Wood Buffalo Environmental Association

ANNUAL REPORT – VOLUME 2

INTEGRATED DATA

March 28, 2018

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS

Passive Measurements:	Maxxam Analytics Ltd Edmonton, Alberta
Volatile Organic Compounds:	InnoTech Alberta, Inc. Vegreville, Alberta
Particulate Matter:	Atmospheric Research & Analysis, Inc. Morrisville, NC
Elemental Carbon and Organic Carbon:	Desert Research Institute Reno, NV
Polycyclic Aromatic Hydrocarbons:	Air Zone One Incorporated Mississauga, Ontario
Precipitation:	InnoTech Alberta, Inc. Vegreville, Alberta
	Central Analytical Laboratory Champaign, IL

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Integrated Monitoring Summaries

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

HNO_3, NH_3, NO_2, O_3 AND SO_2 PASSIVE MEASUREMENTS DATA SUMMARY 2017

Prepared
March 28, 2018

SAMPLE COLLECTIONAND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS

Passive measurement: Maxxam Analytics Ltd
Edmonton, Alberta

FILE CONTENTS DESCRIPTION	Passive Measurements of SO_2, NO_2, O_3, NH_3 and HNO_3	
SAMPLING INTERVAL	Bimonthly	
SAMPLING FREQUENCY OF DATA	Bimonthly	
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection	
UNITS	ppbv or $\mu g/m^3$	
OBSERVATION TYPE	Gas	
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Diffusion	
MEDIUM	Filter	
ANALYTICALMETHODS	IONS by Ion Chromatography (IC)	
SAMPLE PREPARATION	DI water extraction	
ANALYTICAL LABORATORY	MAXXAM Analytics Inc	
USER NOTE 1	Data are blank corrected for SO_2, NO_2 and O_3. Data are not blank corrected for NH_3 and HNO_3.	
USER NOTE 2	Concentrations are calculated by equations developed by lab	
SAMPLING INSTRUMENT TYPE	SO_2	all-season SO_2 passive sampling system
	NO_2	all-season NO_2 passive sampling system
	O_3	all-season O_3 passive sampling system
	NH_3	Ogawa passive sampler
	HNO_3	Ogawa passive sampler
FLAGS USED		
V0	Valid value	
V1	Valid value but comprised wholly or partially of below detection limit data	
V4	Valid value despite failing to meet some QC or statistical criteria	
M1	Missing value because no value is available	
M2	Missing value because invalidated by Data Originator	

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2017**

Passives - Annual Averages

Species Column Contains:

Concentration,SC = Samples Collected, VP = Valid Periods

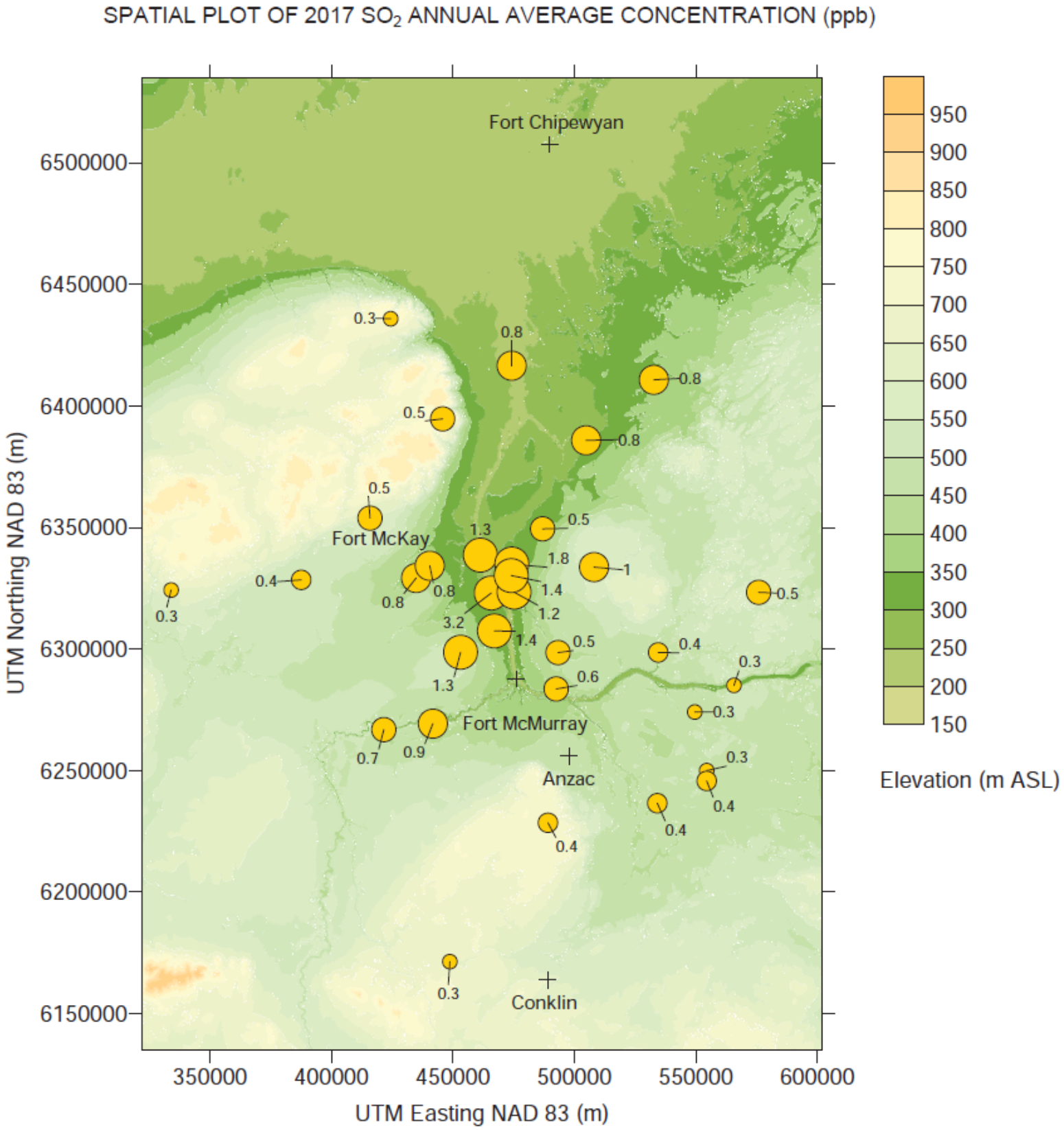
					SO2			NO2			O3			HNO3			NH3		
Site	Start Date	End Date	Lat.	Long.	ppb	SC	VP	ppb	SC	VP	ppb	SC	VP	ppb	SC	VP	ppb	SC	VP
AMS01	2016/11/29	2017/11/29	57.189428	-111.640583	1.3	18	6	3.7	18	6	21.9	18	6	0.1	18	6	0.2	18	6
AMS02	2016/11/29	2017/11/29	57.050006	-111.564147	3.2	18	6	4.5	18	6	22.9	18	6	0.2	18	6	1.6	18	6
AS103	2016/11/28	2017/12/06	56.696417	-111.122283	0.6	12	6	1.0	12	6	30.8	12	6	0.1	12	6	0.3	12	6
AS107	2016/11/28	2017/12/07	56.829833	-111.768167	1.3	12	6	1.1	12	6	30.9	12	6	0.1	12	6	0.6	12	6
BM07	2016/12/03	2017/12/05	58.058133	-112.281967	0.3	6	6	0.1	6	6	29.9	6	6	0.1	6	6	0.3	6	6
BM10	2016/12/02	2017/12/07	57.320050	-112.396967	0.5	5	5	0.3	5	5	23.1	5	5	0.1	6	6	0.5	6	6
BM11	2016/12/03	2017/12/05	57.691150	-111.909400	0.5	6	6	0.2	6	6	25.8	6	6	0.1	6	6	0.3	5	5
JE306	2016/12/03	2017/12/05	57.618833	-110.918117	0.8	6	6	1.4	6	6	25.0	6	6	0.1	6	6	0.3	6	6
JE308	2016/12/02	2017/12/07	57.085917	-112.855550	0.4	6	6	0.3	6	6	24.8	6	6	0.0	6	6	0.2	6	6
JE312	2016/11/30	2017/12/06	56.829950	-110.434767	0.4	6	6	0.4	6	6	27.6	5	5	0.1	6	6	0.5	6	6
JE316	2016/11/30	2017/12/06	56.353250	-110.118833	0.3	6	6	0.2	6	6	27.9	6	6	0.1	6	6	0.7	6	6
JE323	2016/11/28	2017/12/08	56.833167	-111.109133	0.5	6	6	0.7	6	6	23.4	6	6	0.1	6	6	0.2	6	6
JP101	2016/11/28	2017/12/04	56.539867	-112.276583	0.7	12	6	0.5	12	6	32.2	12	6	0.1	12	6	0.2	12	6
JP102	2016/11/28	2017/12/07	56.910317	-111.538267	1.4	12	6	2.0	12	6	29.9	12	6	0.1	12	6	0.4	12	6
JP104	2016/12/01	2017/12/02	57.120867	-111.424217	1.8	12	6	3.9	12	6	25.8	12	6	0.1	12	6	0.6	12	6
JP107	2016/12/03	2017/12/05	57.889483	-111.433700	0.8	12	6	1.6	12	6	30.3	12	6	0.1	12	6	0.5	12	6
JP108	2016/11/30	2017/12/06	56.709267	-109.927283	0.3	12	6	0.4	11	6	25.6	12	6	0.1	12	6	0.4	12	6
JP201	2016/12/02	2017/12/07	57.032217	-113.733217	0.3	12	6	0.3	12	6	31.3	12	6	0.1	12	6	0.2	12	6
JP205	2016/12/03	2017/12/05	57.840200	-110.446433	0.8	11	6	0.6	12	6	33.4	12	6	0.1	12	6	0.3	12	6
JP210	2016/11/30	2017/12/06	56.276083	-110.452000	0.4	12	6	0.4	12	6	31.2	12	6	0.1	12	6	0.6	12	6
JP212	2016/11/28	2017/12/07	57.053633	-111.406567	1.2	6	6	3.2	6	6	20.3	6	6	0.1	6	6	0.5	6	6
JP213	2016/12/03	2017/12/06	57.046467	-109.748767	0.5	12	6	0.3	12	6	32.4	12	6	0.1	12	6	0.5	12	6
JP309	2016/12/02	2017/12/04	57.101800	-112.072517	0.8	12	6	1.0	12	6	27.0	12	6	0.1	12	6	0.2	12	6
JP311	2016/11/28	2017/12/04	56.565750	-111.947417	0.9	12	6	0.7	12	6	32.3	12	6	0.1	12	6	0.2	12	6
JP316	2016/11/30	2017/12/06	56.353250	-110.118833	0.4	12	6	0.4	12	6	30.8	12	6	0.1	12	6	0.5	12	6
NE07	2016/12/02	2017/12/08	57.146783	-110.866050	1.0	6	6	0.9	6	6	28.2	6	6	0.1	6	6	0.2	6	6
NE10	2016/11/30	2017/12/06	56.608433	-110.192883	0.3	6	6	0.3	6	6	27.2	6	6	0.0	5	5	0.1	5	5
NE11	2016/12/02	2017/12/08	57.288033	-111.216950	0.5	5	5	1.6	5	5	20.1	5	5	0.1	5	5	0.3	5	5
R2	2016/12/01	2017/12/02	57.114450	-111.428967	1.4	6	6	3.0	6	6	19.0	6	6	0.1	6	6	0.7	6	6
SM07	2016/12/08	2017/12/04	55.685533	-111.815367	0.3	6	6	0.4	6	6	29.2	6	6	0.1	6	6	0.9	6	6
SM08	2016/12/08	2017/12/04	56.201617	-111.175283	0.4	6	6	0.3	6	6	28.8	6	6	0.1	6	6	0.2	6	6
WF04	2016/12/02	2017/12/04	57.147867	-111.984033	0.8	6	6	0.8	5	5	20.5	5	5	0.3	6	6	0.6	6	6

Wood Buffalo Environmental Association

				Passive Measurements														Local sites		
				Ammonia			Nitric Acid			Nitrogen Dioxide			Ozone			Sulfur Dioxide			RH	Temp	Wind Speed
Site ID	Site Name	Start Date	End Date	ppb	MDL	Flag	ppb	MDL	Flag	ppb	MDL	Flag	ppb	MDL	Flag	ppb	MDL	Flag	%	K	cm/sec
AMS01	Bertha Ganter	Nov-29-16	Jan-27-17	<0.1	0.1	V1	0.17	0.02	V0	8.6	0.1	V4	17.2	0.1	V0	1.3	0.1	V0	80	258	130
AMS01	Bertha Ganter	Nov-29-16	Jan-27-17	<0.1	0.1	V1	0.17	0.02	V0	8.8	0.1	V4	15.5	0.1	V0	1.4	0.1	V0	80	258	130
AMS01	Bertha Ganter	Nov-29-16	Jan-27-17	<0.1	0.1	V1	0.13	0.02	V0	7.7	0.1	V4	17.3	0.1	V0	1.4	0.1	V0	80	258	130
			Average	-			0.2			8.4			16.7			1.4					
			Std Dev	-			0.0			0.6			0.9			0.0					
			Continuous	-			-			13.4			16			0.9					
			Diff (%)	-			-			-38%			4%			52%					
AMS01	Bertha Ganter	Jan-27-17	Apr-03-17	<0.1	0.1	V1	0.31	0.02	V0	5.5	0.1	V4	23.4	0.1	V0	2.1	0.1	V0	70	265	130
AMS01	Bertha Ganter	Jan-27-17	Apr-03-17	<0.1	0.1	V1	0.35	0.02	V0	4.9	0.1	V4	23.2	0.1	V0	2.4	0.1	V0	70	265	130
AMS01	Bertha Ganter	Jan-27-17	Apr-03-17	0.2	0.1	V0	0.24	0.02	V0	4.6	0.1	V4	20.4	0.1	V0	2.4	0.1	V0	70	265	130
			Average	0.2			0.3			5.0			22.3			2.3					
			Std Dev	0.0			0.1			0.2			1.4			0.1					
			Continuous	-			-			10.5			24.4			1.7					
			Diff (%)	-			-			-52%			-8%			35%					
AMS01	Bertha Ganter	Apr-03-17	May-26-17	0.2	0.1	V0	0.18	0.02	V0	1.7	0.1	V4	27.2	0.1	V0	1.3	0.1	V0	59	280	130
AMS01	Bertha Ganter	Apr-03-17	May-26-17	0.8	0.1	V0	0.18	0.02	V0	1.6	0.1	V4	29.4	0.1	V0	1.3	0.1	V0	59	280	130
AMS01	Bertha Ganter	Apr-03-17	May-26-17	0.8	0.1	V0	0.22	0.02	V0	1.6	0.1	V4	25.9	0.1	V0	1.4	0.1	V0	59	280	130
			Average	0.6			0.2			1.6			27.5			1.3					
			Std Dev	0.1			0.0			0.0			1.8			0.1					
			Continuous	-			-			5.1			30.3			1.1					
			Diff (%)	-			-			-68%			-9%			21%					
AMS01	Bertha Ganter	May-26-17	Aug-01-17	1	0.1	V0	0.15	0.02	V0	0.7	0.1	V4	21.7	0.1	V0	1	0.1	V0	60	290	130
AMS01	Bertha Ganter	May-26-17	Aug-01-17	1	0.1	V0	0.19	0.02	V0	0.7	0.1	V4	22.6	0.1	V0	1	0.1	V0	60	290	130
AMS01	Bertha Ganter	May-26-17	Aug-01-17	0.9	0.1	V0	0.15	0.02	V0	0.8	0.1	V4	23.1	0.1	V0	1.1	0.1	V0	60	290	130
			Average	1.0			0.2			0.7			22.5			1.0					
			Std Dev	0.1			0.0			0.1			0.3			0.1					
			Continuous	-			-			3.2			23.6			1					
			Diff (%)	-			-			-77%			-5%			3%					
AMS01	Bertha Ganter	Aug-01-17	Sep-29-17	1.3	0.1	V0	0.15	0.02	V0	2	0.1	V4	22.1	0.1	V0	1.1	0.1	V0	65	288	130
AMS01	Bertha Ganter	Aug-01-17	Sep-29-17	1	0.1	V0	0.08	0.02	V0	1.8	0.1	V4	19.6	0.1	V0	1.2	0.1	V0	65	288	130
AMS01	Bertha Ganter	Aug-01-17	Sep-29-17	0.8	0.1	V0	0.11	0.02	V0	1.3	0.1	V4	21.1	0.1	V0	1	0.1	V0	65	288	130
			Average	1.0			0.1			1.7			20.9			1.1					
			Std Dev	0.1			0.0			0.3			0.8			0.1					
			Continuous	-			-			3.6			20.3			1					
			Diff (%)	-			-			-53%			3%			10%					
AMS01	Bertha Ganter	Sep-29-17	Nov-29-17	1.3	0.1	V0	0.35	0.02	V0	5.3	0.1	V4	19.3	0.1	V0	0.6	0.1	V0	79	269	130
AMS01	Bertha Ganter	Sep-29-17	Nov-29-17	1.3	0.1	V0	0.35	0.02	V0	4.5	0.1	V4	24.2	0.1	V0	0.7	0.1	V0	79	269	130
AMS01	Bertha Ganter	Sep-29-17	Nov-29-17	1.6	0.1	V0	0.35	0.02	V0	3.9	0.1	V4	21	0.1	V0	0.5	0.1	V0	79	269	130
			Average	1.4			0.4			4.6			21.5			0.6					
			Std Dev	0.2			0.0			0.4			1.7			0.1					
			Continuous	-			-			6.5			19.7			0.7					
			Diff (%)	-			-			-30%			9%			-14%					

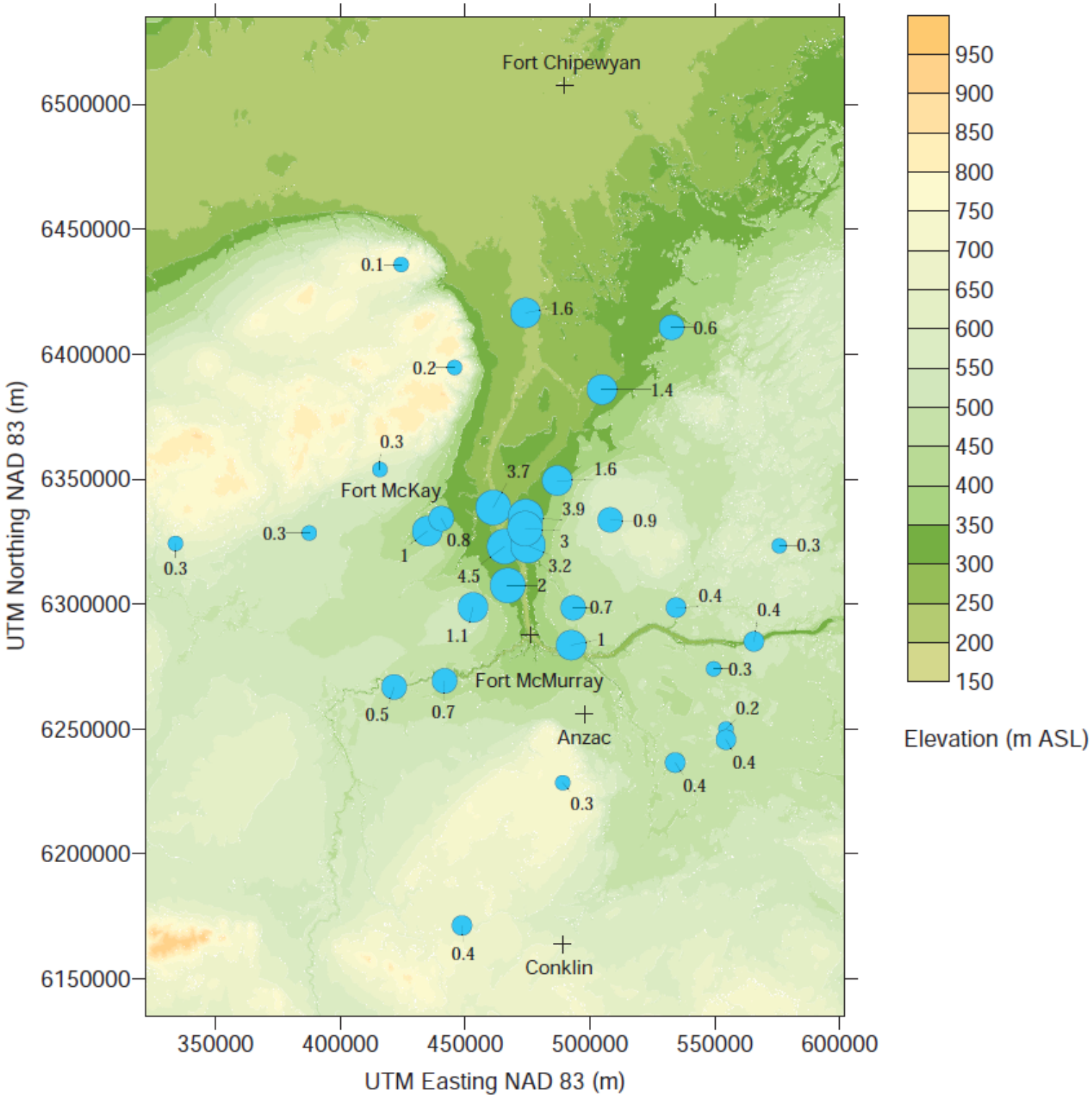
Wood Buffalo Environmental Association

				Passive Measurements														Local sites		
				Ammonia			Nitric Acid			Nitrogen Dioxide			Ozone			Sulfur Dioxide			RH	Temp	Wind Speed
Site ID	Site Name	Start Date	End Date	ppb	MDL	Flag	ppb	MDL	Flag	ppb	MDL	Flag	ppb	MDL	Flag	ppb	MDL	Flag	%	K	cm/sec
AMS02	Mildred Lake	Nov-29-16	Jan-27-17	0.8	0.1	V0	0.2	0.02	V0	8.4	0.1	V4	15.9	0.1	V0	3.8	0.1	V0	80	258	130
AMS02	Mildred Lake	Nov-29-16	Jan-27-17	0.4	0.1	V0	0.17	0.02	V0	9.2	0.1	V4	16.7	0.1	V0	3.7	0.1	V0	80	258	130
AMS02	Mildred Lake	Nov-29-16	Jan-27-17	0.7	0.1	V0	0.24	0.02	V0	9.5	0.1	V4	18.1	0.1	V0	3.8	0.1	V0	80	258	130
			Average	0.6			0.2			9.0			16.9			3.8					
			Std Dev	0.2			0.0			0.2			0.8			0.1					
			Continuous	-			-			-			-			2.3					
			Diff (%)	-			-			-			-			64%					
AMS02	Mildred Lake	Jan-27-17	Mar-30-17	1.7	0.1	V0	0.17	0.02	V0	5.5	0.1	V4	25.2	0.1	V0	3.6	0.1	V0	70	265	130
AMS02	Mildred Lake	Jan-27-17	Mar-30-17	1.7	0.1	V0	0.69	0.02	V0	6.3	0.1	V4	25.1	0.1	V0	3.5	0.1	V0	70	265	130
AMS02	Mildred Lake	Jan-27-17	Mar-30-17	1.7	0.1	V0	0.24	0.02	V0	5.7	0.1	V4	23.7	0.1	V0	3.9	0.1	V0	70	265	130
			Average	1.7			0.4			5.8			24.7			3.7					
			Std Dev	0.0			0.2			0.3			0.7			0.2					
			Continuous	-			-			-			-			2.8					
			Diff (%)	-			-			-			-			31%					
AMS02	Mildred Lake	Mar-30-17	May-26-17	1.3	0.1	V0	0.15	0.02	V0	1.4	0.1	V4	27.4	0.1	V0	2.3	0.1	V0	60	279	130
AMS02	Mildred Lake	Mar-30-17	May-26-17	1	0.1	V0	0.11	0.02	V0	1.3	0.1	V4	38.5	0.1	V0	2.1	0.1	V0	60	279	130
AMS02	Mildred Lake	Mar-30-17	May-26-17	1.6	0.1	V0	0.15	0.02	V0	1.4	0.1	V4	29.9	0.1	V0	2.6	0.1	V0	60	279	130
			Average	1.3			0.1			1.4			31.9			2.3					
			Std Dev	0.3			0.0			0.1			4.5			0.3					
			Continuous	-			-			-			-			1.9					
			Diff (%)	-			-			-			-			23%					
AMS02	Mildred Lake	May-26-17	Aug-01-17	2.8	0.1	V0	0.15	0.02	V0	1.2	0.1	V4	25.8	0.1	V0	2.8	0.1	V0	60	290	130
AMS02	Mildred Lake	May-26-17	Aug-01-17	3.6	0.1	V0	0.15	0.02	V0	1.1	0.1	V4	23.5	0.1	V0	3.4	0.1	V0	60	290	130
AMS02	Mildred Lake	May-26-17	Aug-01-17	3.6	0.1	V0	0.19	0.02	V0	1.1	0.1	V4	24.5	0.1	V0	2.8	0.1	V0	60	290	130
			Average	3.3			0.2			1.1			24.6			3.0					
			Std Dev	0.2			0.0			0.0			0.6			0.3					
			Continuous	-			-			-			-			2.4					
			Diff (%)	-			-			-			-			25%					
AMS02	Mildred Lake	Aug-01-17	Oct-06-17	3.7	0.1	V0	0.15	0.02	V0	2.5	0.1	V4	18.2	0.1	V0	3.2	0.1	V0	65	288	130
AMS02	Mildred Lake	Aug-01-17	Oct-06-17	3.3	0.1	V0	0.19	0.02	V0	2.6	0.1	V4	21.6	0.1	V0	3.4	0.1	V0	65	288	130
AMS02	Mildred Lake	Aug-01-17	Oct-06-17	3.6	0.1	V0	0.26	0.02	V0	2.7	0.1	V4	16.7	0.1	V0	3.6	0.1	V0	65	288	130
			Average	3.5			0.2			2.6			18.8			3.4					
			Std Dev	0.2			0.0			0.1			2.5			0.1					
			Continuous	-			-			-			-			2.5					
			Diff (%)	-			-			-			-			36%					
AMS02	Mildred Lake	Oct-06-17	Nov-29-17	3.9	0.1	V0	0.35	0.02	V0	5	0.1	V4	21.3	0.1	V0	3	0.1	V0	79	269	130
AMS02	Mildred Lake	Oct-06-17	Nov-29-17	4.3	0.1	V0	0.7	0.02	V0	6.8	0.1	V4	21.3	0.1	V0	2.6	0.1	V0	79	269	130
AMS02	Mildred Lake	Oct-06-17	Nov-29-17	4.1	0.1	V0	0.35	0.02	V0	9.8	0.1	V4	19.3	0.1	V0	3	0.1	V0	79	269	130
			Average	4.1			0.5			7.2			20.6			2.9					
			Std Dev	0.1			0.2			1.6			1.0			0.2					
			Continuous	-			-			-			-			1.7					
			Diff (%)	-			-			-			-			69%					

