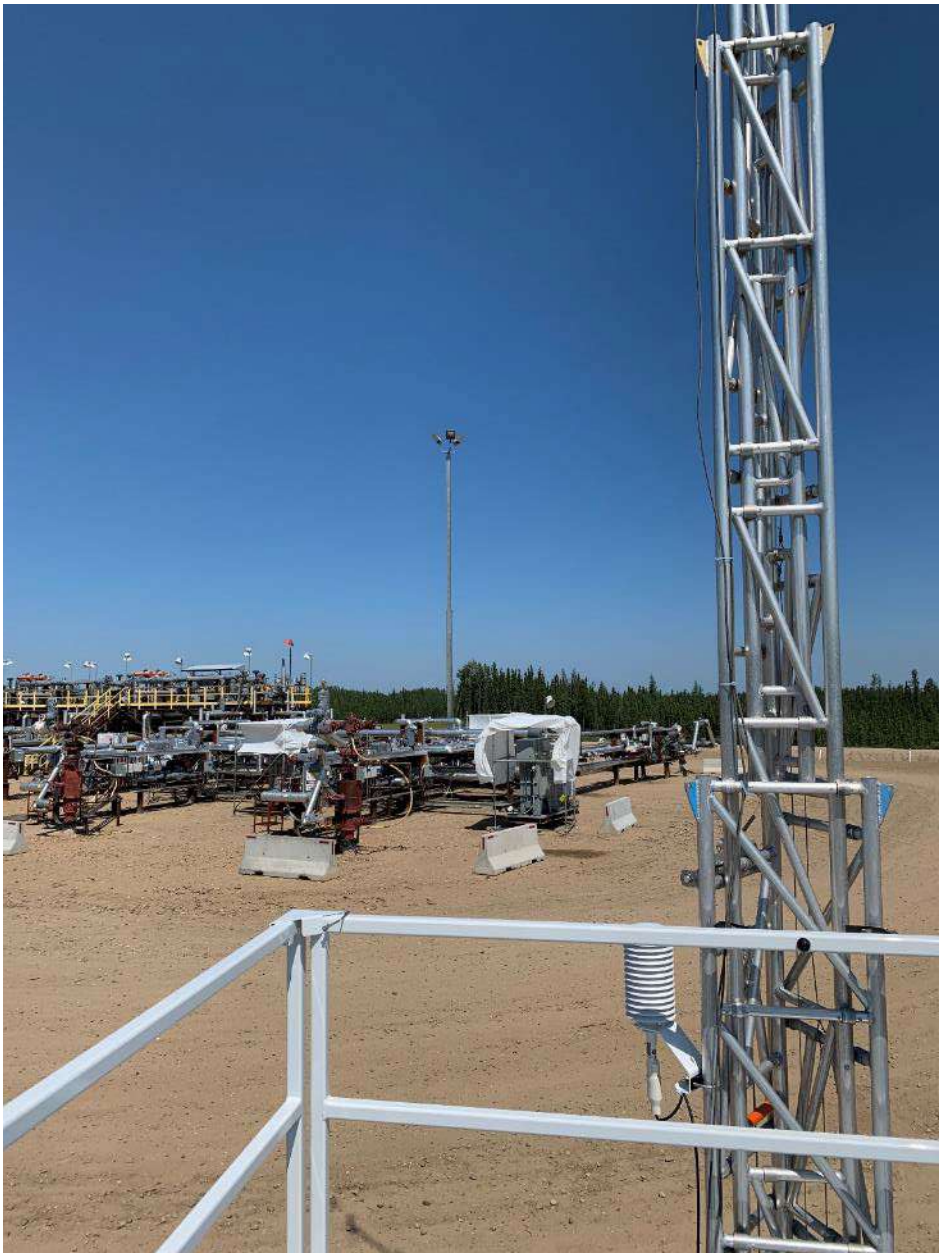


Figure 4 – Environment looking North

Figure 5 – Environment looking East

Figure 6 – Environment looking South

Figure 7 – Environment looking West

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

Figure 9 – Photo showing the inlet and sample manifold

Figure 10 – Curb shot of the monitoring station

Figure 11 –Photo of the front and the back of instrument rack

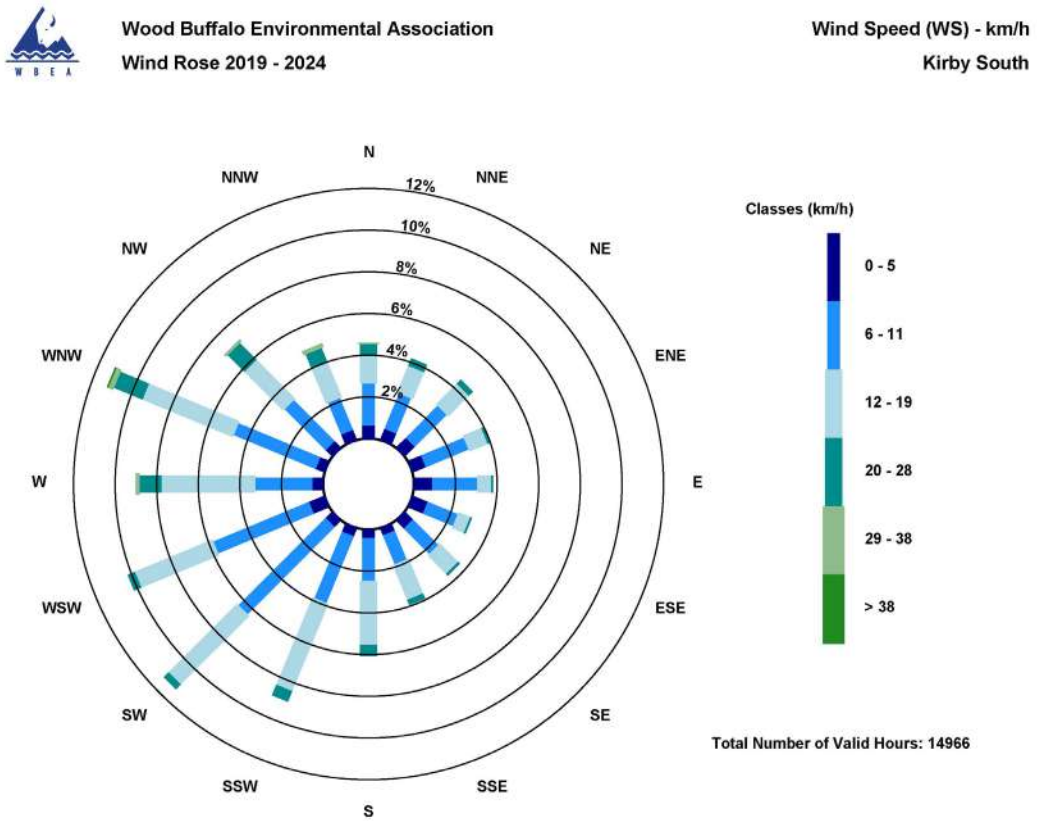


Figure 12 – Windrose (Five Year)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

Kirby North

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 508
Station name	Kirby North
Date station established	2022

Location

Station street address	Industrial Pad
Legal land description	Industrial - SAGD
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.4616480
Longitude	-111.2188230
UTM East	486163
UTM North	6146187
Nearest community	Conklin
Community population	178
Census Year	2021

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Canadian Natural Resources Ltd.
Approval number	149968-01-00
Contact Name	Shawn Milligan
Address	2100, 855 – 2 Street S.W. Calgary, AB
Phone number	(403) 896-3109
Email address	shawn.milligan@cnrl.com

Site Description

Land use by sector	0 – 90 degrees	SAGD Plant
	91 – 180 degrees	SAGD Land / Forest
	181 – 270 degrees	SAGD Land / Forest
	271 – 360 degrees	SAGD Plant
Site elevation (m) (above sea level)	700m	
Angle of elevation to nearby buildings	Greatest angle	None
	Building direction	None
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	N/A
	East	N/A
	West	N/A
	South	N/A
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10m
	Distance from station (m)	Tower is attached to the shelter

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
SAGD Pad	50	Station is located on the SE side of the pad

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt Road	Medium	50	Road used to access the SAGD plant

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
Kirby North	SAGD Plant	100	W

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Environmental	43-iQ	1182340007	2019	May, 2019
H_2S	Thermo Environmental	43i-TLE	1150840012	2022	May, 2019
$NO/NO_x/NO_2$	Teledyne/API	42-iQ	1182340006	2023	May, 2019
THC	Thermo Environmental	51i	1182340005	2019	May, 2019

Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Sensor Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	F5010010	3	2019	May, 2019
WS	Met One	010C-1	X16479	3	2019	May, 2019
WD	Met One	020C-1	X16495	3	2019	May, 2019

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2372
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	3804
Zero air generator	Zero Air Generator	Teledyne/API	701H	880
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	17541-1
Tower	10 metre crank up	Aluma	T-135	218148.00.7
H2S converter	H2S converter	Global	G-150	2022-197

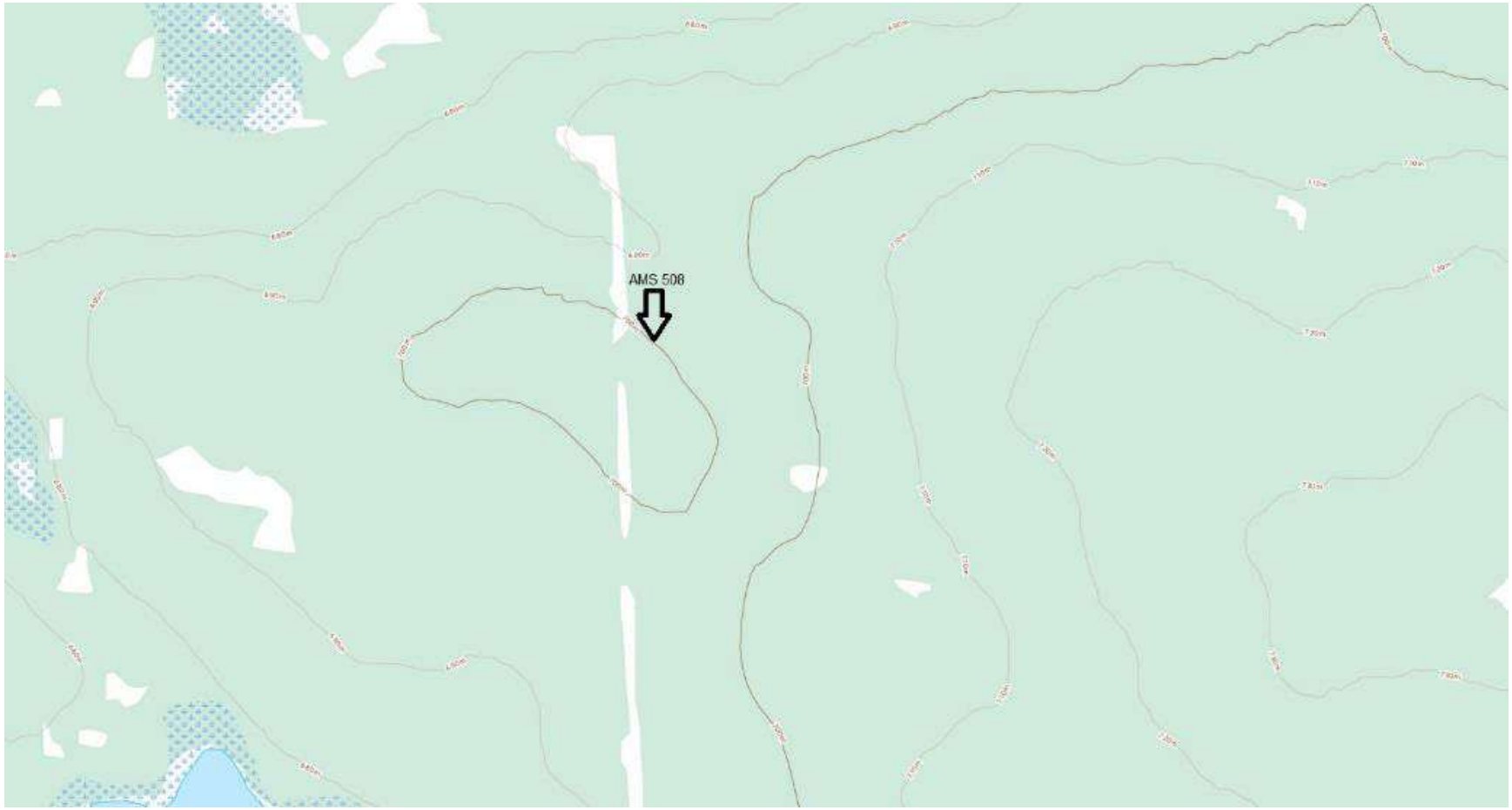
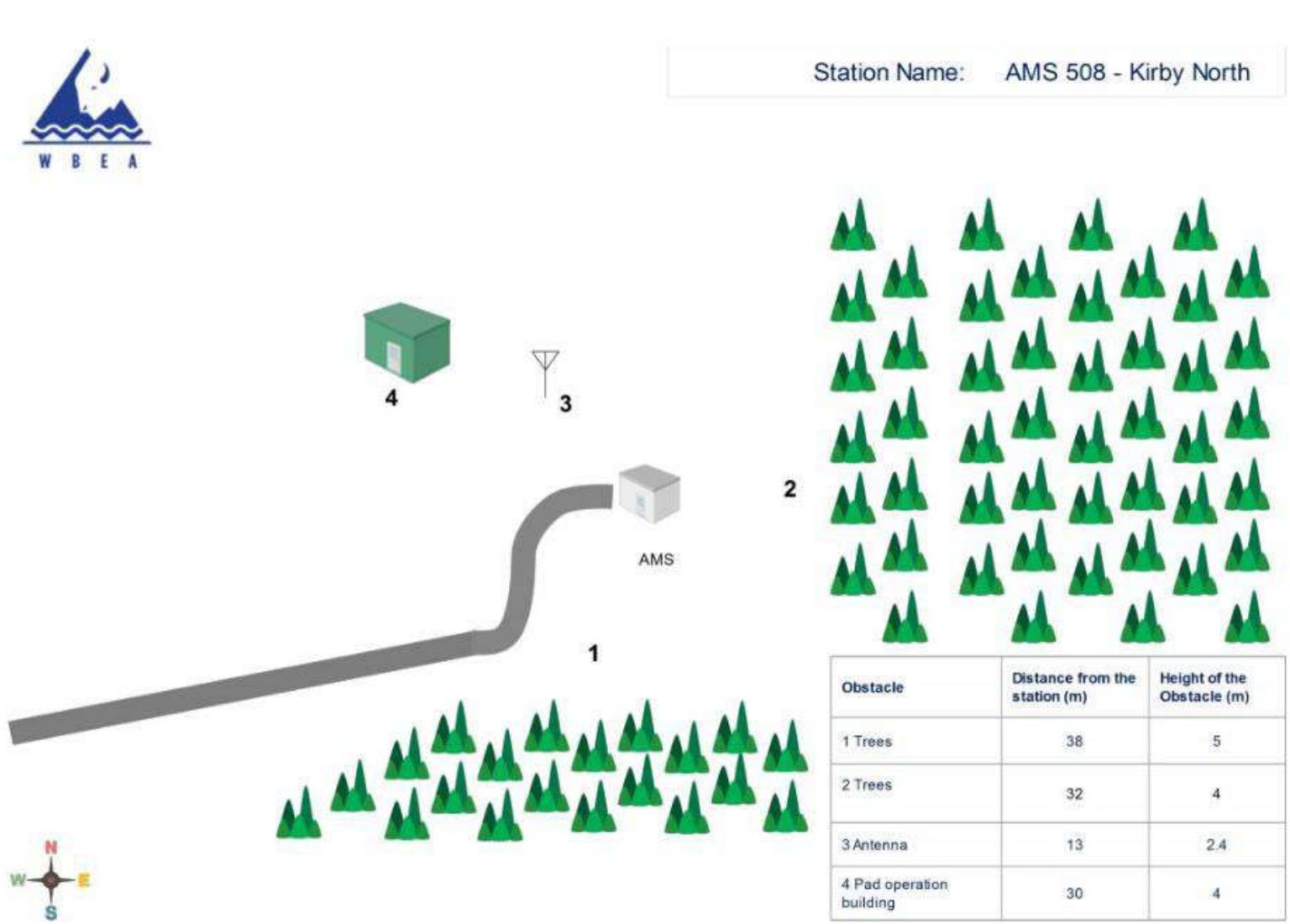


Figure 1 – Area topographic map showing AMS 508



Obstacle	Distance from the station (m)	Height of the Obstacle (m)
1 Trees	38	5
2 Trees	32	4
3 Antenna	13	2.4
4 Pad operation building	30	4