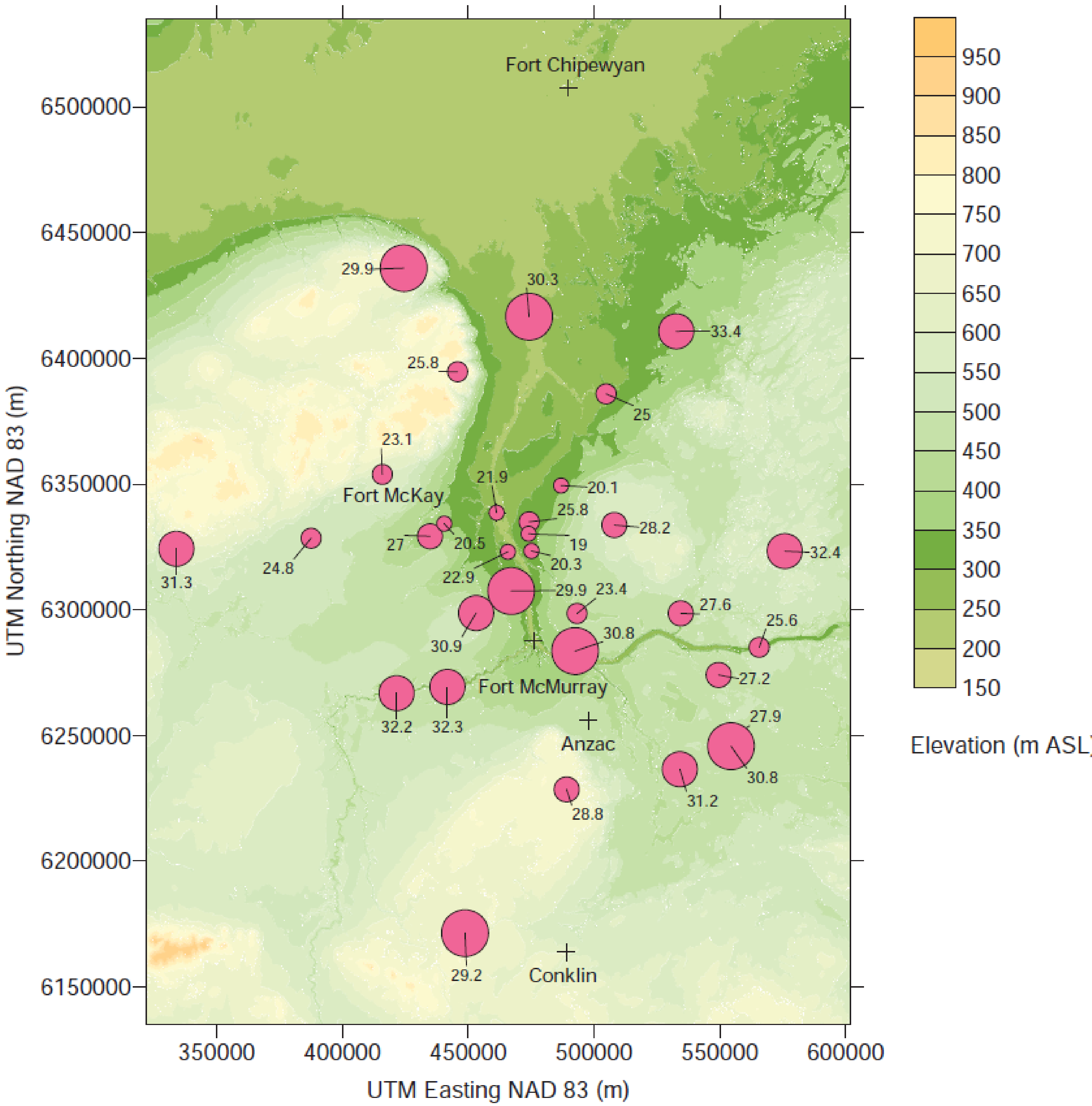

SPATIAL PLOT OF 2017 SO_2 ANNUAL AVERAGE CONCENTRATION (ppb)
Fort Chipewyan
Fort McKay
Fort McMurray
Anzac
Conklin
6500000
6450000
6400000
6350000
6300000
6250000
6200000
6150000
350000
400000
450000
500000
550000
600000
UTM Northing NAD 83 (m)
UTM Easting NAD 83 (m)
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
Elevation (m ASL)

WBEA

SPATIAL PLOT OF NO_2 ANNUAL AVERAGE CONCENTRATION (ppb)

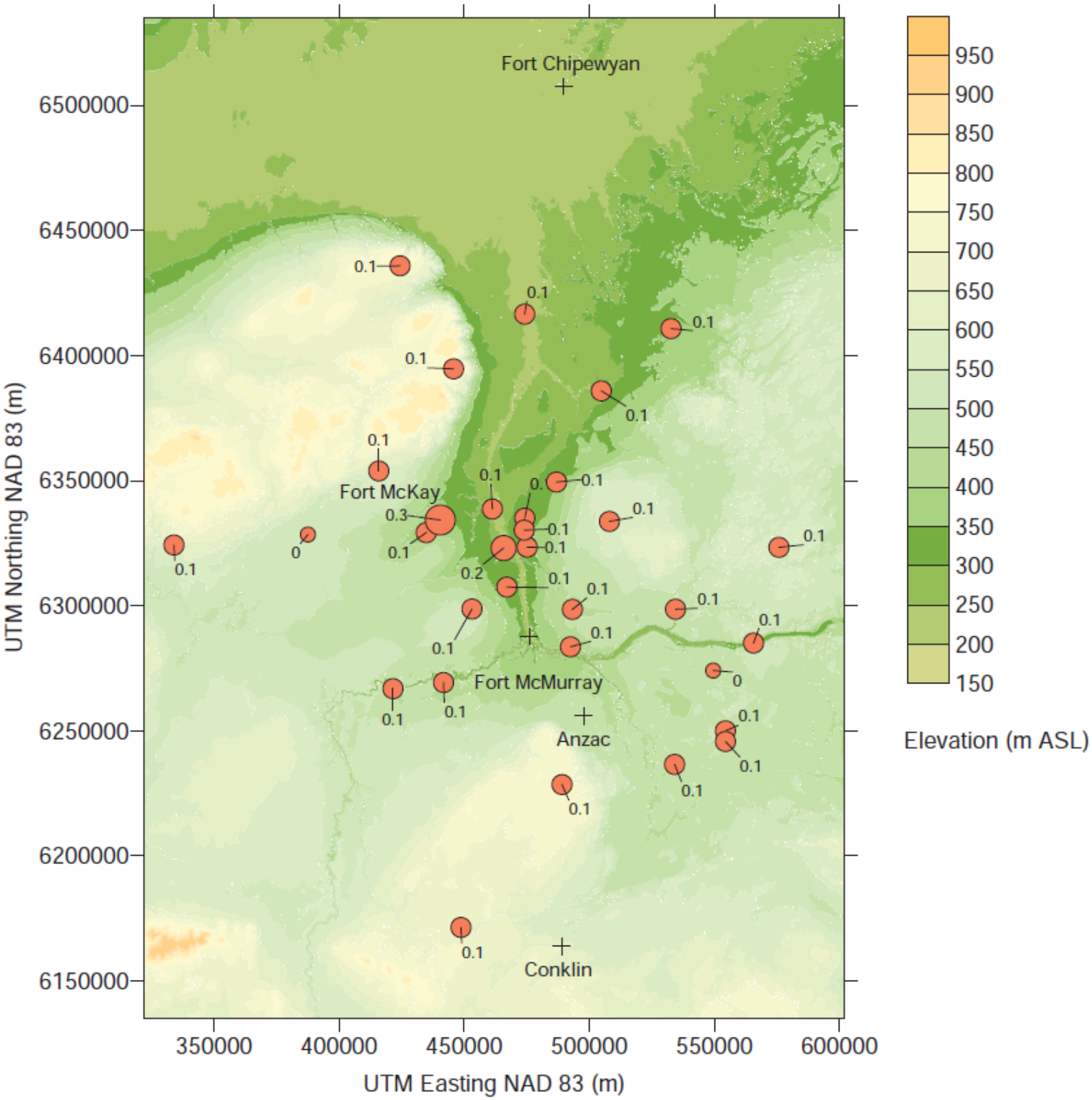


SPATIAL PLOT OF 2017 O_3 ANNUAL AVERAGE CONCENTRATION (ppb)

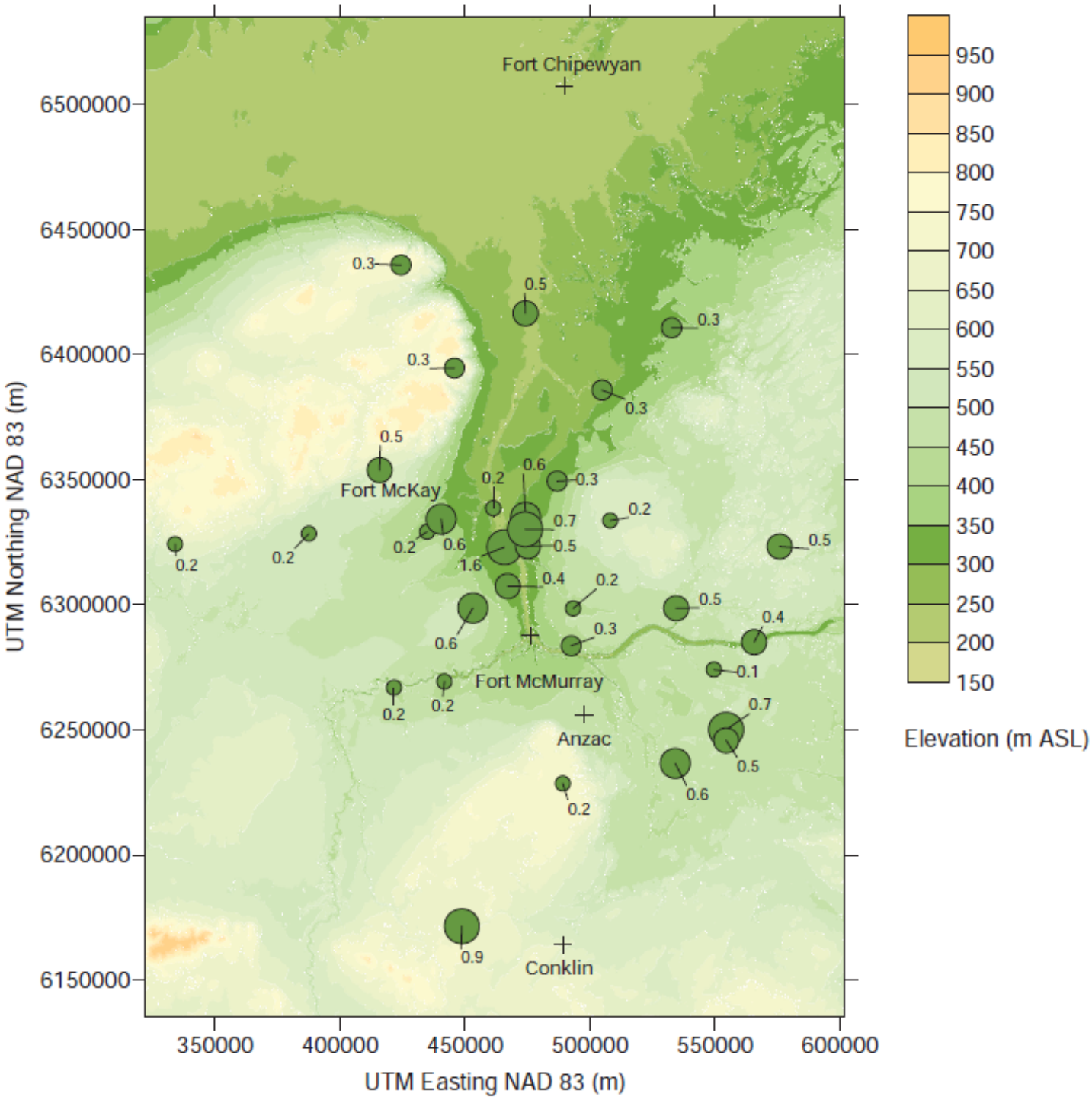


WBEA

SPATIAL PLOT OF 2017 HNO_3 ANNUAL AVERAGE CONCENTRATION (pppb)



SPATIAL PLOT OF 2017 NH_3 ANNUAL AVERAGE CONCENTRATION (ppb)



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

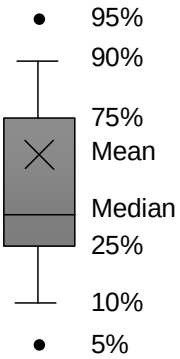
Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS BY:

VOCs: InnoTech Alberta, Inc.
Vegreville, Alberta

FILE CONTENTS DESCRIPTION	VOC - Speciated Volatile Organic Compounds
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection Limits (MDL) are provided with each observation
UNITS	ppbv (parts per billion volume)
OBSERVATION TYPE	Gas
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Evacuated canister
ANALYTICAL METHODS	GC/MS - Gas chromatography/mass spectrometer
ANALYTICAL LABORATORY	InnoTech Alberta Inc
USER NOTE 1	Data are not blank corrected
SAMPLING INSTRUMENT TYPE	Tisch TE123
FLOW RATE	10.0 cc/min (cubic centimeters per minute)
FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



Volatile Organic Compounds - 1,2,4-Trimethylbenzene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	39%	0	0	0	0	0	0.04	0.06	0.064	0.13	0.019	0.028
AMS 6	Patricia McInnes	61	31%	0	0	0	0	0	0.03	0.054	0.1	0.15	0.018	0.033
AMS 7	Athabasca Valley	61	43%	0	0	0	0	0	0.04	0.06	0.09	0.11	0.021	0.029
AMS 14	Anzac	60	15%	0	0	0	0	0	0	0.035	0.04	0.05	5.7E-3	0.014
AMS 9	Barge Landing	60	32%	0	0	0	0	0	0.04	0.07	0.08	0.12	0.02	0.031
AMS 13	Fort McKay South	61	23%	0	0	0	0	0	0	0.054	0.095	0.17	0.015	0.034
AMS 15	Horizon	60	20%	0	0	0	0	0	0	0.045	0.065	0.44	0.017	0.06
AMS 22	Janvier	20	10%	0	0	0	0	0	0	0.015	0.085	0.14	8.5E-3	0.032

Volatile Organic Compounds - 1,3,5-Trimethylbenzene (ppbv) - 2017

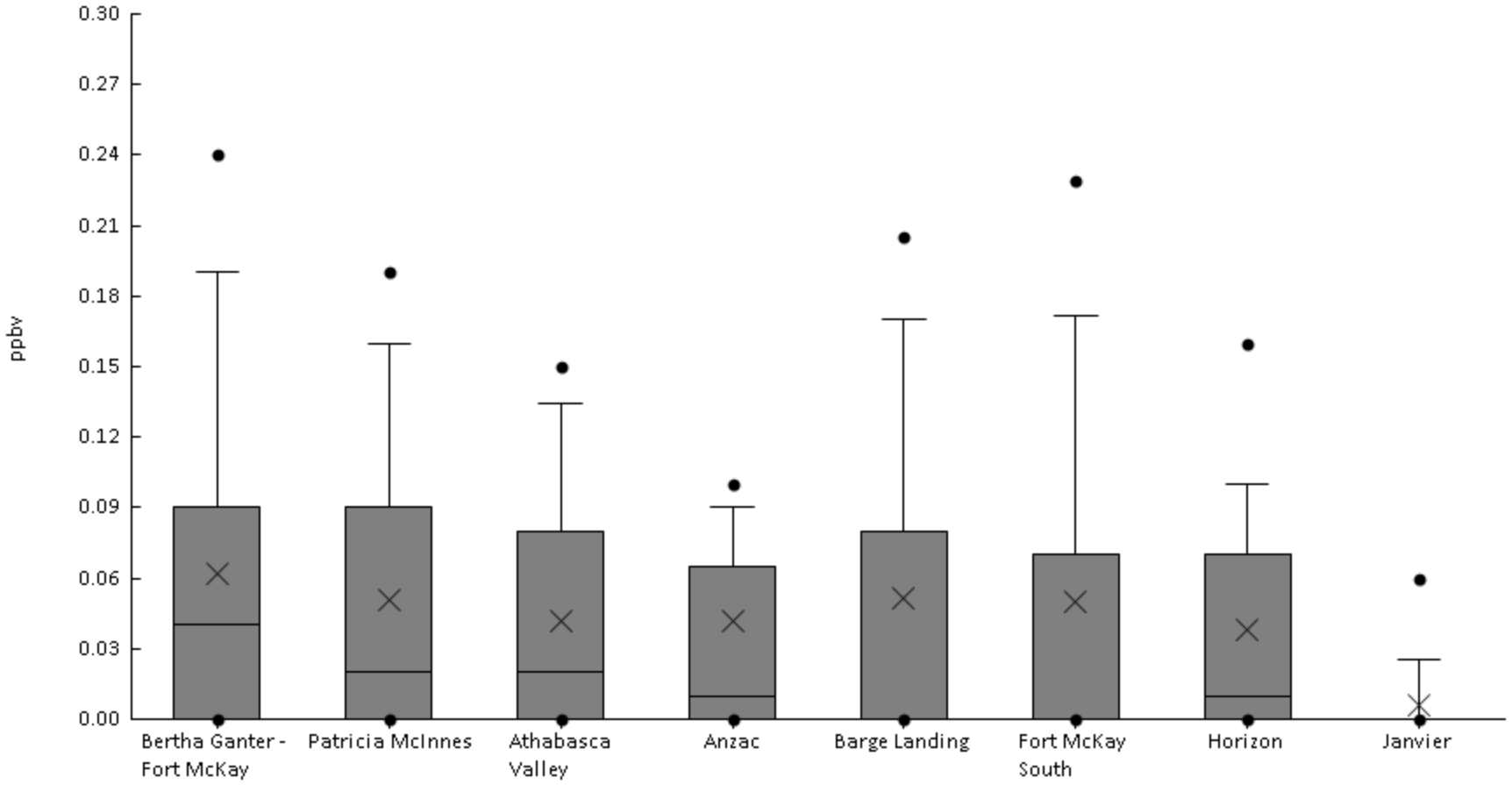
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	19%	0	0	0	0	0	0	0.03	0.04	0.1	6.9E-3	0.017
AMS 6	Patricia McInnes	61	16%	0	0	0	0	0	0	0.03	0.045	0.12	7.7E-3	0.022
AMS 7	Athabasca Valley	61	18%	0	0	0	0	0	0	0.02	0.03	0.08	5.9E-3	0.015
AMS 14	Anzac	60	8%	0	0	0	0	0	0	0	0.025	0.05	2.7E-3	9.5E-3
AMS 9	Barge Landing	60	22%	0	0	0	0	0	0	0.035	0.055	0.1	8.7E-3	0.02
AMS 13	Fort McKay South	61	15%	0	0	0	0	0	0	0.02	0.055	0.18	8.2E-3	0.028
AMS 15	Horizon	60	17%	0	0	0	0	0	0	0.03	0.06	0.14	9E-3	0.026
AMS 22	Janvier	20	5%	0	0	0	0	0	0	0	0.015	0.03	1.5E-3	6.7E-3

Volatile Organic Compounds - 1,3-Butadiene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	13%	0	0	0	0	0	0	0.03	0.03	0.04	4E-3	0.011
AMS 6	Patricia McInnes	61	7%	0	0	0	0	0	0	0	0.025	0.06	2.3E-3	9.6E-3
AMS 7	Athabasca Valley	61	10%	0	0	0	0	0	0	8E-3	0.029	0.05	3.1E-3	0.01
AMS 14	Anzac	60	7%	0	0	0	0	0	0	0	0.02	0.2	4.5E-3	0.026
AMS 9	Barge Landing	60	12%	0	0	0	0	0	0	0.025	0.035	0.07	4.7E-3	0.014
AMS 13	Fort McKay South	61	10%	0	0	0	0	0	0	8E-3	0.03	0.04	3E-3	9.2E-3
AMS 15	Horizon	60	3%	0	0	0	0	0	0	0	0	0.02	6.7E-4	3.6E-3
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - 1-Butene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	56%	0	0	0	0	0.04	0.09	0.19	0.24	0.32	0.062	0.078
AMS 6	Patricia McInnes	61	51%	0	0	0	0	0.02	0.09	0.16	0.19	0.24	0.051	0.066
AMS 7	Athabasca Valley	61	52%	0	0	0	0	0.02	0.08	0.13	0.15	0.18	0.042	0.052
AMS 14	Anzac	60	50%	0	0	0	0	0.01	0.065	0.09	0.1	0.55	0.042	0.08
AMS 9	Barge Landing	60	45%	0	0	0	0	0	0.08	0.17	0.21	0.33	0.051	0.077
AMS 13	Fort McKay South	61	48%	0	0	0	0	0	0.07	0.17	0.23	0.25	0.05	0.073
AMS 15	Horizon	60	50%	0	0	0	0	0.01	0.07	0.1	0.16	0.18	0.038	0.05
AMS 22	Janvier	20	10%	0	0	0	0	0	0	0.025	0.06	0.07	6E-3	0.019

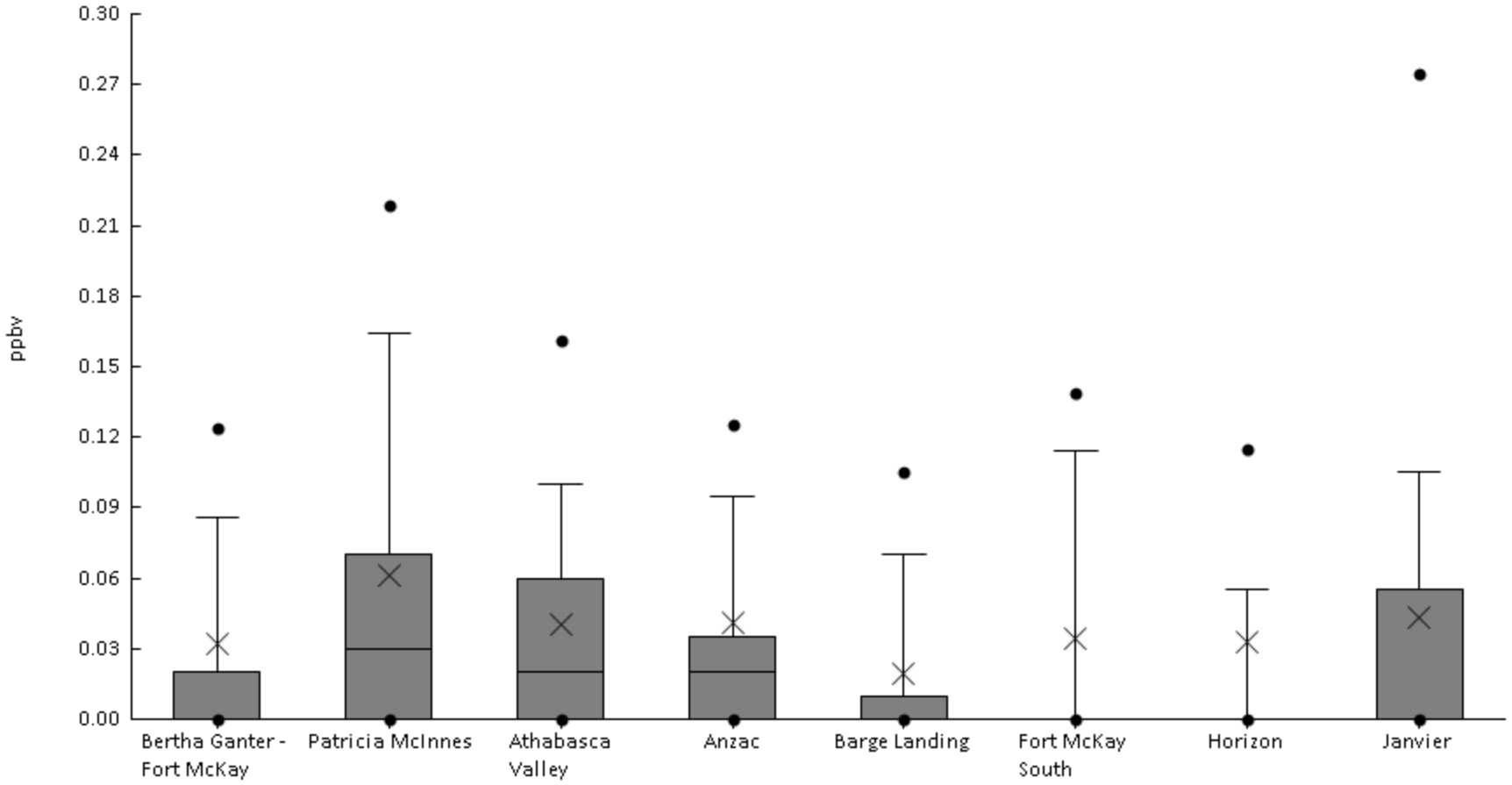


Volatile Organic Compounds - 1-Pentene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	31%	0	0	0	0	0	0.01	0.04	0.044	0.1	0.01	0.021
AMS 6	Patricia McInnes	61	23%	0	0	0	0	0	0	0.024	0.048	0.09	7.4E-3	0.019
AMS 7	Athabasca Valley	61	26%	0	0	0	0	0	0.01	0.02	0.035	0.08	6.4E-3	0.014
AMS 14	Anzac	60	20%	0	0	0	0	0	0	0.01	0.035	0.06	4.5E-3	0.012
AMS 9	Barge Landing	60	22%	0	0	0	0	0	0	0.03	0.045	0.1	7.8E-3	0.02
AMS 13	Fort McKay South	61	28%	0	0	0	0	0	0.01	0.034	0.04	0.12	0.01	0.022
AMS 15	Horizon	60	20%	0	0	0	0	0	0	0.02	0.025	0.1	5.7E-3	0.017
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

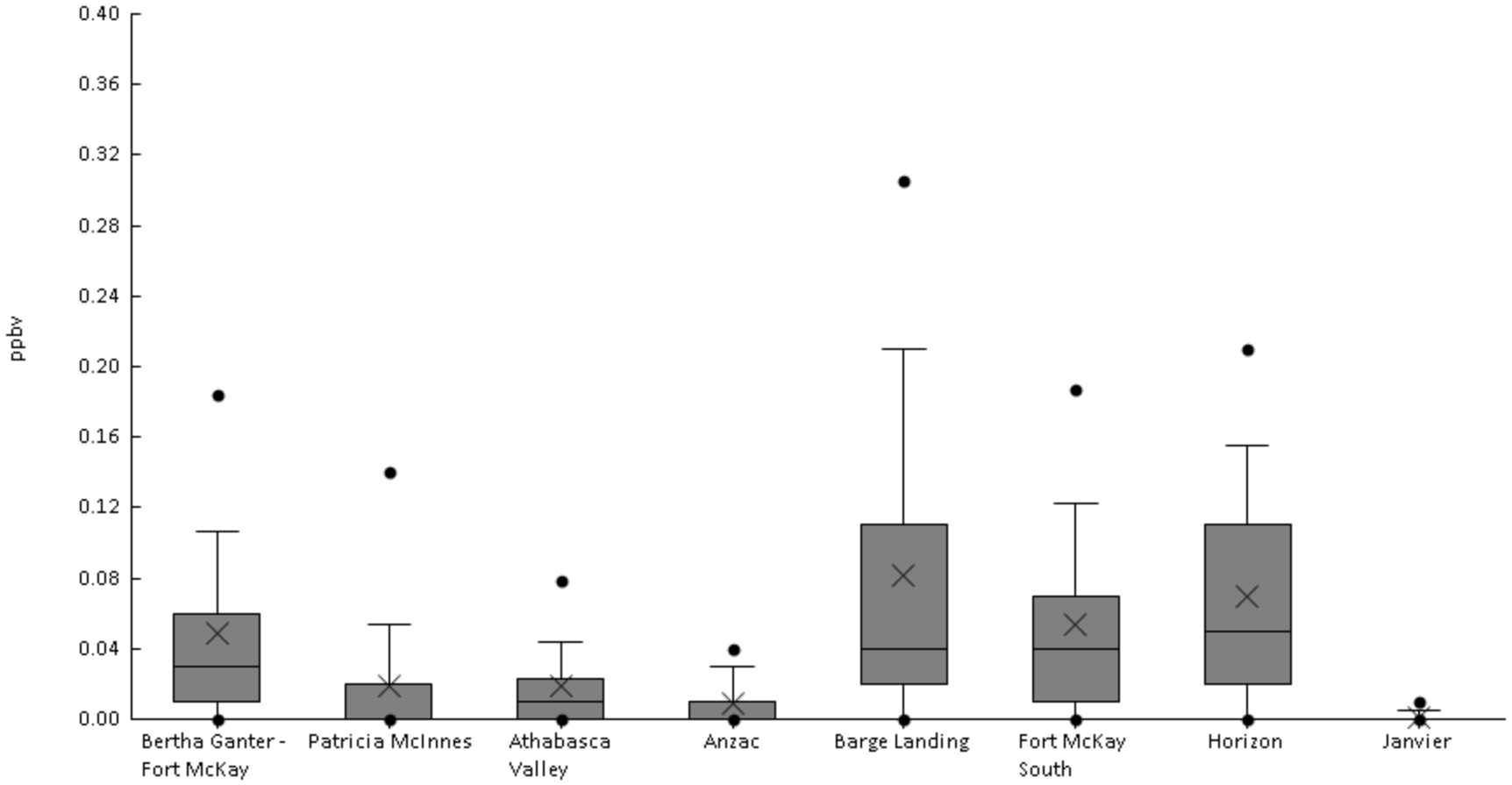
Volatile Organic Compounds - 2,2,4-Trimethylpentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	32%	0	0	0	0	0	0.02	0.086	0.12	0.62	0.032	0.097
AMS 6	Patricia McInnes	61	72%	0	0	0	0	0.03	0.07	0.16	0.22	0.75	0.061	0.11
AMS 7	Athabasca Valley	61	69%	0	0	0	0	0.02	0.06	0.1	0.16	0.23	0.04	0.052
AMS 14	Anzac	60	55%	0	0	0	0	0.02	0.035	0.095	0.13	0.79	0.041	0.11
AMS 9	Barge Landing	60	27%	0	0	0	0	0	0.01	0.07	0.11	0.25	0.019	0.048
AMS 13	Fort McKay South	61	20%	0	0	0	0	0	0	0.11	0.14	0.64	0.034	0.1
AMS 15	Horizon	60	15%	0	0	0	0	0	0	0.055	0.12	1.3	0.033	0.17
AMS 22	Janvier	20	40%	0	0	0	0	0	0.055	0.11	0.28	0.44	0.044	0.1



Volatile Organic Compounds - 2,2-Dimethylbutane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	76%	0	0	0	0.01	0.03	0.06	0.11	0.18	0.34	0.049	0.062
AMS 6	Patricia McInnes	61	43%	0	0	0	0	0	0.02	0.054	0.14	0.16	0.019	0.038
AMS 7	Athabasca Valley	61	57%	0	0	0	0	0.01	0.023	0.044	0.079	0.18	0.019	0.031
AMS 14	Anzac	60	42%	0	0	0	0	0	0.01	0.03	0.04	0.06	9.3E-3	0.015
AMS 9	Barge Landing	60	87%	0	0	0	0.02	0.04	0.11	0.21	0.31	0.55	0.082	0.11
AMS 13	Fort McKay South	61	77%	0	0	0	0.01	0.04	0.07	0.12	0.19	0.33	0.053	0.066
AMS 15	Horizon	60	82%	0	0	0	0.02	0.05	0.11	0.16	0.21	0.36	0.07	0.073
AMS 22	Janvier	20	10%	0	0	0	0	0	0	5E-3	0.01	0.01	1E-3	3.1E-3

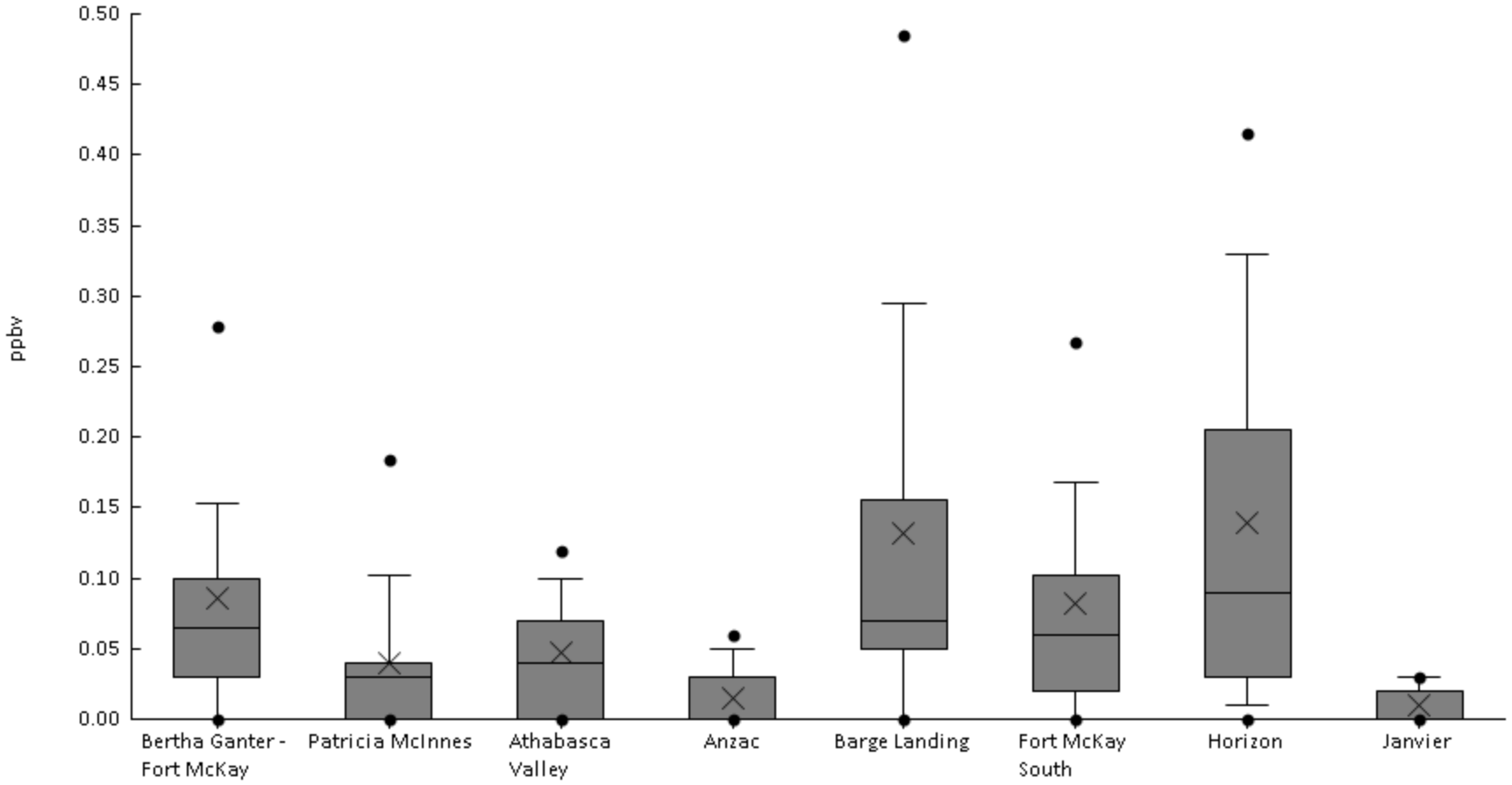


Volatile Organic Compounds - 2,3,4-Trimethylpentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	52%	0	0	0	0	0.01	0.02	0.033	0.05	0.12	0.014	0.023
AMS 6	Patricia McInnes	61	49%	0	0	0	0	0	0.02	0.03	0.072	0.12	0.014	0.026
AMS 7	Athabasca Valley	61	41%	0	0	0	0	0	0.013	0.02	0.07	0.09	0.011	0.02
AMS 14	Anzac	60	25%	0	0	0	0	0	5E-3	0.025	0.04	0.06	6.7E-3	0.014
AMS 9	Barge Landing	60	42%	0	0	0	0	0	0.02	0.03	0.04	0.12	0.012	0.023
AMS 13	Fort McKay South	61	39%	0	0	0	0	0	0.02	0.04	0.083	0.13	0.014	0.027
AMS 15	Horizon	60	55%	0	0	0	0	0.01	0.025	0.045	0.085	0.14	0.019	0.03
AMS 22	Janvier	20	10%	0	0	0	0	0	0	0.01	0.02	0.02	2E-3	6.2E-3

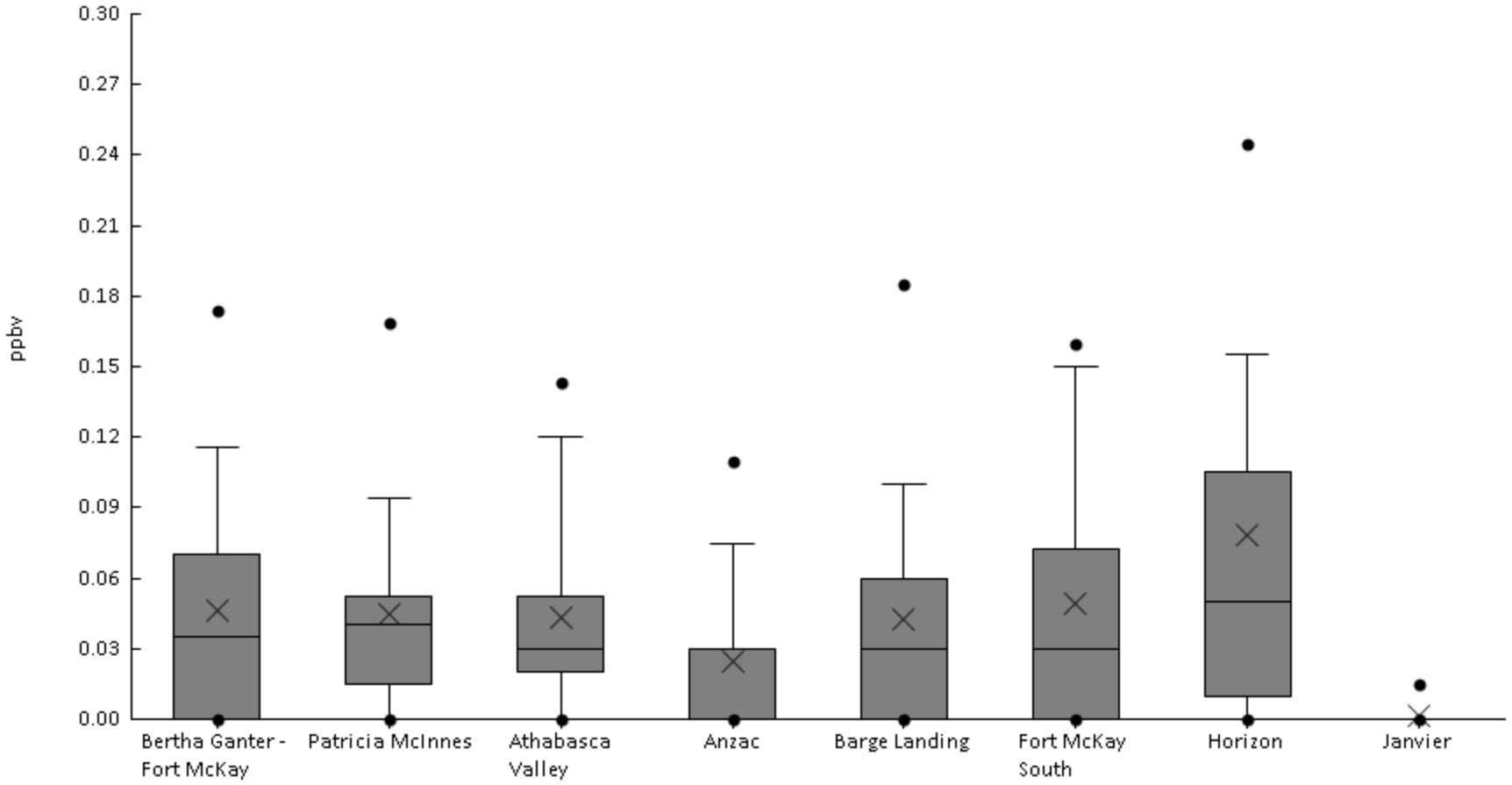
Volatile Organic Compounds - 2,3-Dimethylbutane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	84%	0	0	0	0.03	0.065	0.1	0.15	0.28	0.73	0.086	0.11
AMS 6	Patricia McInnes	61	64%	0	0	0	0	0.03	0.04	0.1	0.18	0.32	0.04	0.06
AMS 7	Athabasca Valley	61	69%	0	0	0	0	0.04	0.07	0.1	0.12	0.36	0.047	0.056
AMS 14	Anzac	60	38%	0	0	0	0	0	0.03	0.05	0.06	0.09	0.015	0.022
AMS 9	Barge Landing	60	87%	0	0	0	0.05	0.07	0.16	0.3	0.49	0.84	0.13	0.16
AMS 13	Fort McKay South	61	77%	0	0	0	0.02	0.06	0.1	0.17	0.27	0.64	0.082	0.11
AMS 15	Horizon	60	90%	0	0	0.01	0.03	0.09	0.21	0.33	0.42	0.6	0.14	0.14
AMS 22	Janvier	20	40%	0	0	0	0	0	0.02	0.03	0.03	0.03	0.01	0.013



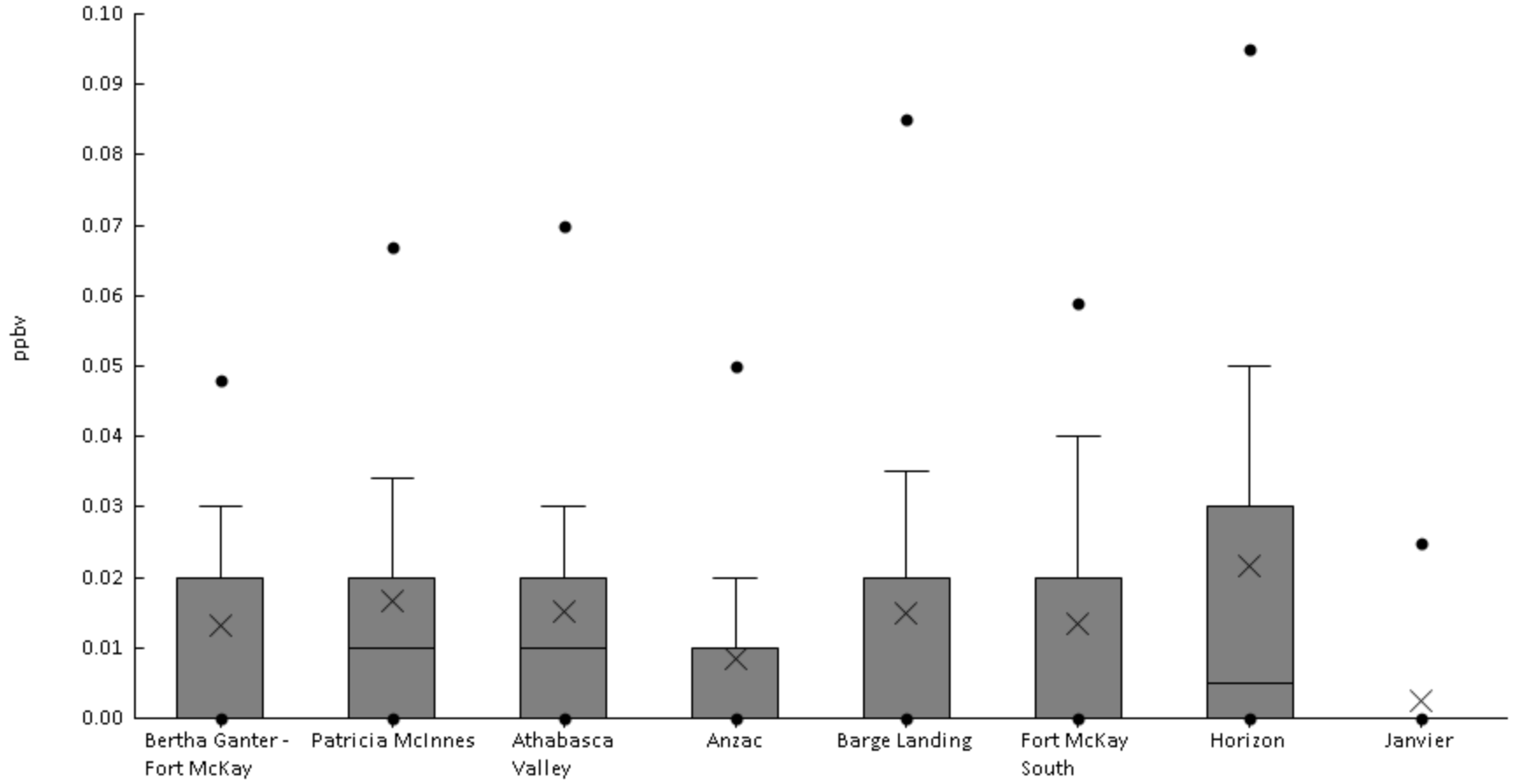
Volatile Organic Compounds - 2,3-Dimethylpentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	66%	0	0	0	0	0.035	0.07	0.12	0.17	0.2	0.046	0.052
AMS 6	Patricia McInnes	61	75%	0	0	0	0.015	0.04	0.053	0.094	0.17	0.21	0.044	0.048
AMS 7	Athabasca Valley	61	82%	0	0	0	0.02	0.03	0.053	0.12	0.14	0.2	0.043	0.044
AMS 14	Anzac	60	45%	0	0	0	0	0	0.03	0.075	0.11	0.26	0.024	0.044
AMS 9	Barge Landing	60	67%	0	0	0	0	0.03	0.06	0.1	0.19	0.22	0.043	0.052
AMS 13	Fort McKay South	61	61%	0	0	0	0	0.03	0.073	0.15	0.16	0.35	0.049	0.067
AMS 15	Horizon	60	75%	0	0	0	0.01	0.05	0.11	0.16	0.25	0.76	0.079	0.11
AMS 22	Janvier	20	5%	0	0	0	0	0	0	0	0.015	0.03	1.5E-3	6.7E-3