Figure 2 – Plan view sketch for AMS 508 site

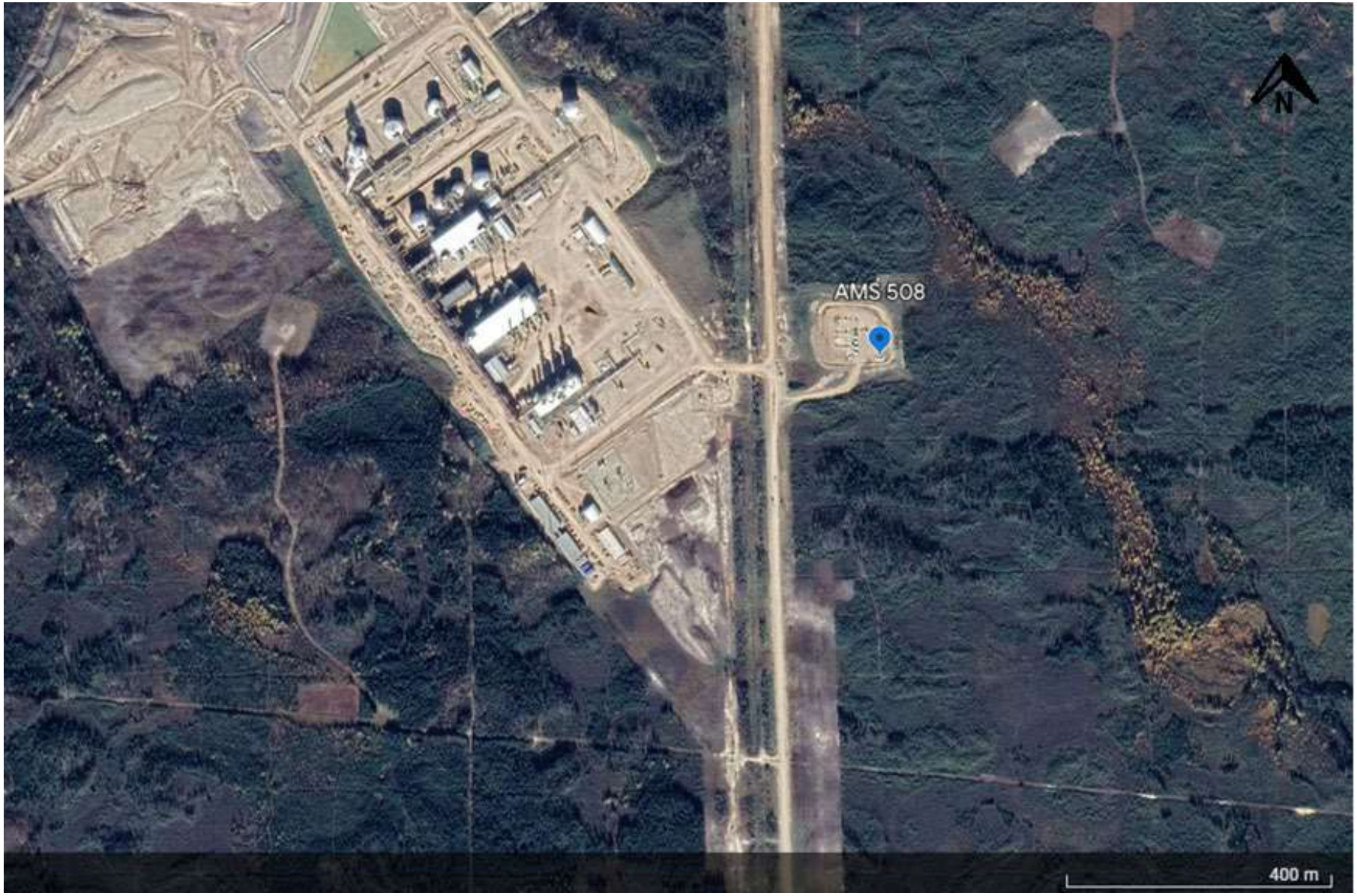


Figure 3 – Aerial photo showing AMS 508

Site photos

The following photos show the environment surrounding the monitoring station.