Volatile Organic Compounds - 2,4-Dimethylpentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	47%	0	0	0	0	0	0.02	0.03	0.048	0.12	0.013	0.023
AMS 6	Patricia McInnes	61	57%	0	0	0	0	0.01	0.02	0.034	0.067	0.12	0.017	0.025
AMS 7	Athabasca Valley	61	56%	0	0	0	0	0.01	0.02	0.03	0.07	0.09	0.015	0.021
AMS 14	Anzac	60	35%	0	0	0	0	0	0.01	0.02	0.05	0.08	8.3E-3	0.016
AMS 9	Barge Landing	60	47%	0	0	0	0	0	0.02	0.035	0.085	0.17	0.015	0.032
AMS 13	Fort McKay South	61	43%	0	0	0	0	0	0.02	0.04	0.059	0.12	0.013	0.025
AMS 15	Horizon	60	50%	0	0	0	0	5E-3	0.03	0.05	0.095	0.27	0.022	0.044
AMS 22	Janvier	20	5%	0	0	0	0	0	0	0	0.025	0.05	2.5E-3	0.011



Volatile Organic Compounds - 2-Methyl-1-pentene (ppbv) - 2017

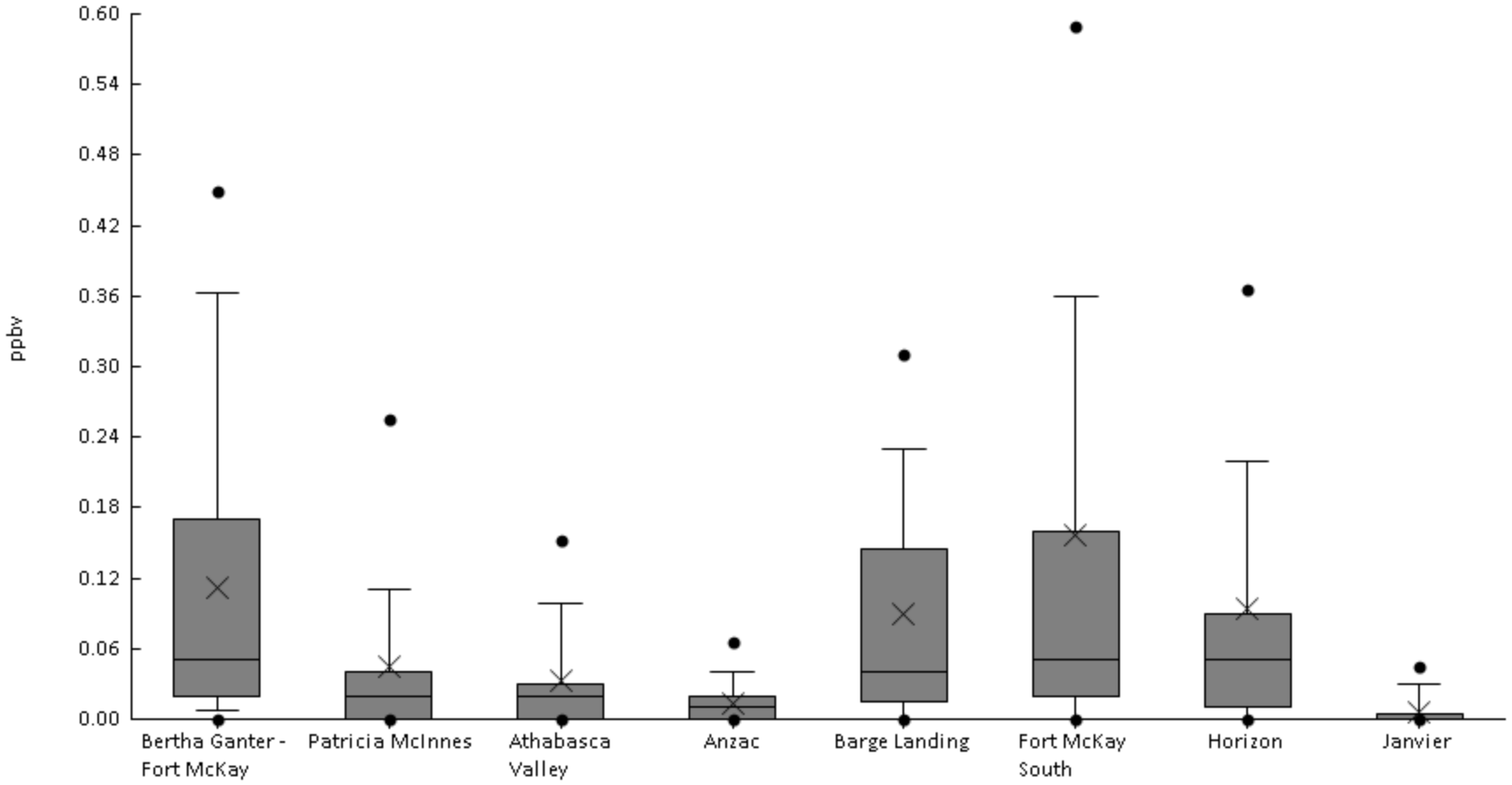
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - 2-Methyl-2-butene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

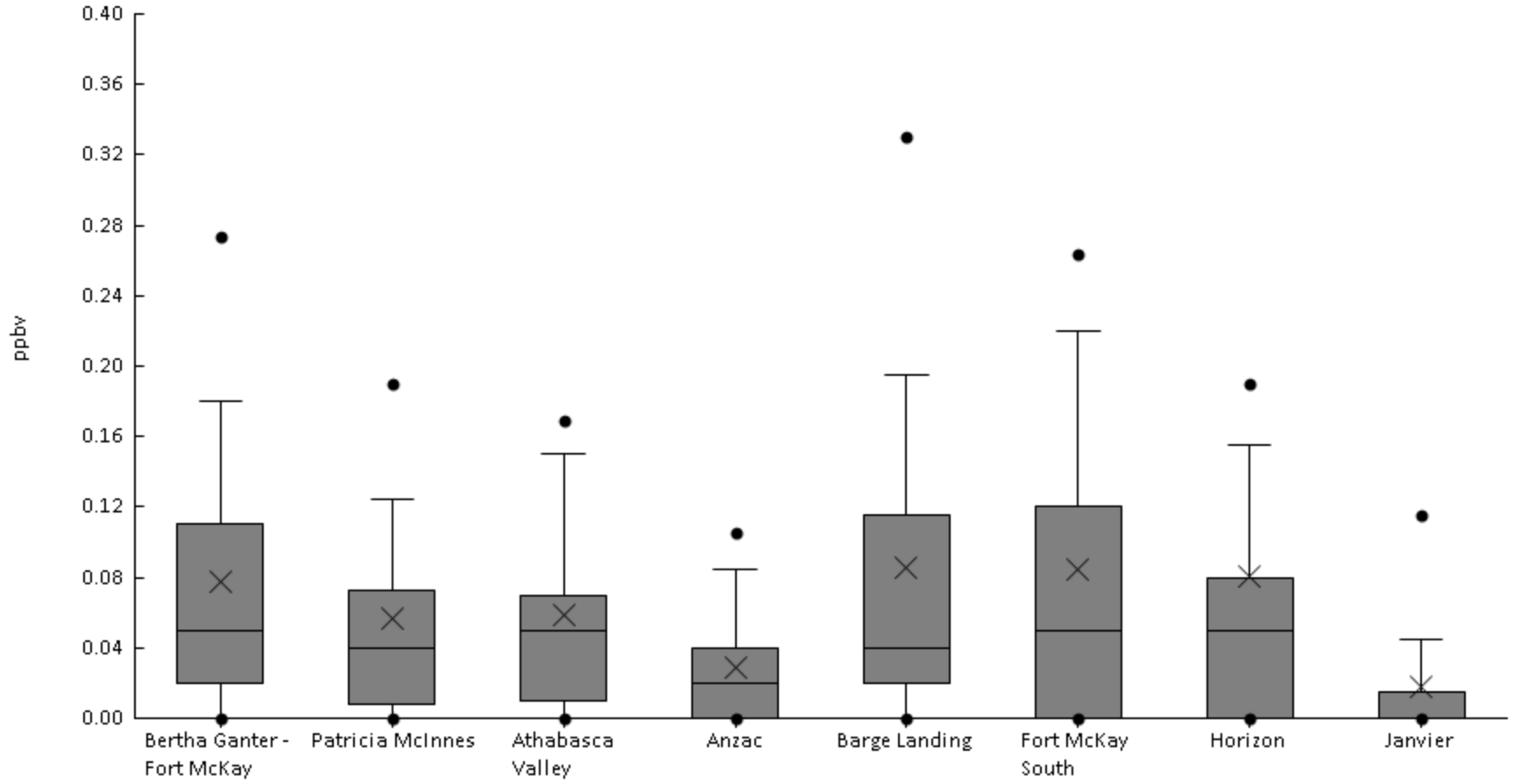
Volatile Organic Compounds - 2-Methylheptane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	90%	0	0	7E-3	0.02	0.05	0.17	0.36	0.45	0.56	0.11	0.14
AMS 6	Patricia McInnes	61	66%	0	0	0	0	0.02	0.04	0.11	0.25	0.6	0.045	0.097
AMS 7	Athabasca Valley	61	66%	0	0	0	0	0.02	0.03	0.098	0.15	0.4	0.033	0.063
AMS 14	Anzac	60	58%	0	0	0	0	0.01	0.02	0.04	0.065	0.08	0.014	0.019
AMS 9	Barge Landing	60	80%	0	0	0	0.015	0.04	0.15	0.23	0.31	0.6	0.09	0.12
AMS 13	Fort McKay South	61	84%	0	0	0	0.02	0.05	0.16	0.36	0.59	1.8	0.16	0.32
AMS 15	Horizon	60	78%	0	0	0	0.01	0.05	0.09	0.22	0.37	1.1	0.095	0.17
AMS 22	Janvier	20	25%	0	0	0	0	0	5E-3	0.03	0.045	0.05	6.5E-3	0.014



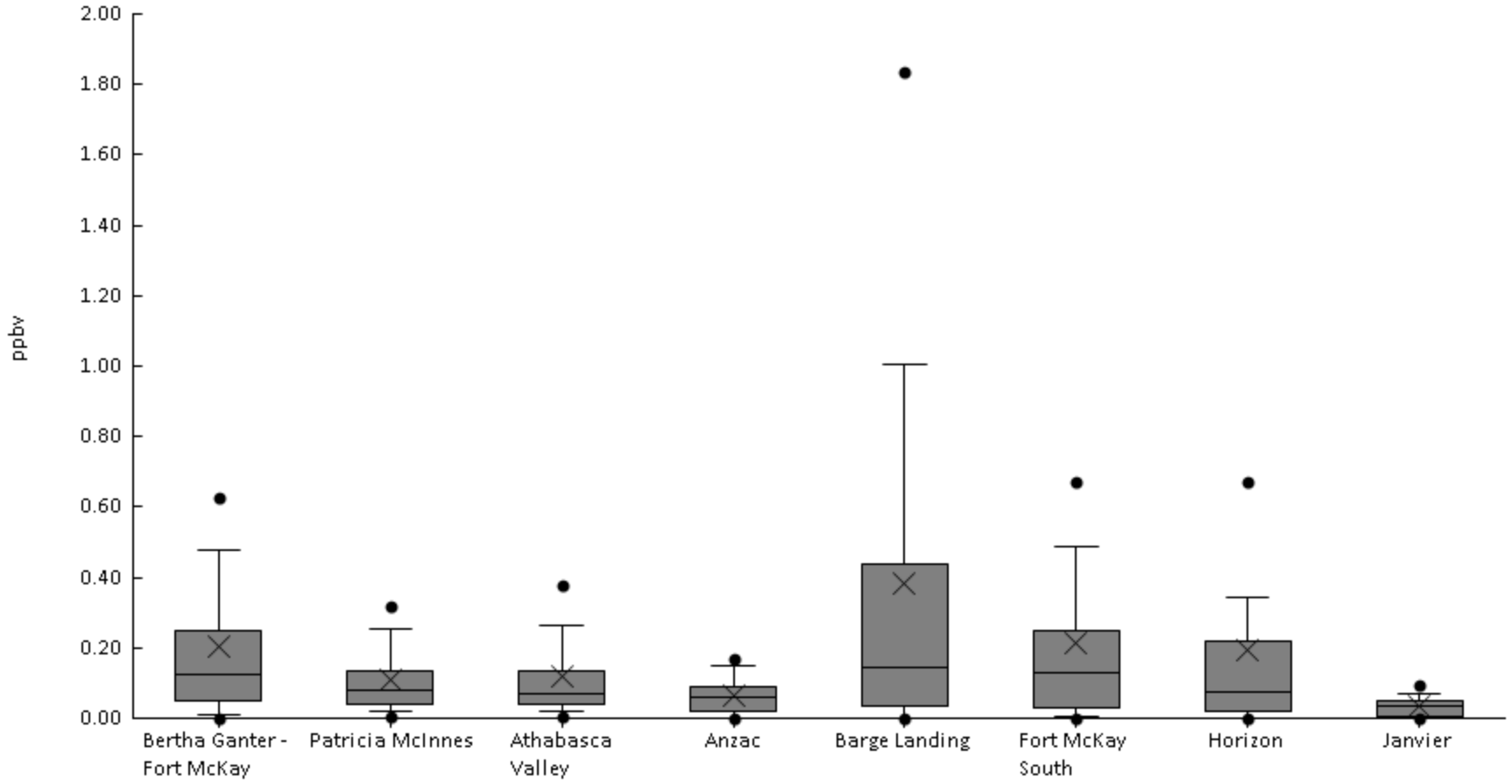
Volatile Organic Compounds - 2-Methylhexane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	77%	0	0	0	0.02	0.05	0.11	0.18	0.27	0.32	0.077	0.08
AMS 6	Patricia McInnes	61	75%	0	0	0	7.5E-3	0.04	0.073	0.12	0.19	0.43	0.057	0.071
AMS 7	Athabasca Valley	61	79%	0	0	0	0.01	0.05	0.07	0.15	0.17	0.37	0.058	0.066
AMS 14	Anzac	60	67%	0	0	0	0	0.02	0.04	0.085	0.11	0.2	0.029	0.038
AMS 9	Barge Landing	60	77%	0	0	0	0.02	0.04	0.12	0.2	0.33	0.88	0.085	0.14
AMS 13	Fort McKay South	61	70%	0	0	0	0	0.05	0.12	0.22	0.26	0.58	0.085	0.11
AMS 15	Horizon	60	73%	0	0	0	0	0.05	0.08	0.16	0.19	1.6	0.081	0.2
AMS 22	Janvier	20	45%	0	0	0	0	0	0.015	0.045	0.12	0.18	0.018	0.041



Volatile Organic Compounds - 2-Methylpentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	92%	0	0	0.01	0.05	0.13	0.25	0.48	0.63	2.1	0.21	0.3
AMS 6	Patricia McInnes	61	95%	0	5.5E-3	0.02	0.04	0.08	0.13	0.25	0.32	0.71	0.11	0.12
AMS 7	Athabasca Valley	61	95%	0	5.5E-3	0.02	0.04	0.07	0.13	0.26	0.38	1	0.12	0.16
AMS 14	Anzac	60	82%	0	0	0	0.02	0.06	0.09	0.15	0.17	0.21	0.066	0.055
AMS 9	Barge Landing	60	88%	0	0	0	0.035	0.15	0.44	1	1.8	3.6	0.38	0.65
AMS 13	Fort McKay South	61	90%	0	0	6E-3	0.03	0.13	0.25	0.49	0.67	2.1	0.21	0.33
AMS 15	Horizon	60	80%	0	0	0	0.02	0.075	0.22	0.35	0.67	2.3	0.19	0.41
AMS 22	Janvier	20	75%	0	0	0	5E-3	0.035	0.05	0.07	0.095	0.11	0.034	0.029



Volatile Organic Compounds - 3-Methyl-1-butene (ppbv) - 2017

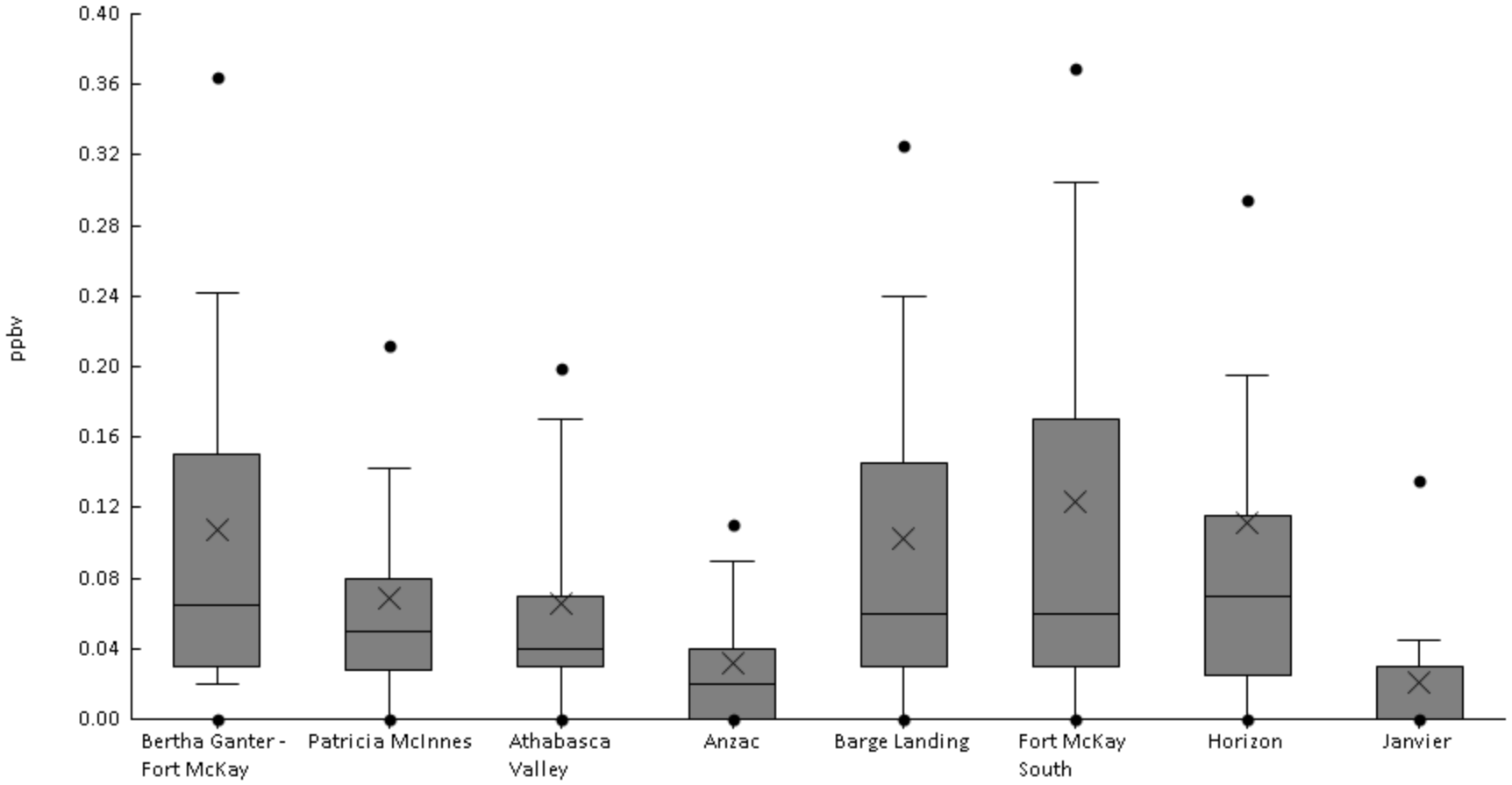
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - 3-Methylheptane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	52%	0	0	0	0	0.025	0.07	0.14	0.19	0.21	0.044	0.058
AMS 6	Patricia McInnes	61	31%	0	0	0	0	0	0.02	0.038	0.14	0.22	0.019	0.045
AMS 7	Athabasca Valley	61	23%	0	0	0	0	0	0	0.04	0.089	0.17	0.012	0.031
AMS 14	Anzac	60	10%	0	0	0	0	0	0	0.01	0.035	0.06	3.8E-3	0.012
AMS 9	Barge Landing	60	45%	0	0	0	0	0	0.055	0.1	0.17	0.25	0.036	0.057
AMS 13	Fort McKay South	61	48%	0	0	0	0	0	0.073	0.15	0.21	0.68	0.058	0.12
AMS 15	Horizon	60	45%	0	0	0	0	0	0.04	0.1	0.17	0.75	0.04	0.1
AMS 22	Janvier	20	5%	0	0	0	0	0	0	0	0.015	0.03	1.5E-3	6.7E-3