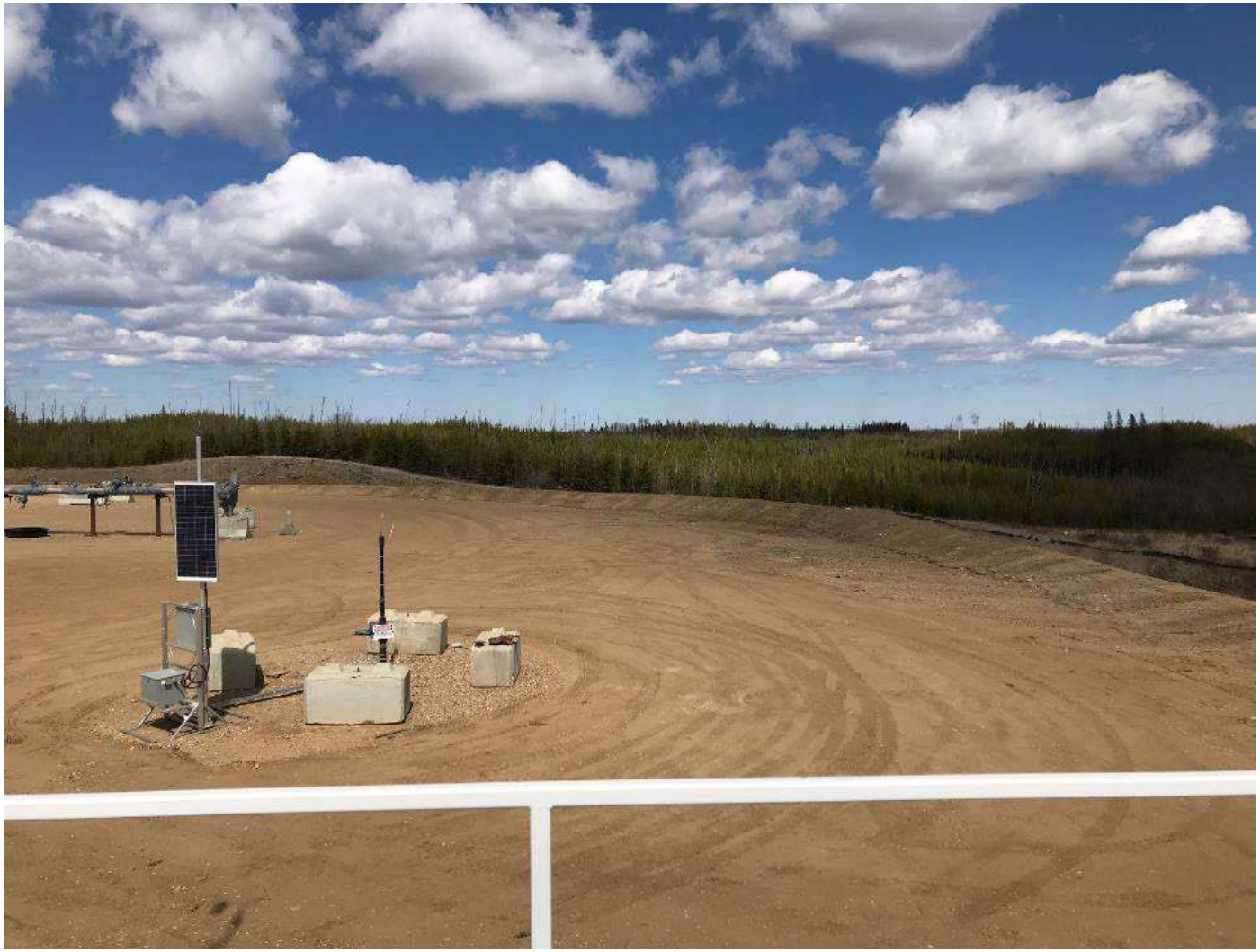


Figure 4 – Environment looking North

Figure 5 – Environment looking East

Figure 6 – Environment looking South

Figure 7 – Environment looking West

Figure 8 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.

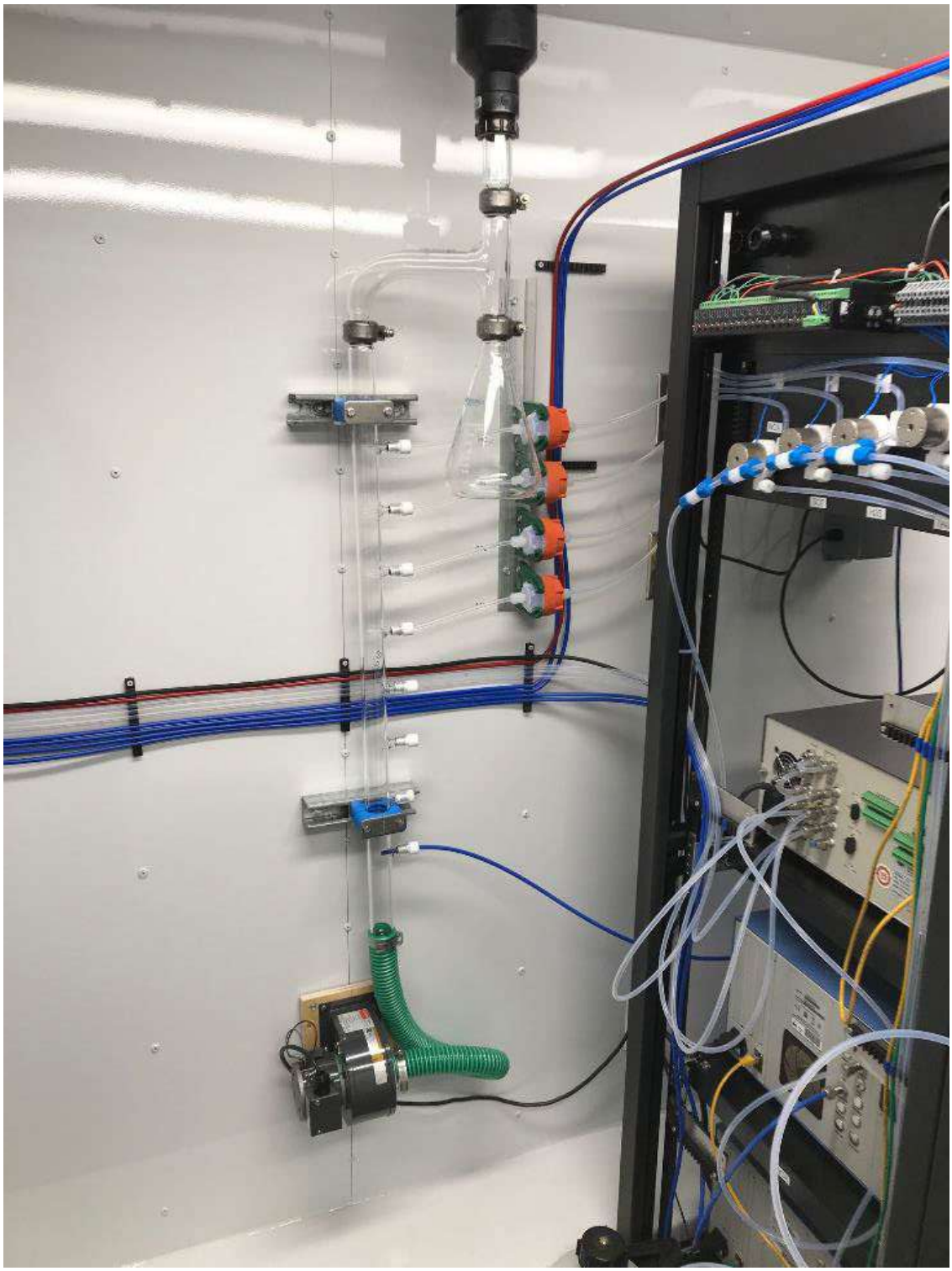


Figure 9 – Photo showing the inlet and sample manifold

Figure 10 – Curb shot of the monitoring station

Figure 11 –Photo of the front and the back of instrument rack

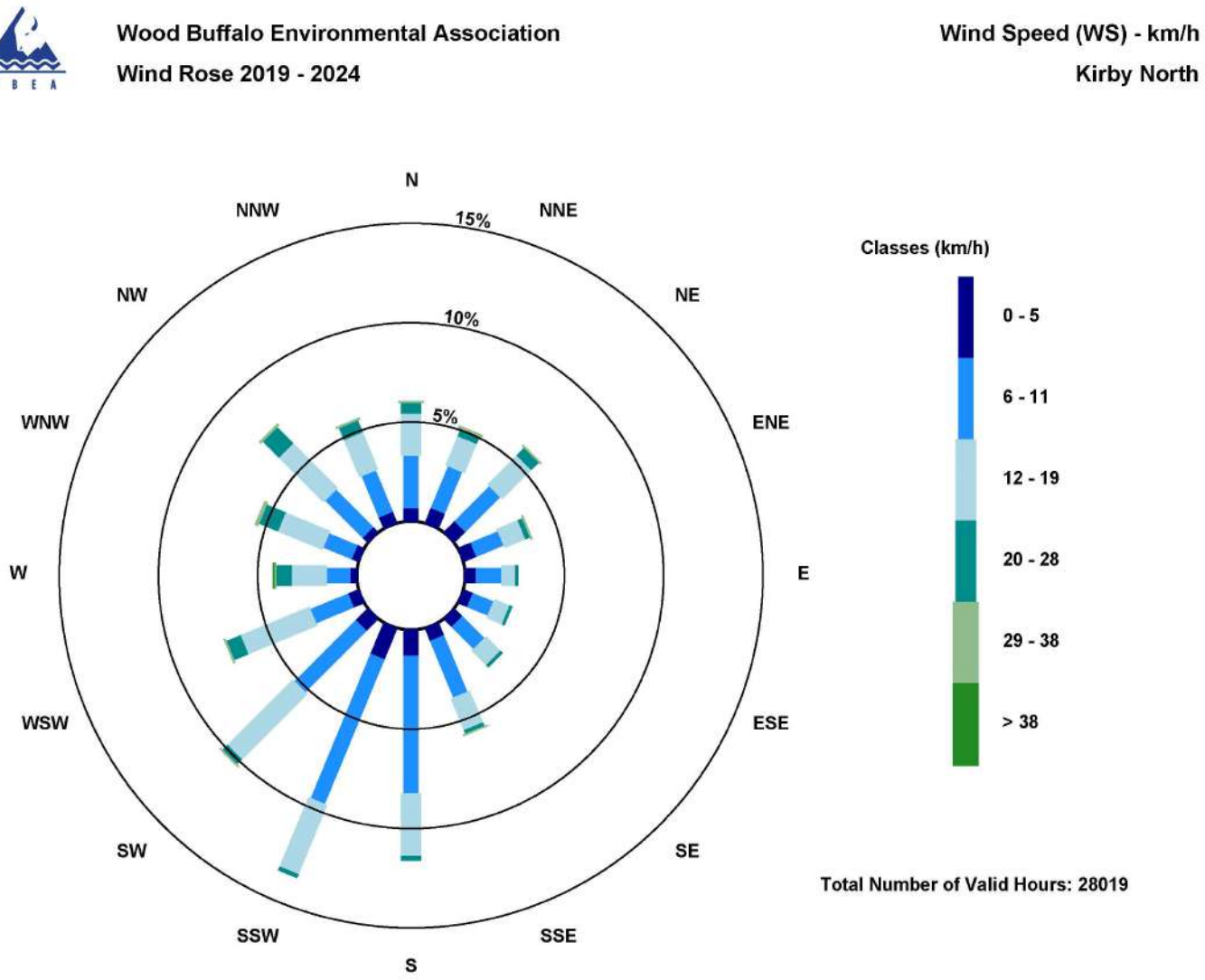


Figure 12 – Windrose (2019 - 2024)

Wood Buffalo Environmental Association

Ambient Air Monitoring Station Site Documentation

BlackGold

LAST UPDATED: MARCH 28, 2024

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General Site Information

Revision Date: March 28, 2024

Station

Station ID	AMS 511
Station name	BlackGold
Date station established	Oct 1, 2023

Location

Station street address	n/a
Legal land description	07-14-76-07, W4M
Airshed Zone	Wood Buffalo Environmental Association
Latitude	55.582983
Longitude	110.973061
UTM East	501691
UTM North	6159684
Nearest community	Conklin
Community population	229
Census Year	2018

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3-805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	Harvest Operations Corp.
Approval number	246984-01
Contact Name	Eric Deegan
Address	1500, 700 2nd Street S.W. Calgary, AB T2P 2W1
Phone number	403-387-1203
Email address	Eric.deegan@harvestenergy.ca

Site Description

Land use by sector	0 – 90 degrees	Lay-down yard/Access Road/Muskeg
	91 – 180 degrees	Lay-down yard/Muskeg
	181 – 270 degrees	Lay-down yard/SAGD Facility
	271 – 360 degrees	Lay-down yard/Access Road/Camp Facility
Site elevation (m) (above sea level)	600	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	South
Airflow restrictions	North	N/A

	East	N/A
	South	N/A
	West	N/A
Distance to nearest trees (m)	North	85
	East	110
	West	110
	South	165
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Wind Sensors	Type	Cup and vane
	Height above ground (m)	10
	Distance from station (m)	0