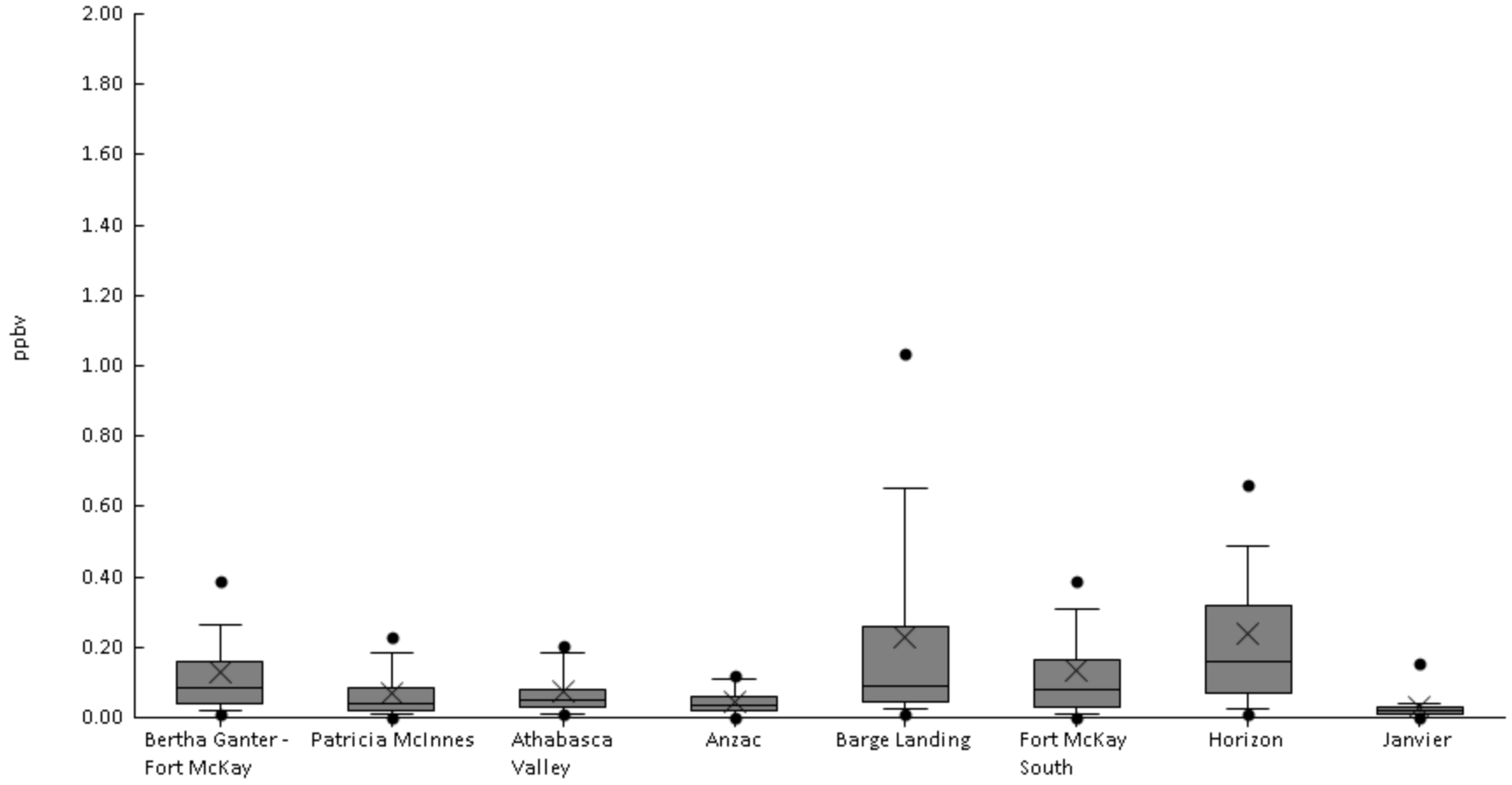
Volatile Organic Compounds - 3-Methylhexane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	94%	0	0	0.02	0.03	0.065	0.15	0.24	0.36	0.46	0.11	0.11
AMS 6	Patricia McInnes	61	77%	0	0	0	0.028	0.05	0.08	0.14	0.21	0.71	0.069	0.1
AMS 7	Athabasca Valley	61	85%	0	0	0	0.03	0.04	0.07	0.17	0.2	0.61	0.066	0.088
AMS 14	Anzac	60	68%	0	0	0	0	0.02	0.04	0.09	0.11	0.18	0.032	0.036
AMS 9	Barge Landing	60	85%	0	0	0	0.03	0.06	0.15	0.24	0.33	0.75	0.1	0.13
AMS 13	Fort McKay South	61	82%	0	0	0	0.03	0.06	0.17	0.3	0.37	1	0.12	0.18
AMS 15	Horizon	60	78%	0	0	0	0.025	0.07	0.12	0.2	0.3	1.9	0.11	0.24
AMS 22	Janvier	20	35%	0	0	0	0	0	0.03	0.045	0.14	0.22	0.021	0.05



Volatile Organic Compounds - 3-Methylpentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	97%	0	0.01	0.02	0.04	0.085	0.16	0.26	0.39	1.1	0.13	0.16
AMS 6	Patricia McInnes	61	93%	0	0	0.01	0.02	0.04	0.083	0.18	0.23	0.39	0.07	0.076
AMS 7	Athabasca Valley	61	98%	0	0.01	0.01	0.03	0.05	0.08	0.18	0.2	0.51	0.075	0.086
AMS 14	Anzac	60	87%	0	0	0	0.02	0.035	0.06	0.11	0.12	0.13	0.045	0.036
AMS 9	Barge Landing	60	97%	0	0.01	0.025	0.045	0.09	0.26	0.65	1	1.9	0.23	0.34
AMS 13	Fort McKay South	61	92%	0	0	0.01	0.028	0.08	0.16	0.31	0.39	1	0.14	0.18
AMS 15	Horizon	60	95%	0	0.01	0.025	0.07	0.16	0.32	0.49	0.66	1.8	0.24	0.3
AMS 22	Janvier	20	85%	0	0	0	0.01	0.02	0.03	0.04	0.16	0.26	0.032	0.055

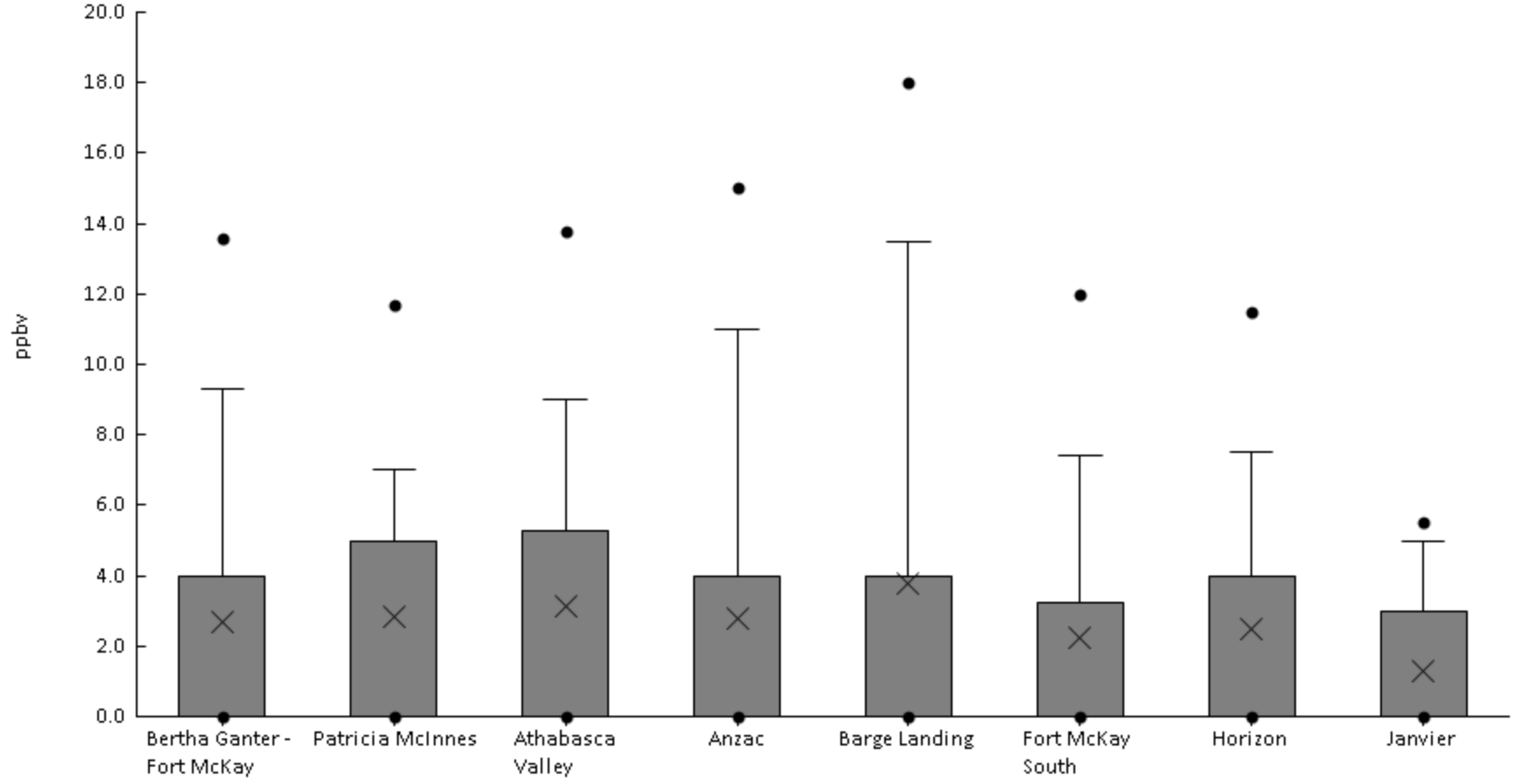


Volatile Organic Compounds - 4-Methyl-1-pentene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

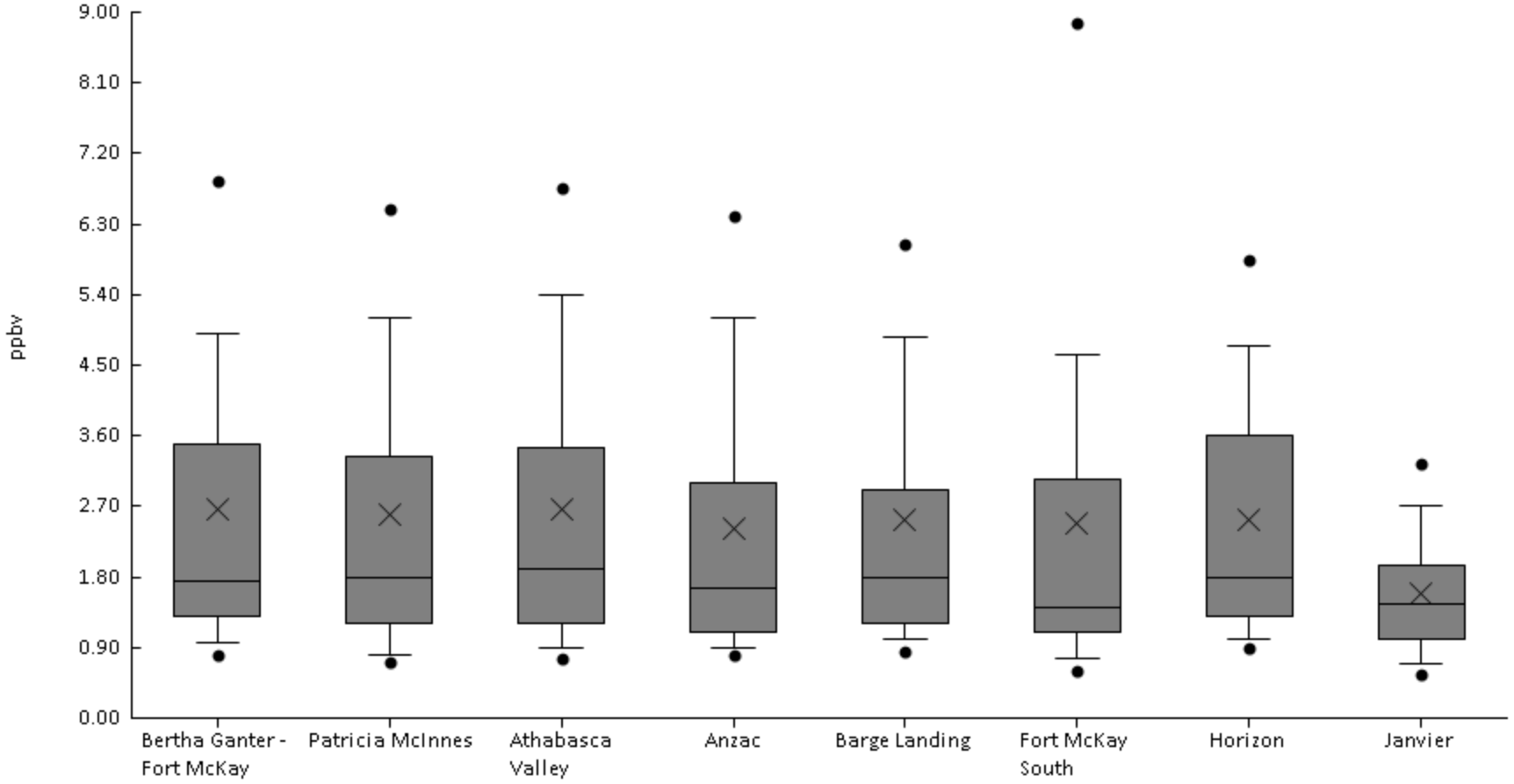
Volatile Organic Compounds - Acetaldehyde (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	35%	0	0	0	0	0	4	9.3	14	18	2.7	4.5
AMS 6	Patricia McInnes	61	33%	0	0	0	0	0	5	7	12	31	2.8	5.8
AMS 7	Athabasca Valley	61	41%	0	0	0	0	0	5.3	9	14	25	3.1	5
AMS 14	Anzac	60	35%	0	0	0	0	0	4	11	15	19	2.8	4.9
AMS 9	Barge Landing	60	35%	0	0	0	0	0	4	14	18	55	3.8	8.5
AMS 13	Fort McKay South	61	31%	0	0	0	0	0	3.3	7.4	12	19	2.2	4.1
AMS 15	Horizon	60	40%	0	0	0	0	0	4	7.5	12	19	2.5	3.9
AMS 22	Janvier	20	30%	0	0	0	0	0	3	5	5.5	6	1.3	2.1



Volatile Organic Compounds - Acetone (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	100%	0.6	0.8	0.97	1.3	1.8	3.5	4.9	6.8	13	2.7	2.2
AMS 6	Patricia McInnes	61	100%	0.5	0.71	0.8	1.2	1.8	3.3	5.1	6.5	15	2.6	2.3
AMS 7	Athabasca Valley	61	100%	0.4	0.76	0.9	1.2	1.9	3.5	5.4	6.8	9.7	2.7	2
AMS 14	Anzac	60	100%	0.7	0.8	0.9	1.1	1.7	3	5.1	6.4	8.1	2.4	1.8
AMS 9	Barge Landing	60	100%	0.7	0.85	1	1.2	1.8	2.9	4.9	6.1	14	2.5	2.2
AMS 13	Fort McKay South	61	100%	0.5	0.6	0.76	1.1	1.4	3.1	4.6	8.9	13	2.5	2.5
AMS 15	Horizon	60	100%	0.6	0.9	1	1.3	1.8	3.6	4.8	5.9	8.7	2.5	1.7
AMS 22	Janvier	20	100%	0.5	0.55	0.7	1	1.5	2	2.7	3.3	3.6	1.6	0.8

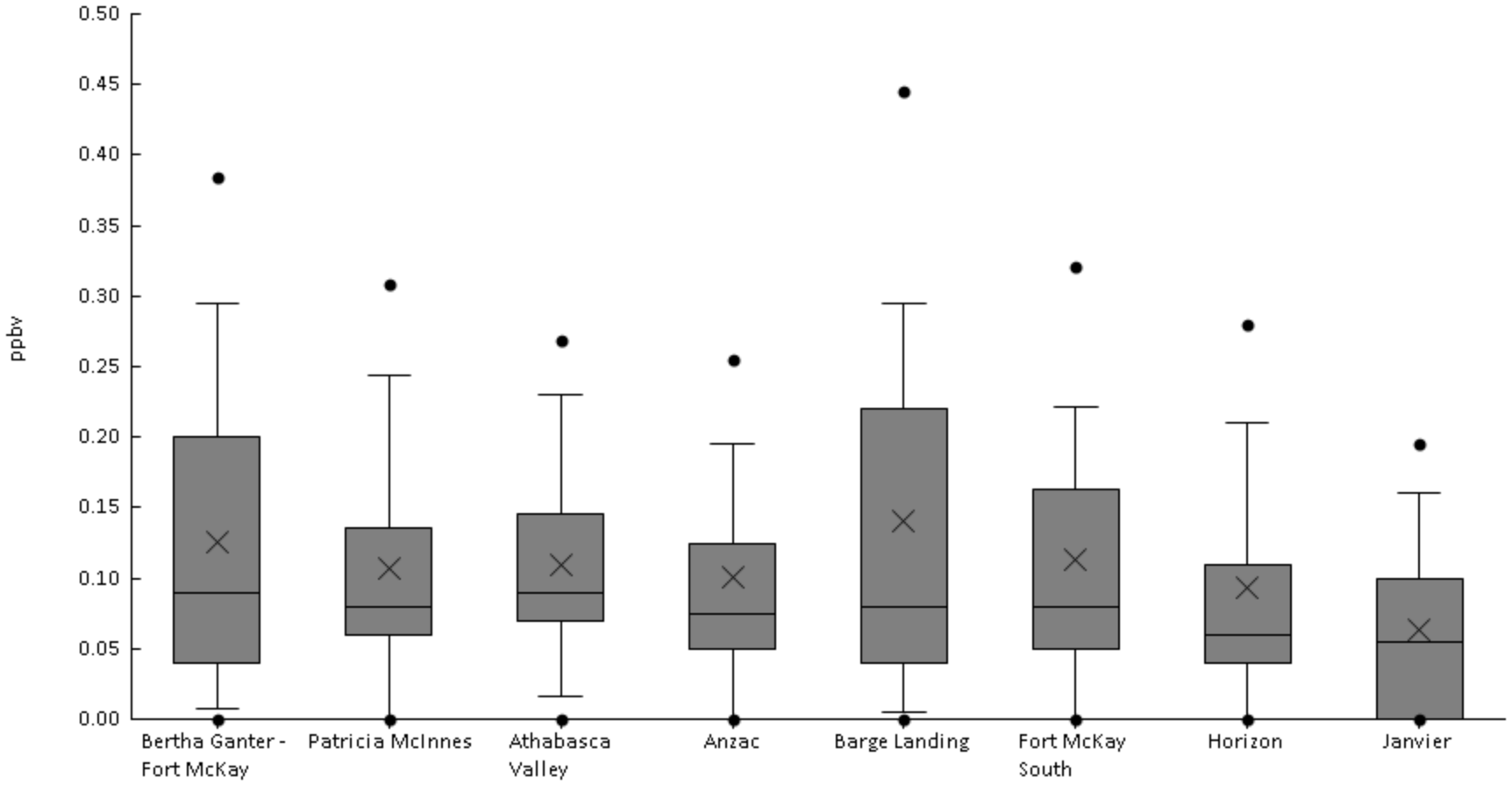


Volatile Organic Compounds - alpha-Pinene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	3%	0	0	0	0	0	0	0	0	0.5	0.015	0.081
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	3%	0	0	0	0	0	0	0	0	0.4	0.013	0.072
AMS 9	Barge Landing	60	3%	0	0	0	0	0	0	0	0	0.4	0.013	0.072
AMS 13	Fort McKay South	61	15%	0	0	0	0	0	0	0.34	0.63	1.1	0.084	0.23
AMS 15	Horizon	60	12%	0	0	0	0	0	0	0.4	0.8	3.1	0.12	0.45
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - Benzene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	90%	0	0	7E-3	0.04	0.09	0.2	0.3	0.38	0.42	0.13	0.11
AMS 6	Patricia McInnes	61	89%	0	0	0	0.06	0.08	0.14	0.24	0.31	0.4	0.11	0.09
AMS 7	Athabasca Valley	61	92%	0	0	0.016	0.07	0.09	0.15	0.23	0.27	0.4	0.11	0.08
AMS 14	Anzac	60	85%	0	0	0	0.05	0.075	0.13	0.2	0.26	0.82	0.1	0.12
AMS 9	Barge Landing	60	90%	0	0	5E-3	0.04	0.08	0.22	0.3	0.45	0.97	0.14	0.16
AMS 13	Fort McKay South	61	89%	0	0	0	0.05	0.08	0.16	0.22	0.32	0.54	0.11	0.1
AMS 15	Horizon	60	83%	0	0	0	0.04	0.06	0.11	0.21	0.28	0.48	0.094	0.098
AMS 22	Janvier	20	65%	0	0	0	0	0.055	0.1	0.16	0.2	0.21	0.063	0.065



Volatile Organic Compounds - beta-Pinene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	2%	0	0	0	0	0	0	0	0	0.4	6.5E-3	0.051
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	2%	0	0	0	0	0	0	0	0	0.3	5E-3	0.039
AMS 13	Fort McKay South	61	10%	0	0	0	0	0	0	0.12	0.45	0.6	0.046	0.14
AMS 15	Horizon	60	3%	0	0	0	0	0	0	0	0	0.3	0.01	0.054
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - cis-2-Butene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	27%	0	0	0	0	0	0.02	0.043	0.06	0.12	0.013	0.026
AMS 6	Patricia McInnes	61	34%	0	0	0	0	0	0.03	0.05	0.075	0.12	0.016	0.028
AMS 7	Athabasca Valley	61	30%	0	0	0	0	0	0.02	0.05	0.064	0.1	0.013	0.023
AMS 14	Anzac	60	27%	0	0	0	0	0	0.03	0.045	0.06	0.08	0.012	0.021
AMS 9	Barge Landing	60	20%	0	0	0	0	0	0	0.04	0.055	0.12	0.01	0.025
AMS 13	Fort McKay South	61	30%	0	0	0	0	0	0.03	0.05	0.069	0.12	0.014	0.026
AMS 15	Horizon	60	22%	0	0	0	0	0	0	0.04	0.07	0.11	0.01	0.023
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - cis-2-Hexene (ppbv) - 2017

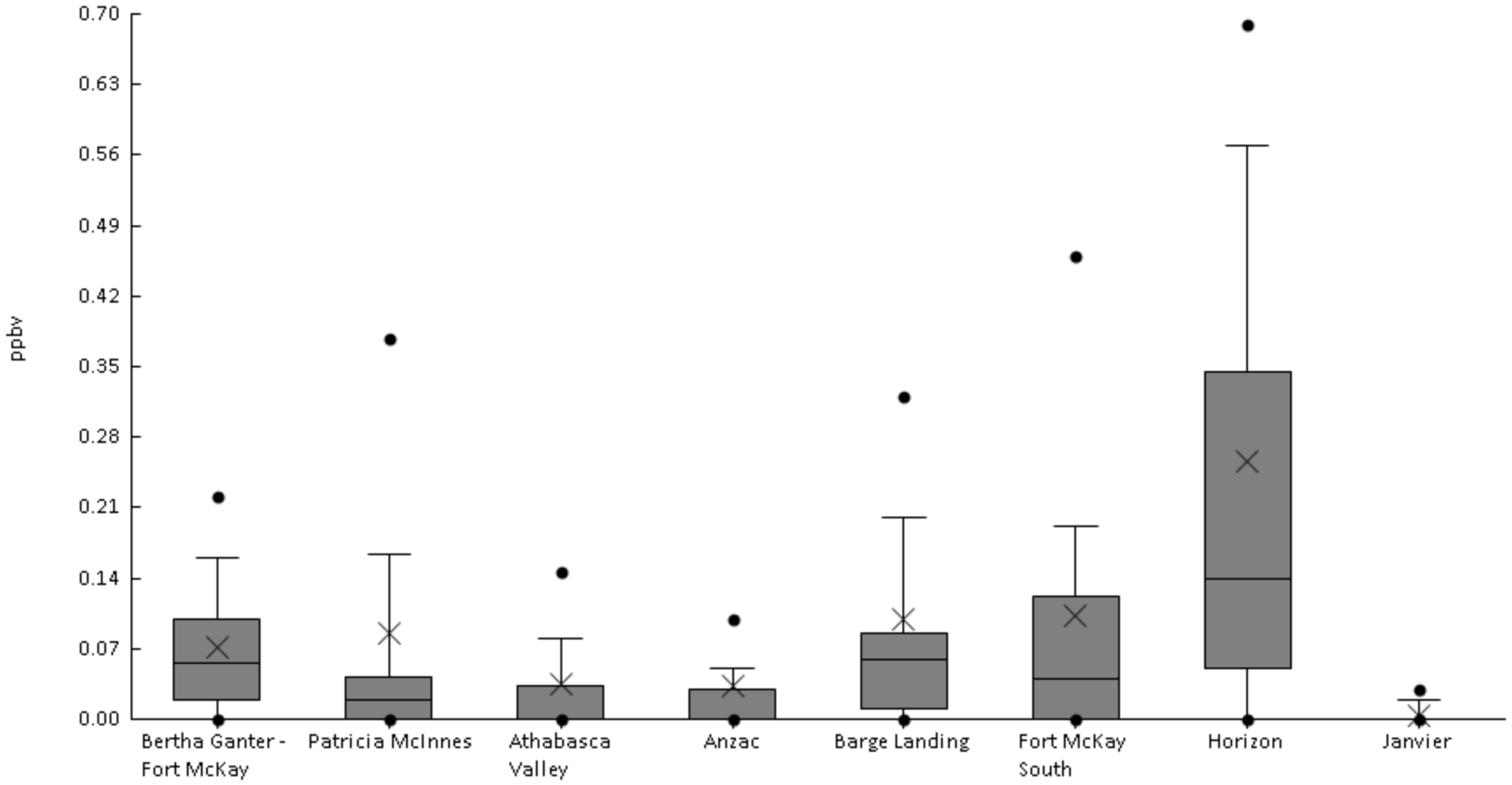
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - cis-2-Pentene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	5%	0	0	0	0	0	0	0	0.016	0.1	3.5E-3	0.017
AMS 6	Patricia McInnes	61	5%	0	0	0	0	0	0	0	0.031	0.1	4.3E-3	0.019
AMS 7	Athabasca Valley	61	7%	0	0	0	0	0	0	0	0.029	0.09	3.4E-3	0.015
AMS 14	Anzac	60	5%	0	0	0	0	0	0	0	0.01	0.05	1.8E-3	8.5E-3
AMS 9	Barge Landing	60	3%	0	0	0	0	0	0	0	0	0.11	3.2E-3	0.017
AMS 13	Fort McKay South	61	5%	0	0	0	0	0	0	0	0.013	0.11	4.1E-3	0.02
AMS 15	Horizon	60	3%	0	0	0	0	0	0	0	0	0.1	2.8E-3	0.016
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

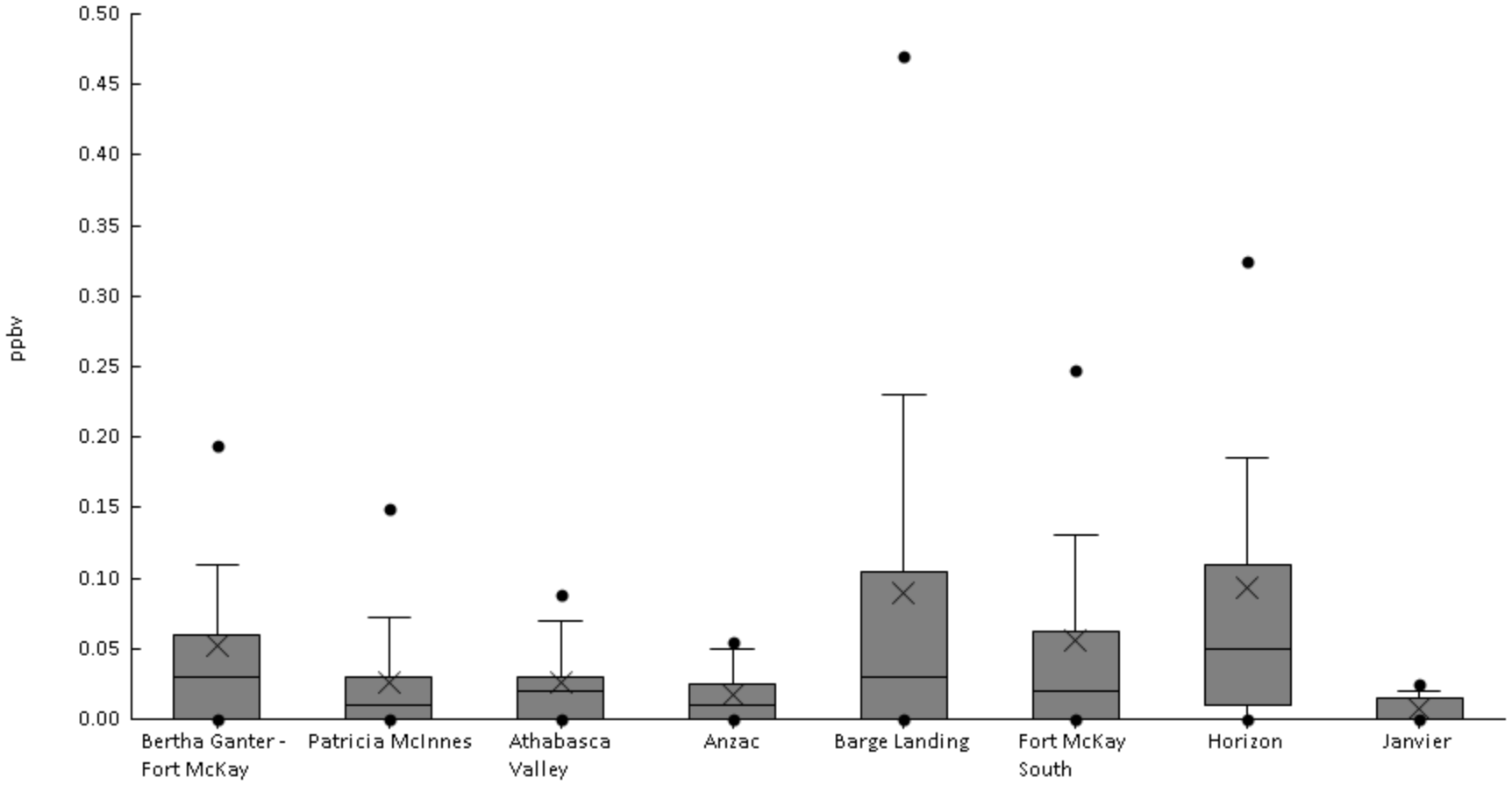
Volatile Organic Compounds - Cyclohexane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	76%	0	0	0	0.02	0.055	0.1	0.16	0.22	0.56	0.072	0.087
AMS 6	Patricia McInnes	61	51%	0	0	0	0	0.02	0.043	0.16	0.38	1.4	0.085	0.26
AMS 7	Athabasca Valley	61	48%	0	0	0	0	0	0.033	0.08	0.15	0.56	0.035	0.08
AMS 14	Anzac	60	38%	0	0	0	0	0	0.03	0.05	0.1	0.59	0.033	0.1
AMS 9	Barge Landing	60	75%	0	0	0	0.01	0.06	0.085	0.2	0.32	1.5	0.099	0.21
AMS 13	Fort McKay South	61	74%	0	0	0	0	0.04	0.12	0.19	0.46	1.3	0.1	0.2
AMS 15	Horizon	60	88%	0	0	0	0.05	0.14	0.35	0.57	0.69	3.1	0.26	0.43
AMS 22	Janvier	20	15%	0	0	0	0	0	0	0.02	0.03	0.04	4E-3	0.01



Volatile Organic Compounds - Cyclopentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	69%	0	0	0	0	0.03	0.06	0.11	0.19	0.71	0.052	0.1
AMS 6	Patricia McInnes	61	62%	0	0	0	0	0.01	0.03	0.072	0.15	0.19	0.026	0.044
AMS 7	Athabasca Valley	61	67%	0	0	0	0	0.02	0.03	0.07	0.088	0.27	0.026	0.041
AMS 14	Anzac	60	53%	0	0	0	0	0.01	0.025	0.05	0.055	0.11	0.017	0.022
AMS 9	Barge Landing	60	72%	0	0	0	0	0.03	0.11	0.23	0.47	0.69	0.089	0.15
AMS 13	Fort McKay South	61	64%	0	0	0	0	0.02	0.063	0.13	0.25	0.63	0.056	0.1
AMS 15	Horizon	60	75%	0	0	0	0.01	0.05	0.11	0.19	0.33	1.1	0.093	0.16
AMS 22	Janvier	20	45%	0	0	0	0	0	0.015	0.02	0.025	0.03	7.5E-3	9.7E-3

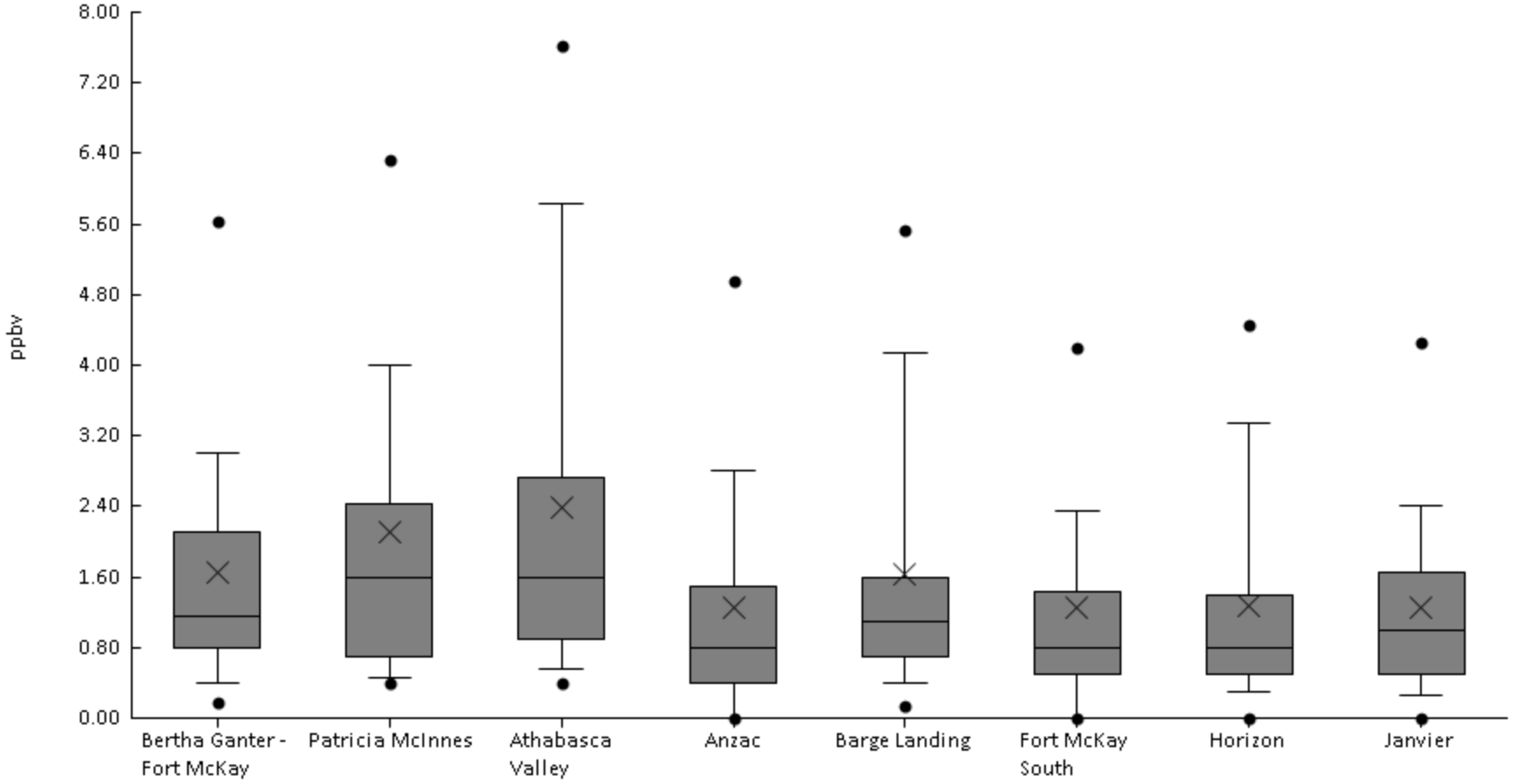


Volatile Organic Compounds - Cyclopentene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

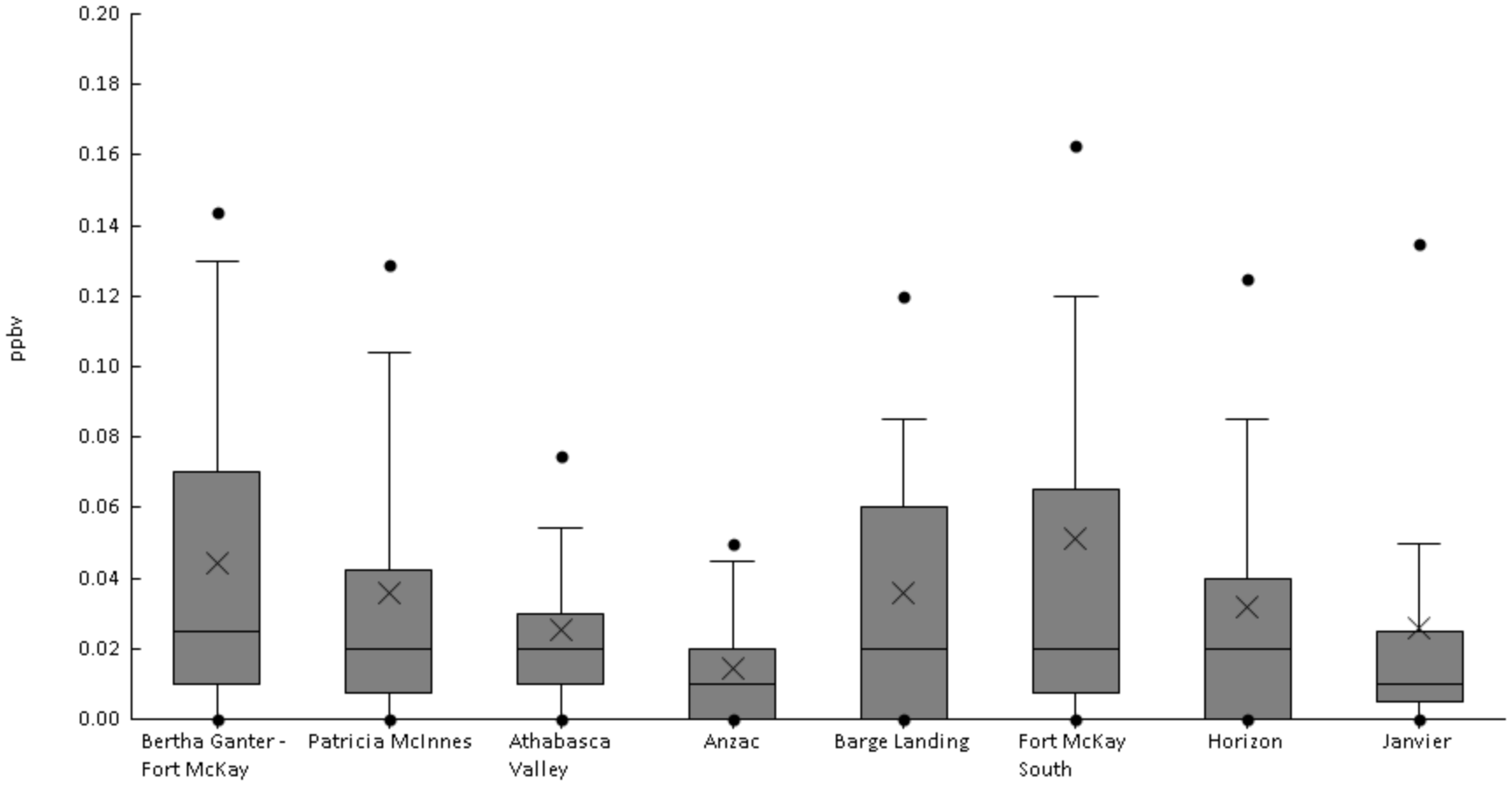
Volatile Organic Compounds - Ethanol (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	95%	0	0.18	0.4	0.8	1.2	2.1	3	5.6	8.1	1.7	1.6
AMS 6	Patricia McInnes	61	98%	0	0.4	0.46	0.7	1.6	2.4	4	6.3	11	2.1	2.1
AMS 7	Athabasca Valley	61	100%	0.3	0.4	0.56	0.9	1.6	2.7	5.8	7.6	12	2.4	2.4
AMS 14	Anzac	60	82%	0	0	0	0.4	0.8	1.5	2.8	5	8.2	1.3	1.6
AMS 9	Barge Landing	59	95%	0	0.14	0.4	0.7	1.1	1.6	4.1	5.5	11	1.6	1.9
AMS 13	Fort McKay South	61	85%	0	0	0	0.5	0.8	1.4	2.3	4.2	11	1.2	1.6
AMS 15	Horizon	60	92%	0	0	0.3	0.5	0.8	1.4	3.4	4.5	5.6	1.3	1.3
AMS 22	Janvier	20	90%	0	0	0.25	0.5	1	1.7	2.4	4.3	5.9	1.3	1.3



Volatile Organic Compounds - Ethylbenzene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	84%	0	0	0	0.01	0.025	0.07	0.13	0.14	0.17	0.044	0.046
AMS 6	Patricia McInnes	61	75%	0	0	0	7.5E-3	0.02	0.043	0.1	0.13	0.21	0.036	0.044
AMS 7	Athabasca Valley	61	87%	0	0	0	0.01	0.02	0.03	0.054	0.075	0.1	0.025	0.022
AMS 14	Anzac	60	55%	0	0	0	0	0.01	0.02	0.045	0.05	0.06	0.014	0.018
AMS 9	Barge Landing	60	67%	0	0	0	0	0.02	0.06	0.085	0.12	0.17	0.036	0.042
AMS 13	Fort McKay South	61	75%	0	0	0	7.5E-3	0.02	0.065	0.12	0.16	0.48	0.051	0.089
AMS 15	Horizon	60	60%	0	0	0	0	0.02	0.04	0.085	0.13	0.39	0.032	0.058
AMS 22	Janvier	20	75%	0	0	0	5E-3	0.01	0.025	0.05	0.14	0.21	0.026	0.046

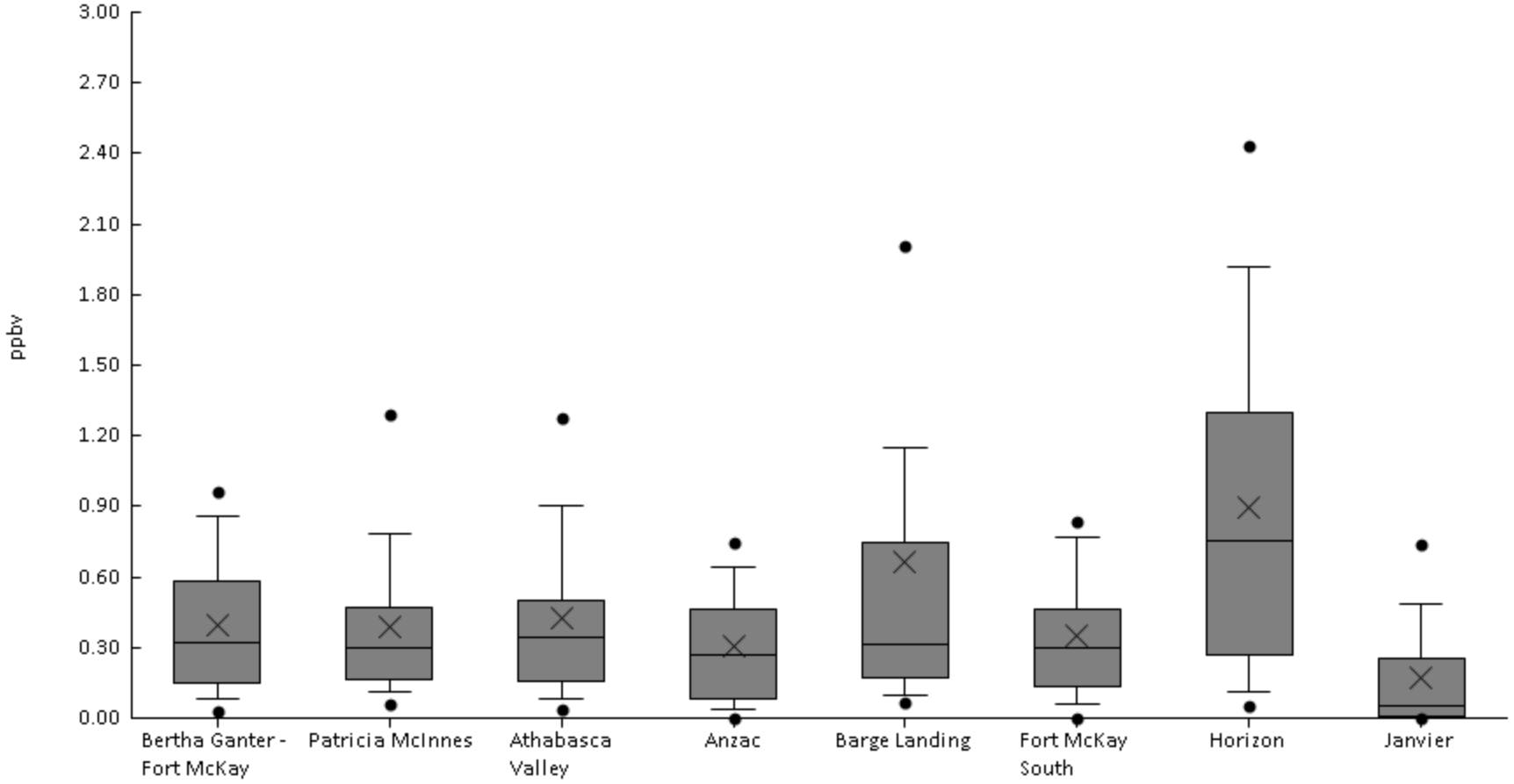


Volatile Organic Compounds - Formaldehyde (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	3%	0	0	0	0	0	0	0	0	3	0.098	0.54
AMS 14	Anzac	60	2%	0	0	0	0	0	0	0	0	3	0.05	0.39
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	3%	0	0	0	0	0	0	0	0	4	0.11	0.64
AMS 15	Horizon	60	2%	0	0	0	0	0	0	0	0	3	0.05	0.39
AMS 22	Janvier	20	55%	0	0	0	0	4.5	8.5	10	11	11	4.1	4.2

Volatile Organic Compounds - Isobutane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	95%	0	0.03	0.08	0.15	0.32	0.58	0.86	0.96	1.6	0.4	0.31
AMS 6	Patricia McInnes	61	97%	0	0.06	0.11	0.17	0.3	0.47	0.79	1.3	1.5	0.39	0.33
AMS 7	Athabasca Valley	61	98%	0	0.041	0.082	0.16	0.34	0.5	0.9	1.3	1.9	0.43	0.4
AMS 14	Anzac	60	92%	0	0	0.035	0.085	0.27	0.46	0.65	0.75	1.3	0.31	0.26
AMS 9	Barge Landing	60	98%	0	0.065	0.1	0.17	0.32	0.75	1.2	2	8.2	0.66	1.2
AMS 13	Fort McKay South	61	93%	0	0	0.062	0.14	0.3	0.46	0.77	0.84	2.1	0.35	0.32
AMS 15	Horizon	60	97%	0	0.05	0.11	0.27	0.76	1.3	1.9	2.4	3	0.9	0.73
AMS 22	Janvier	20	75%	0	0	0	0.01	0.055	0.26	0.49	0.74	0.9	0.17	0.23