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
None	n/a	n/a

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Access Road	Low	160	Roadway used by the site workers

Major Point Sources

Facility Name	Source Type	Distance from site (km)	Compass direction from site
BlackGold	SAGD	0.5	W

Station Equipment

Equipment Owner: WBEA

Analytical Equipment

Parameter	Make	Model	Serial Number	Date Instrument Installed	WBEA Data Start Date
SO_2	Thermo Environmental	43i	1160290014	October, 2023	October, 2023
H_2S	Teledyne/API	T101	197	October, 2023	October, 2023
$NO/NO_x/NO_2$	Teledyne/API	T200	7029	October, 2023	October, 2023
THC	Thermo Environmental	51i	1317958295	October, 2023	October, 2023

Meteorolgical Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Instrument Installed	WBEA Data Start Date
AT/RH	Vaisala	HMP155	H5110025	4	October,2023	October, 2023
WS	Met One	010C-1	B10017	4	October, 2023	October, 2023
WD	Met One	020C-1	D13603	4	October, 2023	October, 2023

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2575
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	2445
Zero air generator	Zero Air Generator	Teledyne/API	701	138
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB-13-16018
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	N/A

Figure 1 – Area topographic map showing AMS 511

Figure 2 – Aerial photo showing AMS 511

Figure 3 – Plan view sketch for AMS 507 – Blackgold site

Site photos

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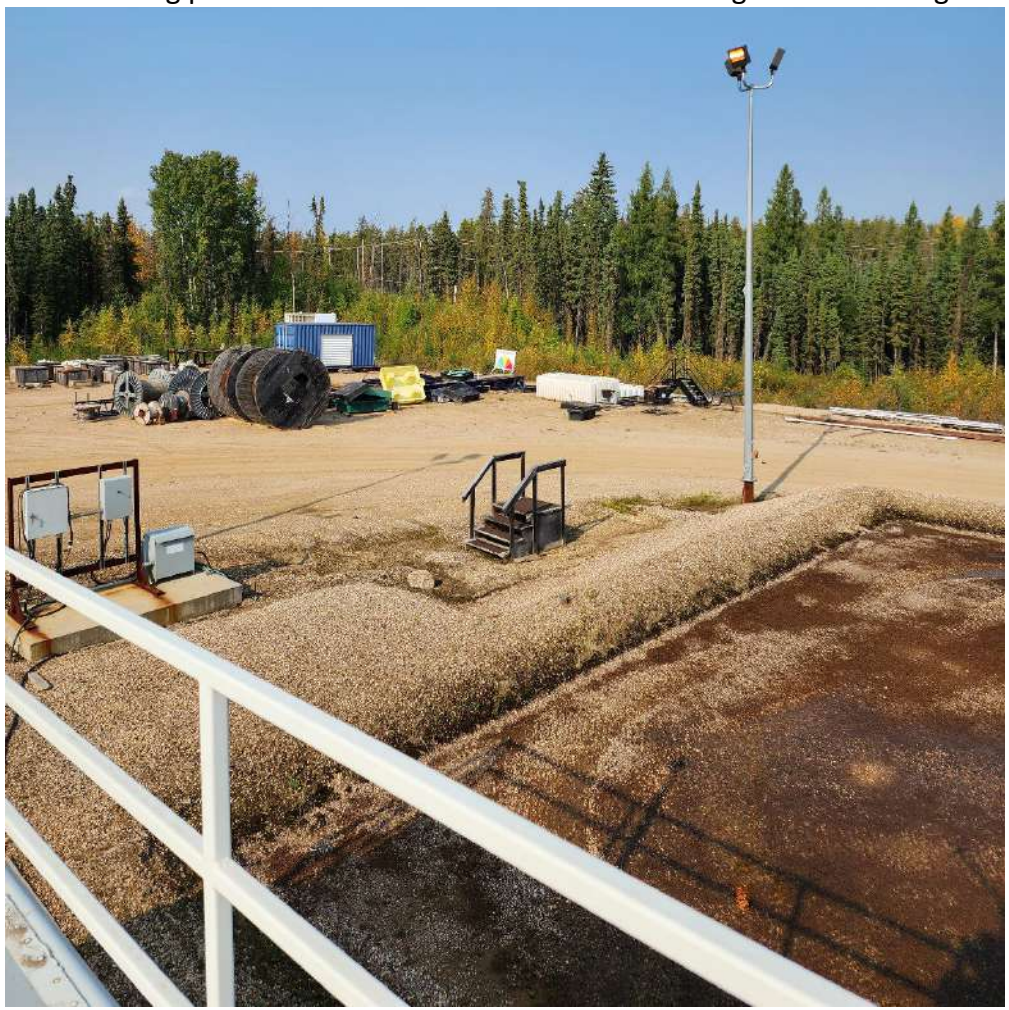

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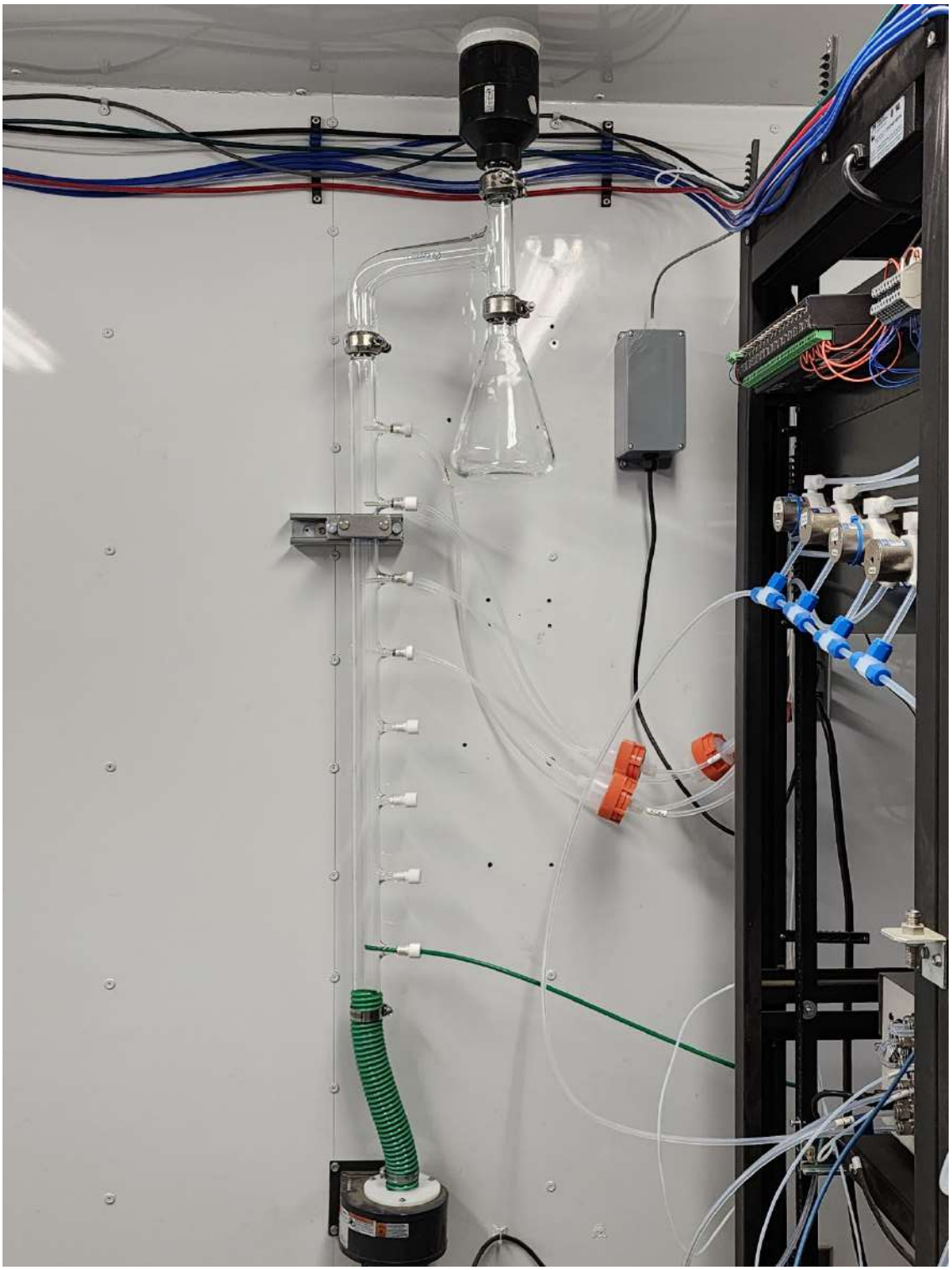

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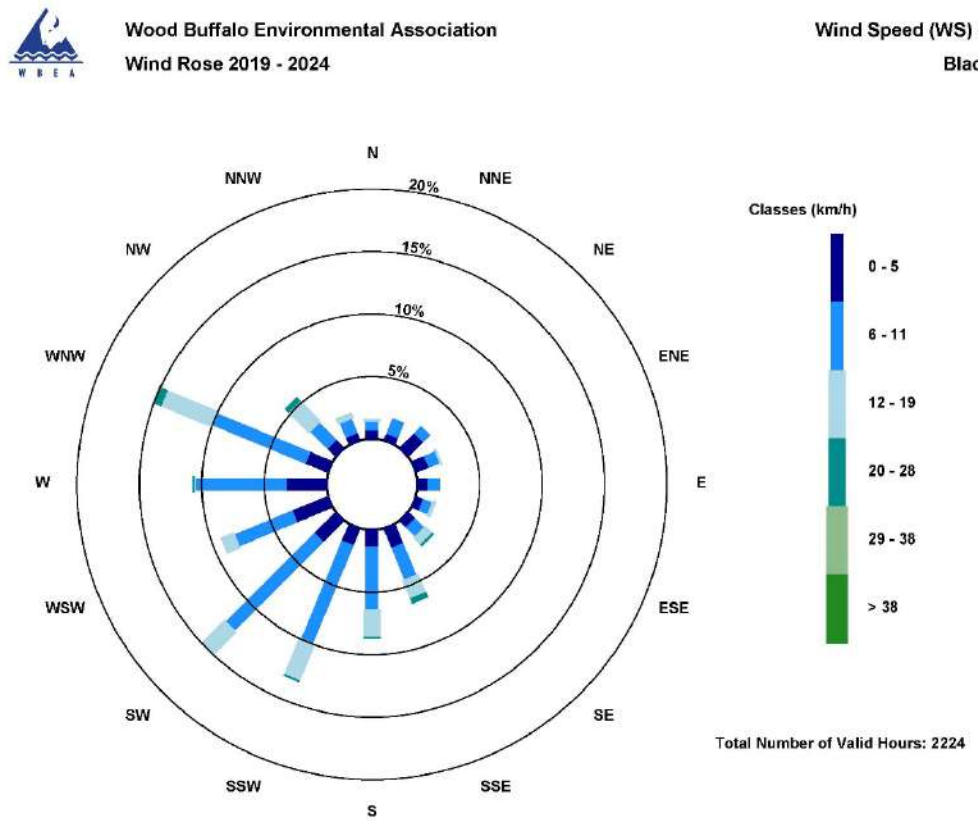

Figure 12 – Windrose (2019-2024)

W B E A

End of Report - Volume 3