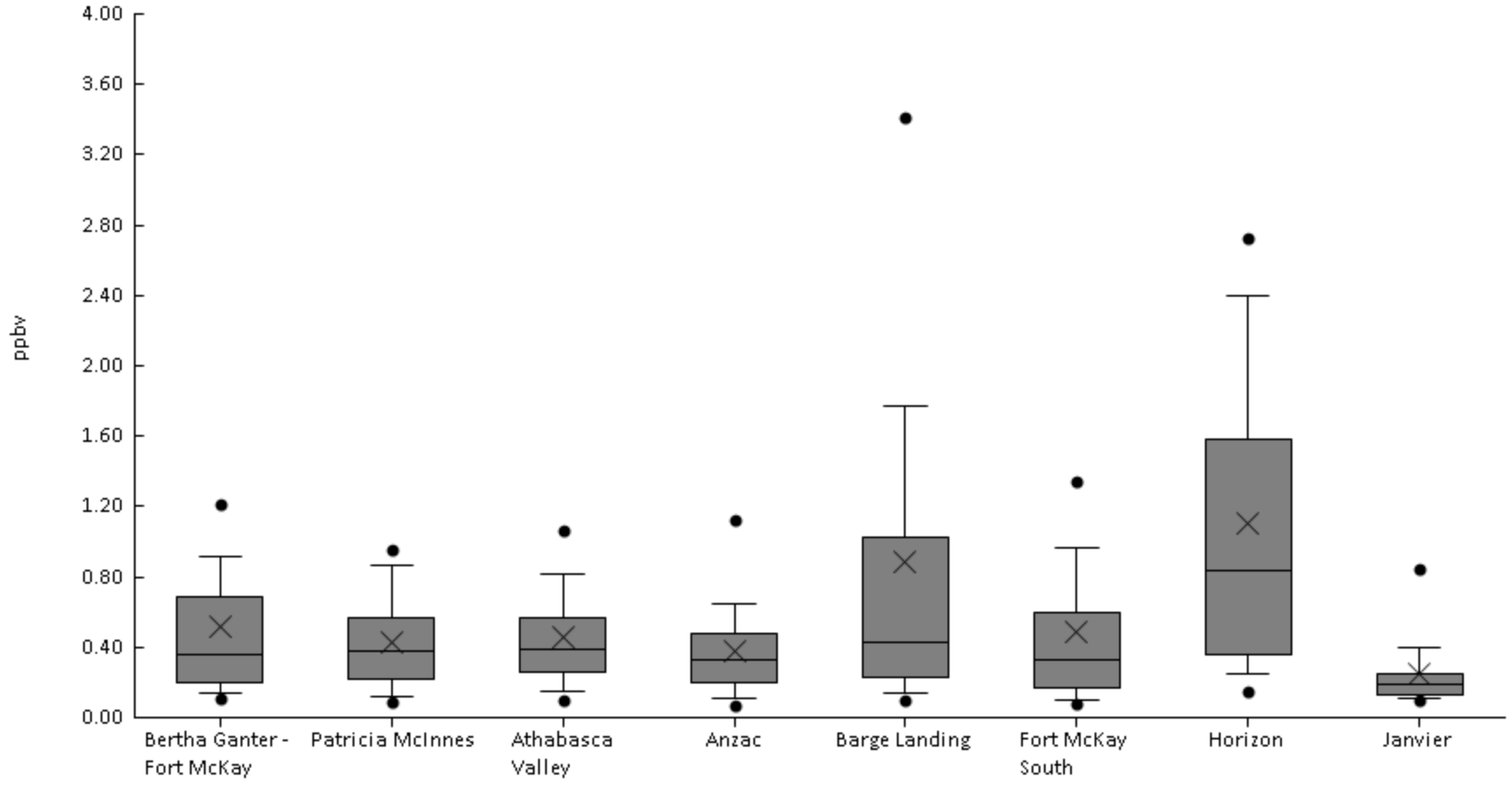


Volatile Organic Compounds - Isobutylene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

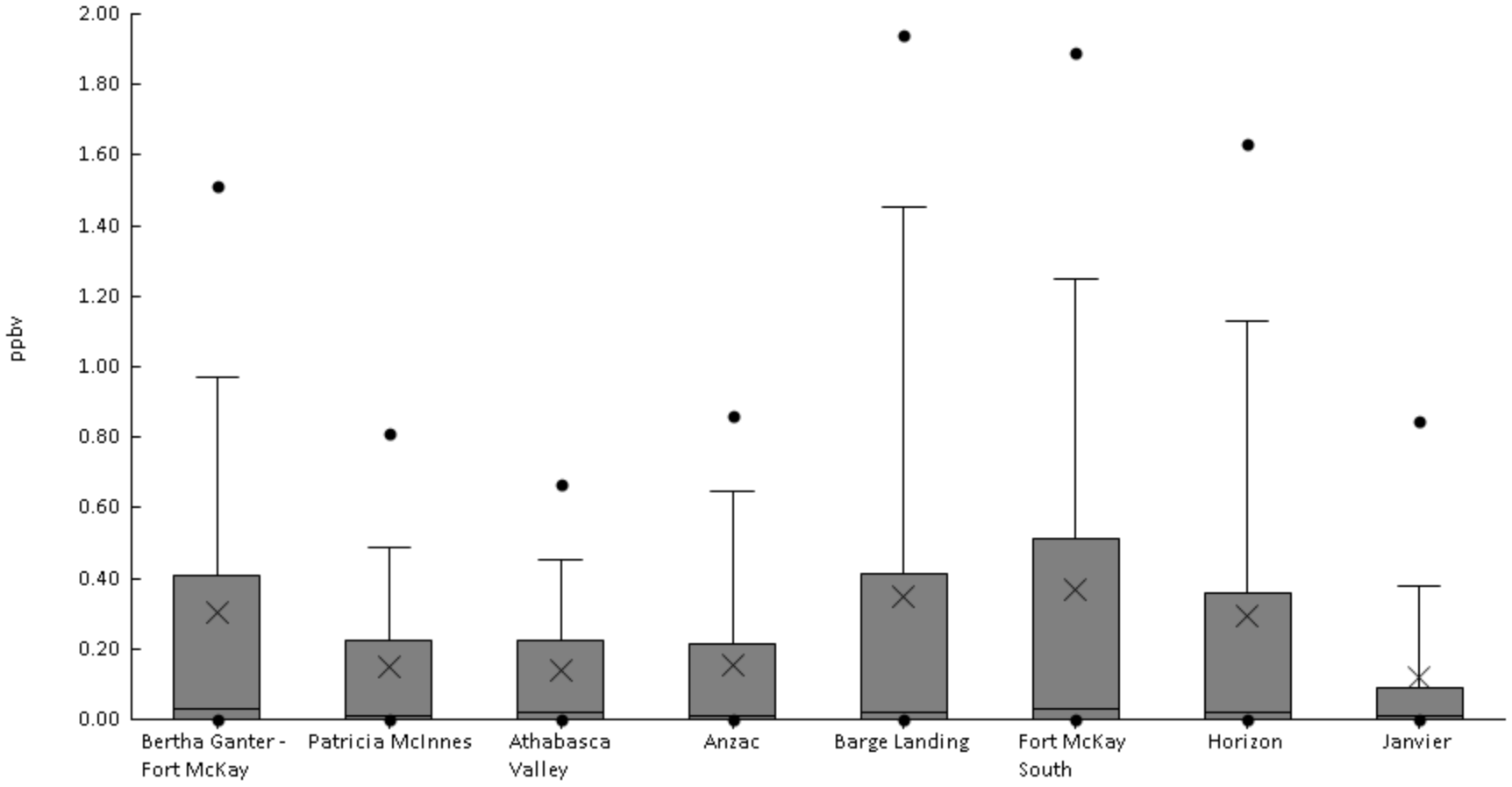
Volatile Organic Compounds - Isopentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	100%	0.08	0.11	0.14	0.2	0.36	0.69	0.92	1.2	3.6	0.52	0.52
AMS 6	Patricia McInnes	61	100%	0.03	0.086	0.12	0.22	0.38	0.57	0.86	0.95	1.5	0.43	0.28
AMS 7	Athabasca Valley	61	100%	0.03	0.096	0.15	0.26	0.39	0.57	0.81	1.1	1.8	0.46	0.31
AMS 14	Anzac	60	98%	0	0.07	0.11	0.2	0.33	0.48	0.65	1.1	1.2	0.37	0.28
AMS 9	Barge Landing	60	100%	0.07	0.095	0.14	0.23	0.43	1	1.8	3.4	10	0.89	1.5
AMS 13	Fort McKay South	61	100%	0.05	0.076	0.1	0.17	0.33	0.6	0.96	1.3	3.4	0.49	0.54
AMS 15	Horizon	60	100%	0.09	0.15	0.25	0.36	0.84	1.6	2.4	2.7	4.2	1.1	0.89
AMS 22	Janvier	20	100%	0.09	0.1	0.11	0.13	0.19	0.25	0.4	0.85	1.3	0.25	0.25



Volatile Organic Compounds - Isoprene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	69%	0	0	0	0	0.03	0.41	0.97	1.5	2.4	0.3	0.53
AMS 6	Patricia McInnes	61	61%	0	0	0	0	0.01	0.23	0.49	0.81	1.1	0.15	0.27
AMS 7	Athabasca Valley	61	61%	0	0	0	0	0.02	0.22	0.45	0.67	0.96	0.14	0.23
AMS 14	Anzac	60	52%	0	0	0	0	0.01	0.22	0.65	0.86	1	0.16	0.28
AMS 9	Barge Landing	60	62%	0	0	0	0	0.02	0.42	1.5	1.9	2.4	0.35	0.62
AMS 13	Fort McKay South	61	61%	0	0	0	0	0.03	0.51	1.2	1.9	3.1	0.37	0.66
AMS 15	Horizon	60	57%	0	0	0	0	0.02	0.36	1.1	1.6	2.2	0.29	0.54
AMS 22	Janvier	20	60%	0	0	0	0	0.01	0.09	0.38	0.85	1.2	0.12	0.28



Volatile Organic Compounds - Isopropylalcohol (ppbv) - 2017

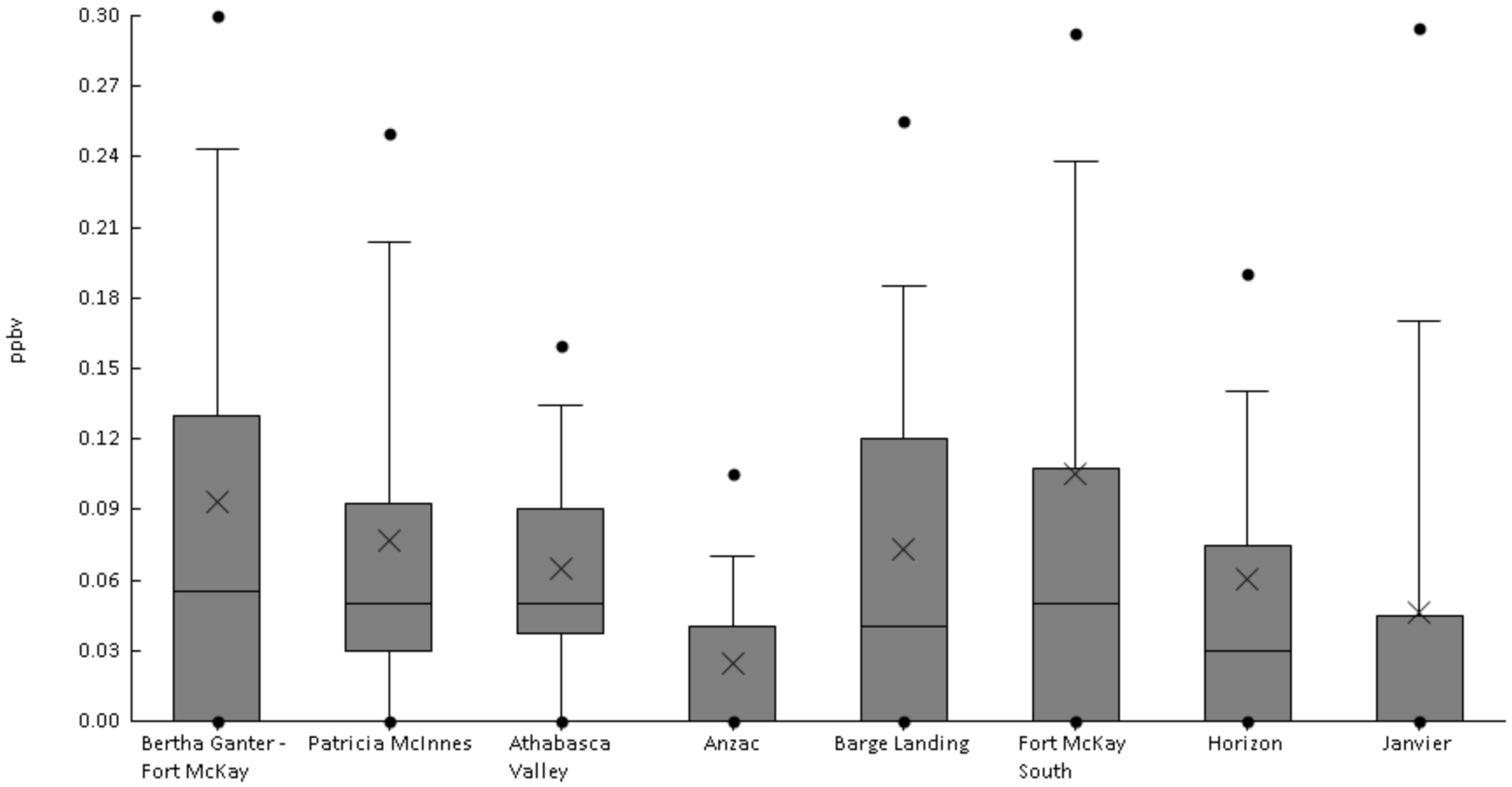
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	2%	0	0	0	0	0	0	0	0	0.6	9.7E-3	0.076
AMS 6	Patricia McInnes	61	3%	0	0	0	0	0	0	0	0	1	0.025	0.14
AMS 7	Athabasca Valley	61	10%	0	0	0	0	0	0	0.16	0.45	2.9	0.084	0.39
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	5%	0	0	0	0	0	0	0	0.2	0.8	0.03	0.14
AMS 13	Fort McKay South	61	3%	0	0	0	0	0	0	0	0	0.6	0.02	0.11
AMS 15	Horizon	60	5%	0	0	0	0	0	0	0	0.25	0.9	0.038	0.17
AMS 22	Janvier	20	5%	0	0	0	0	0	0	0	0.85	1.7	0.085	0.38

Volatile Organic Compounds - Isopropylbenzene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	15%	0	0	0	0	0	0	0.01	0.024	0.09	4.2E-3	0.014
AMS 6	Patricia McInnes	61	15%	0	0	0	0	0	0	0.01	0.042	0.08	5.1E-3	0.017
AMS 7	Athabasca Valley	61	11%	0	0	0	0	0	0	0.01	0.01	0.08	3E-3	0.012
AMS 14	Anzac	60	7%	0	0	0	0	0	0	0	0.015	0.04	1.7E-3	6.9E-3
AMS 9	Barge Landing	60	12%	0	0	0	0	0	0	0.01	0.03	0.09	4.2E-3	0.016
AMS 13	Fort McKay South	61	15%	0	0	0	0	0	0	0.01	0.035	0.13	6.1E-3	0.022
AMS 15	Horizon	60	13%	0	0	0	0	0	0	0.01	0.045	0.09	5.3E-3	0.019
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

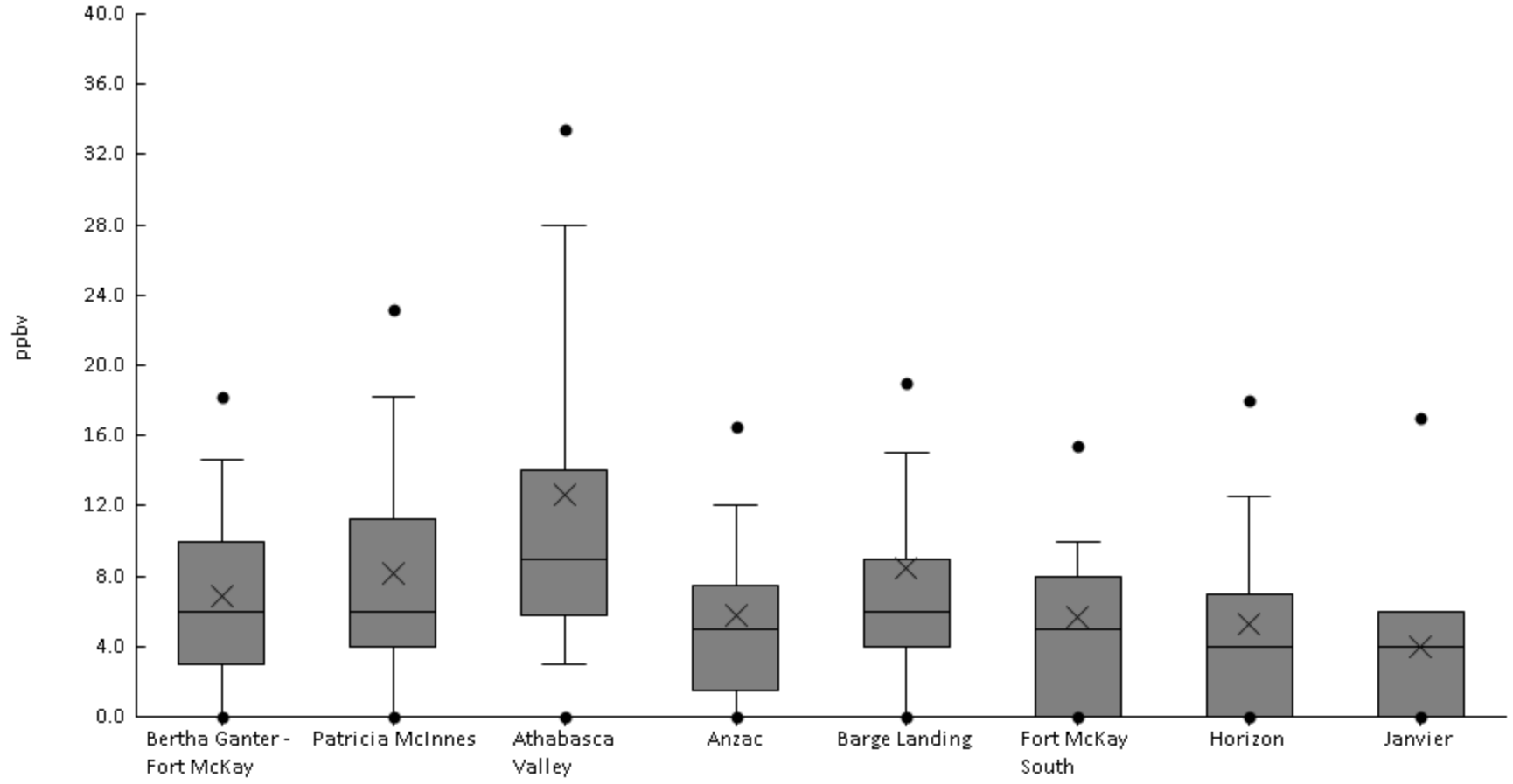
Volatile Organic Compounds - m,p-Xylene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	71%	0	0	0	0	0.055	0.13	0.24	0.3	0.46	0.094	0.1
AMS 6	Patricia McInnes	61	77%	0	0	0	0.03	0.05	0.093	0.2	0.25	0.43	0.077	0.084
AMS 7	Athabasca Valley	61	84%	0	0	0	0.038	0.05	0.09	0.13	0.16	0.28	0.065	0.053
AMS 14	Anzac	60	42%	0	0	0	0	0	0.04	0.07	0.11	0.18	0.025	0.037
AMS 9	Barge Landing	60	62%	0	0	0	0	0.04	0.12	0.19	0.26	0.39	0.073	0.089
AMS 13	Fort McKay South	61	64%	0	0	0	0	0.05	0.11	0.24	0.29	1.2	0.11	0.21
AMS 15	Horizon	60	53%	0	0	0	0	0.03	0.075	0.14	0.19	0.94	0.061	0.13
AMS 22	Janvier	20	40%	0	0	0	0	0	0.045	0.17	0.3	0.35	0.046	0.091



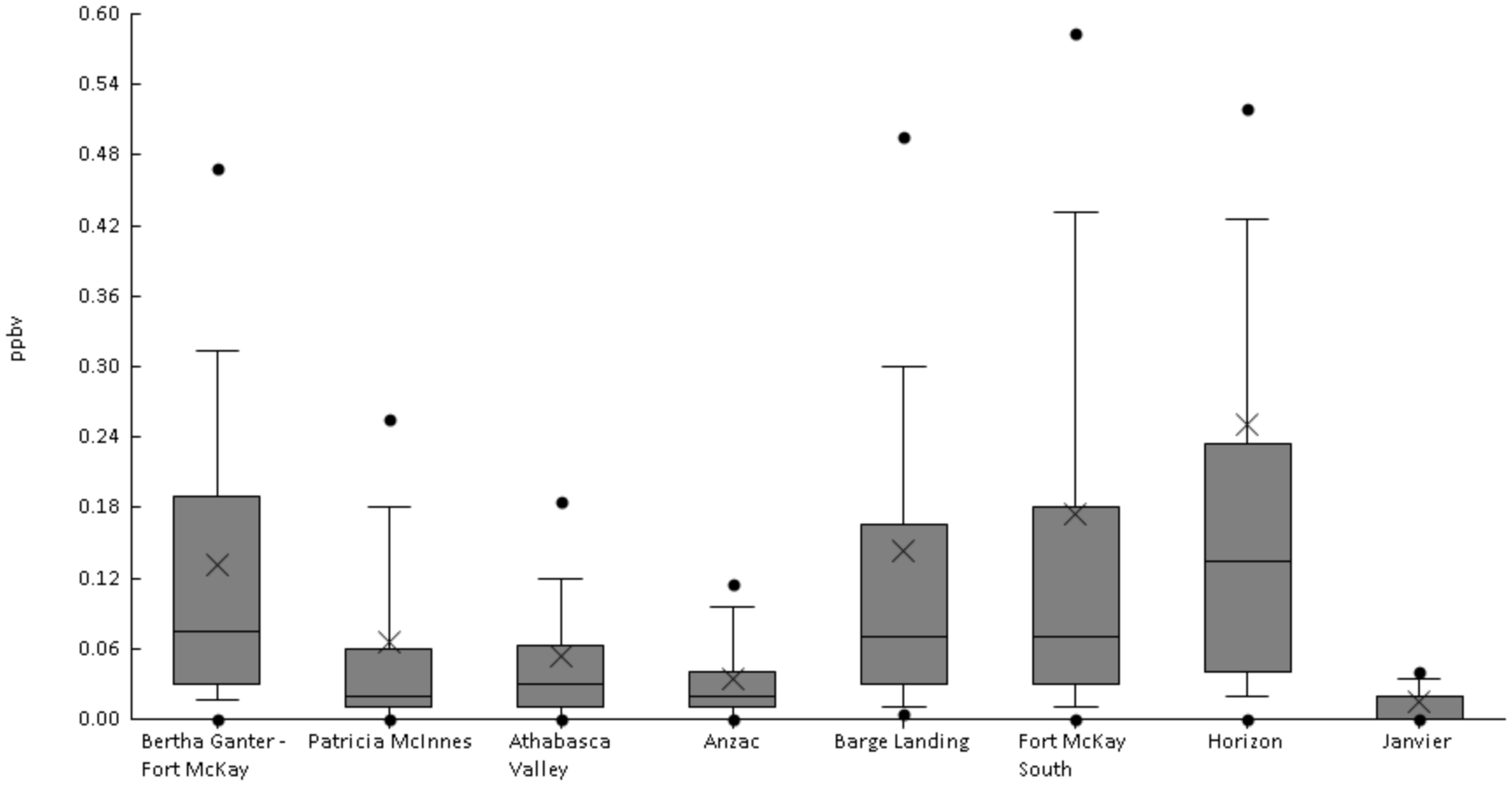
Volatile Organic Compounds - Methanol (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	85%	0	0	0	3	6	10	15	18	23	6.9	5.4
AMS 6	Patricia McInnes	61	80%	0	0	0	4	6	11	18	23	45	8.2	8.2
AMS 7	Athabasca Valley	61	92%	0	0	3	5.8	9	14	28	33	109	13	16
AMS 14	Anzac	60	75%	0	0	0	1.5	5	7.5	12	17	24	5.8	5.1
AMS 9	Barge Landing	60	85%	0	0	0	4	6	9	15	19	81	8.5	11
AMS 13	Fort McKay South	61	74%	0	0	0	0	5	8	10	15	29	5.6	5.2
AMS 15	Horizon	60	68%	0	0	0	0	4	7	13	18	40	5.3	6.8
AMS 22	Janvier	19	53%	0	0	0	0	4	6	6	17	26	3.9	6



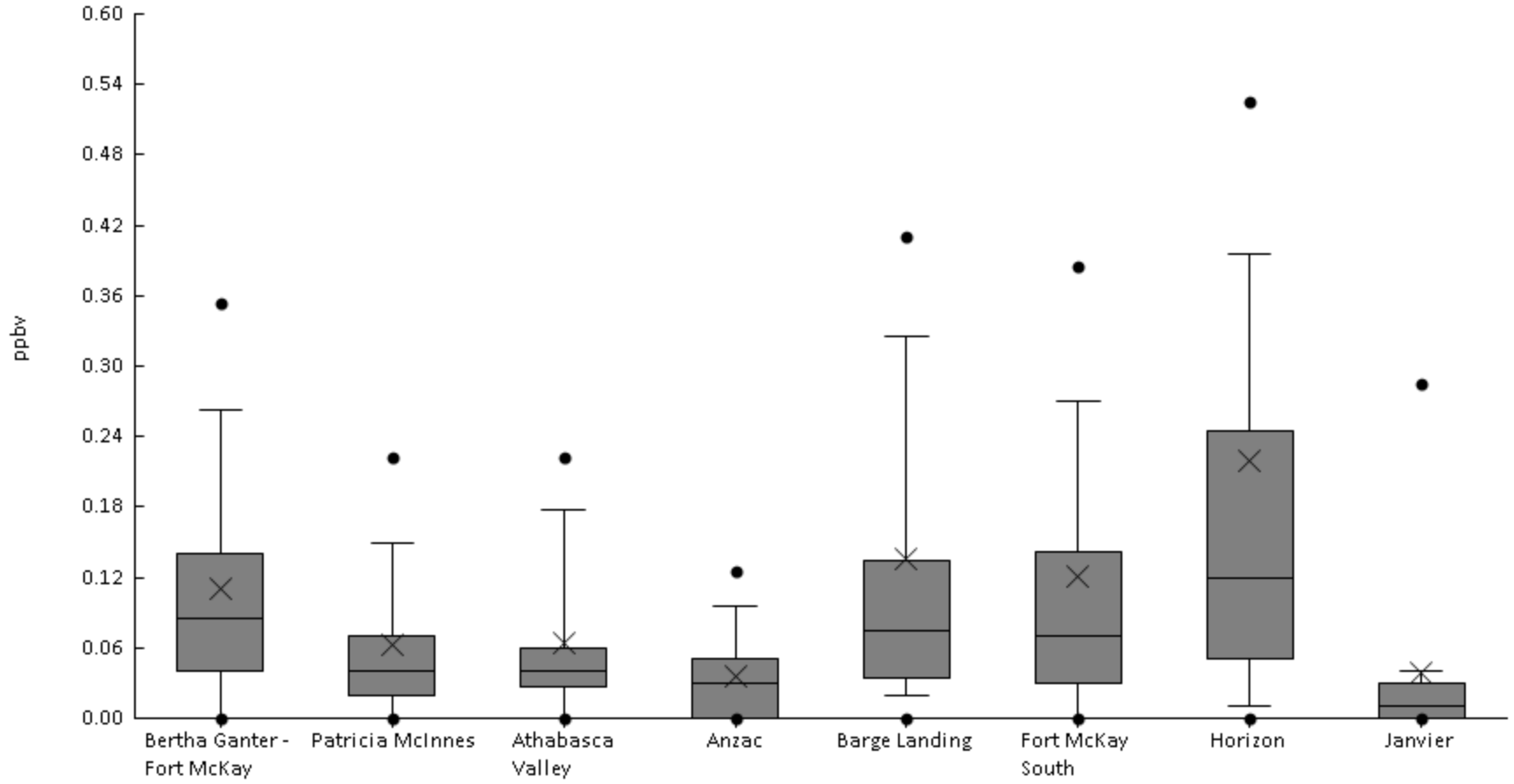
Volatile Organic Compounds - Methylcyclohexane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	94%	0	0	0.017	0.03	0.075	0.19	0.31	0.47	0.51	0.13	0.13
AMS 6	Patricia McInnes	61	82%	0	0	0	0.01	0.02	0.06	0.18	0.25	0.7	0.066	0.11
AMS 7	Athabasca Valley	61	87%	0	0	0	0.01	0.03	0.063	0.12	0.18	0.51	0.054	0.082
AMS 14	Anzac	60	78%	0	0	0	0.01	0.02	0.04	0.095	0.12	0.21	0.034	0.042
AMS 9	Barge Landing	60	95%	0	5E-3	0.01	0.03	0.07	0.17	0.3	0.5	1.8	0.14	0.25
AMS 13	Fort McKay South	61	92%	0	0	0.01	0.03	0.07	0.18	0.43	0.58	1.7	0.17	0.29
AMS 15	Horizon	60	93%	0	0	0.02	0.04	0.14	0.24	0.43	0.52	5.6	0.25	0.72
AMS 22	Janvier	20	65%	0	0	0	0	0.02	0.02	0.035	0.04	0.04	0.015	0.014



Volatile Organic Compounds - Methylcyclopentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	84%	0	0	0	0.04	0.085	0.14	0.26	0.35	0.44	0.11	0.11
AMS 6	Patricia McInnes	61	77%	0	0	0	0.02	0.04	0.07	0.15	0.22	0.45	0.062	0.08
AMS 7	Athabasca Valley	61	84%	0	0	0	0.028	0.04	0.06	0.18	0.22	0.42	0.064	0.084
AMS 14	Anzac	60	63%	0	0	0	0	0.03	0.05	0.095	0.13	0.15	0.036	0.04
AMS 9	Barge Landing	60	93%	0	0	0.02	0.035	0.075	0.14	0.33	0.41	1.5	0.14	0.21
AMS 13	Fort McKay South	61	79%	0	0	0	0.03	0.07	0.14	0.27	0.38	0.97	0.12	0.16
AMS 15	Horizon	60	90%	0	0	0.01	0.05	0.12	0.25	0.4	0.53	3.5	0.22	0.45
AMS 22	Janvier	20	50%	0	0	0	0	0.01	0.03	0.04	0.29	0.52	0.039	0.11



Volatile Organic Compounds - Methylethylketone (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	21%	0	0	0	0	0	0	0.5	0.64	0.9	0.11	0.23
AMS 6	Patricia McInnes	61	20%	0	0	0	0	0	0	0.5	0.7	0.9	0.1	0.23
AMS 7	Athabasca Valley	61	28%	0	0	0	0	0	0.3	0.44	0.6	1.1	0.12	0.23
AMS 14	Anzac	60	18%	0	0	0	0	0	0	0.45	0.55	0.8	0.09	0.2
AMS 9	Barge Landing	60	22%	0	0	0	0	0	0	0.4	0.65	2	0.13	0.32
AMS 13	Fort McKay South	61	16%	0	0	0	0	0	0	0.5	0.5	0.6	0.082	0.19
AMS 15	Horizon	60	22%	0	0	0	0	0	0	0.4	0.55	1	0.1	0.22
AMS 22	Janvier	20	5%	0	0	0	0	0	0	0	0.25	0.5	0.025	0.11

Volatile Organic Compounds - Methylisobutylketone (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.4	6.6E-3	0.051
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - Methylvinylketone (ppbv) - 2017

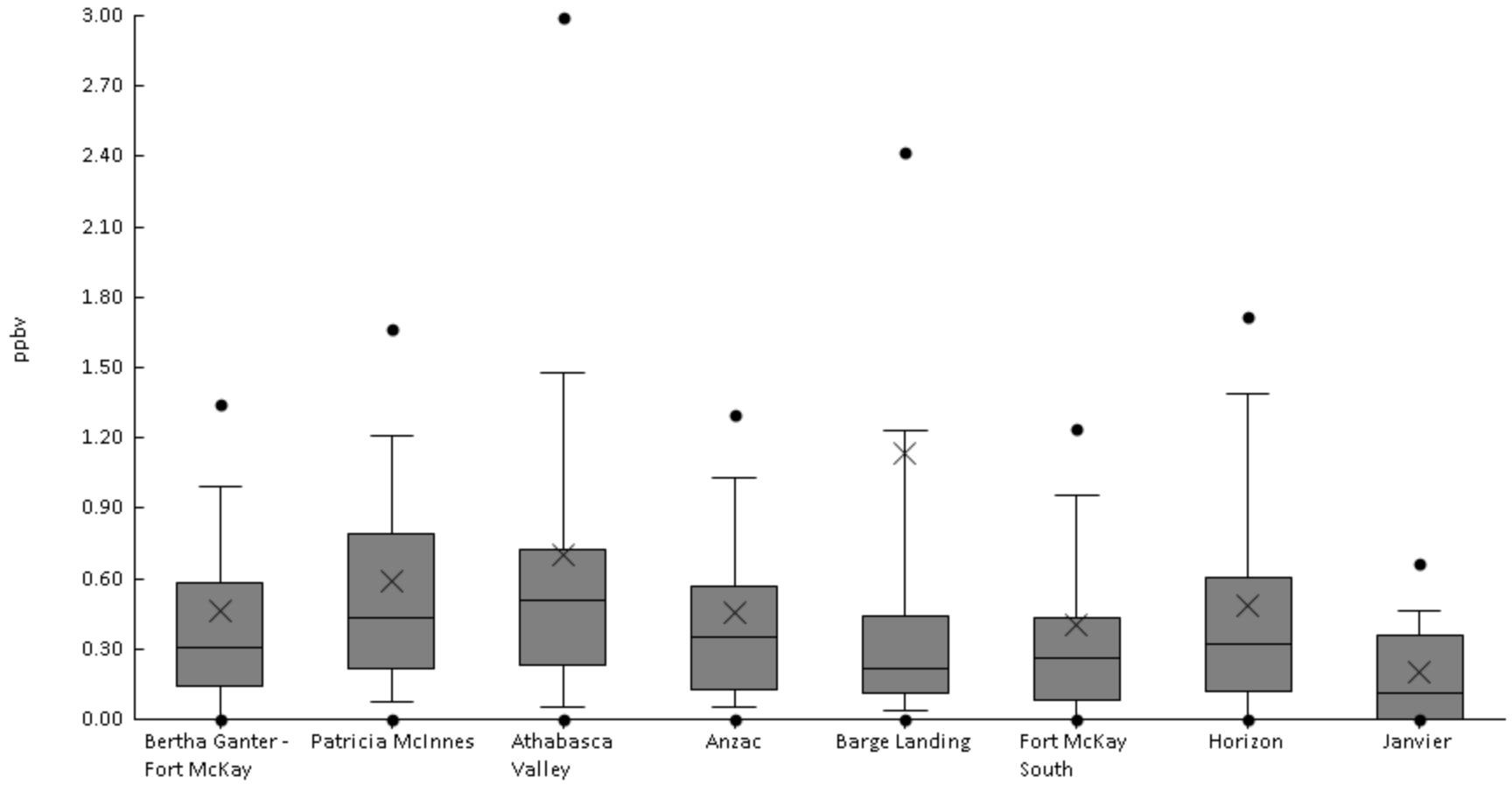
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	2%	0	0	0	0	0	0	0	0	0.9	0.015	0.11
AMS 6	Patricia McInnes	61	2%	0	0	0	0	0	0	0	0	0.7	0.011	0.09
AMS 7	Athabasca Valley	61	3%	0	0	0	0	0	0	0	0	0.9	0.02	0.12
AMS 14	Anzac	60	2%	0	0	0	0	0	0	0	0	0.8	0.013	0.1
AMS 9	Barge Landing	60	2%	0	0	0	0	0	0	0	0	1	0.017	0.13
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	2%	0	0	0	0	0	0	0	0	0.6	0.01	0.077
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - Naphthalene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.5	8.2E-3	0.064
AMS 14	Anzac	60	2%	0	0	0	0	0	0	0	0	0.6	0.01	0.077
AMS 9	Barge Landing	60	2%	0	0	0	0	0	0	0	0	0.6	0.01	0.077
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - n-Butane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	89%	0	0	0	0.14	0.31	0.58	1	1.3	3.3	0.46	0.55
AMS 6	Patricia McInnes	61	93%	0	0	0.078	0.22	0.43	0.79	1.2	1.7	3	0.59	0.56
AMS 7	Athabasca Valley	61	93%	0	0	0.052	0.23	0.51	0.73	1.5	3	4.4	0.7	0.87
AMS 14	Anzac	60	92%	0	0	0.055	0.13	0.35	0.57	1	1.3	2.3	0.46	0.43
AMS 9	Barge Landing	60	92%	0	0	0.04	0.11	0.22	0.44	1.2	2.4	40	1.1	5.2
AMS 13	Fort McKay South	61	82%	0	0	0	0.08	0.26	0.43	0.96	1.2	4.4	0.4	0.64
AMS 15	Horizon	60	87%	0	0	0	0.12	0.32	0.61	1.4	1.7	2.1	0.49	0.54
AMS 22	Janvier	20	70%	0	0	0	0	0.12	0.36	0.46	0.67	0.86	0.2	0.23



Volatile Organic Compounds - n-Decane (ppbv) - 2017

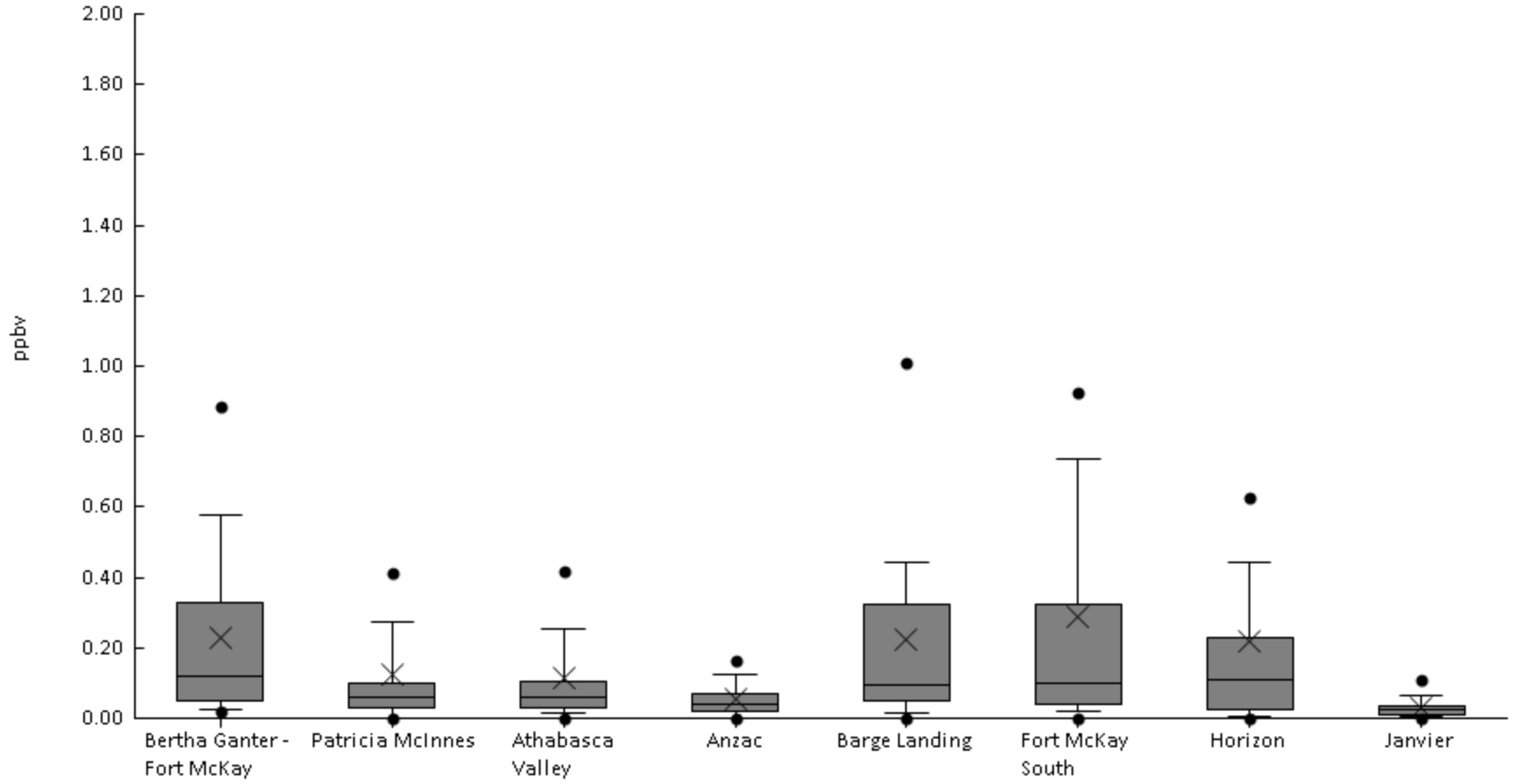
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	2%	0	0	0	0	0	0	0	0	0.09	1.5E-3	0.011
AMS 6	Patricia McInnes	61	7%	0	0	0	0	0	0	0	0.08	0.1	5.6E-3	0.021
AMS 7	Athabasca Valley	61	3%	0	0	0	0	0	0	0	0	0.07	2.1E-3	0.012
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	2%	0	0	0	0	0	0	0	0	0.1	1.7E-3	0.013
AMS 13	Fort McKay South	61	7%	0	0	0	0	0	0	0	0.09	0.1	6.2E-3	0.024
AMS 15	Horizon	60	3%	0	0	0	0	0	0	0	0	0.51	0.01	0.067
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - n-Dodecane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.4	6.6E-3	0.051
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

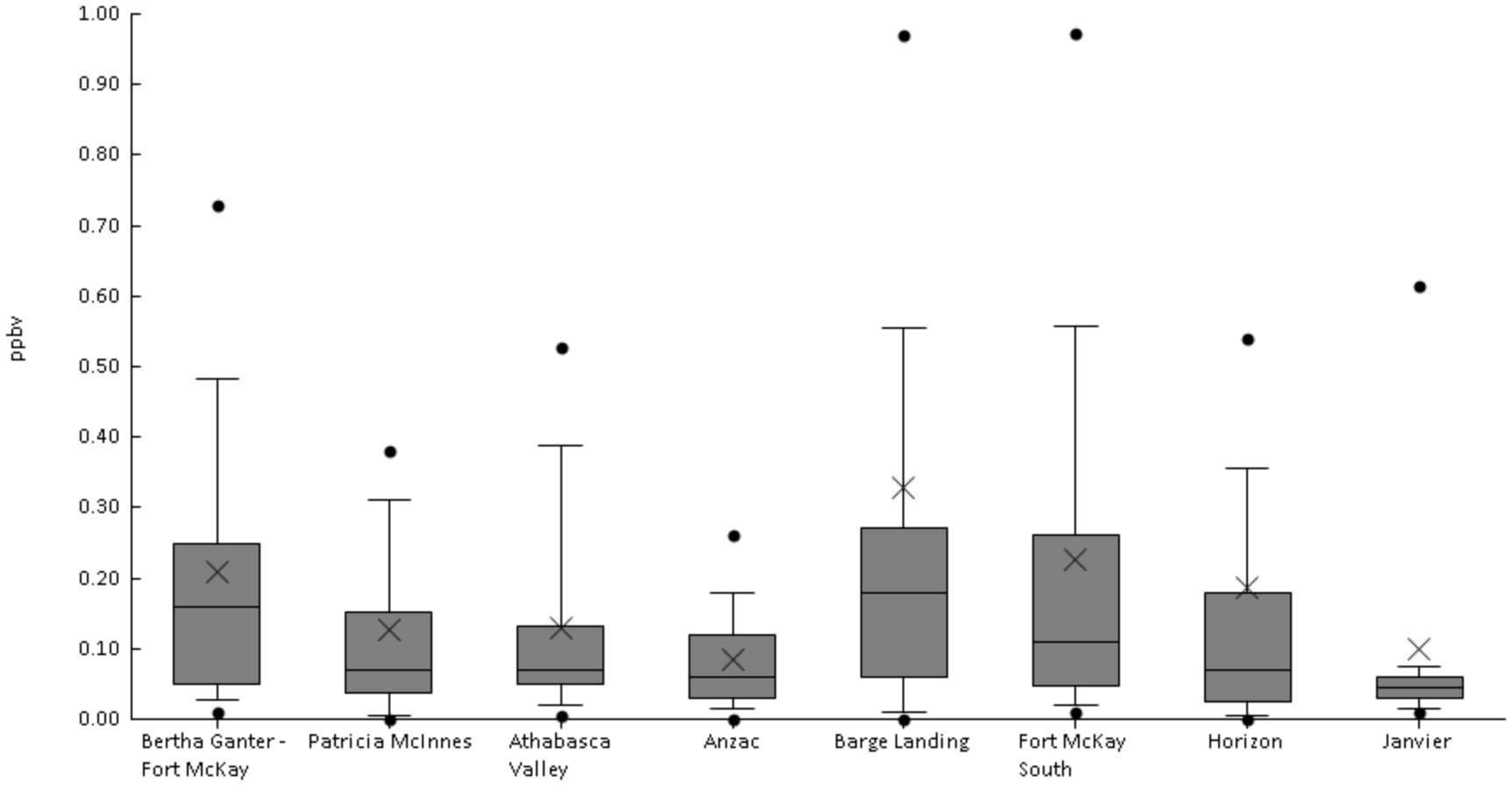
Volatile Organic Compounds - n-Heptane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	97%	0	0.02	0.027	0.05	0.12	0.33	0.58	0.89	1.3	0.23	0.27
AMS 6	Patricia McInnes	61	87%	0	0	0	0.03	0.06	0.1	0.28	0.41	1.9	0.12	0.26
AMS 7	Athabasca Valley	61	92%	0	0	0.016	0.03	0.06	0.1	0.25	0.42	1.5	0.11	0.21
AMS 14	Anzac	60	85%	0	0	0	0.02	0.04	0.07	0.13	0.17	0.28	0.054	0.054
AMS 9	Barge Landing	60	92%	0	0	0.015	0.05	0.095	0.33	0.45	1	1.7	0.22	0.31
AMS 13	Fort McKay South	61	93%	0	0	0.02	0.04	0.1	0.32	0.73	0.93	2.8	0.29	0.5
AMS 15	Horizon	60	90%	0	0	5E-3	0.025	0.11	0.23	0.45	0.63	4	0.22	0.52
AMS 22	Janvier	20	90%	0	0	5E-3	0.01	0.025	0.035	0.065	0.11	0.15	0.031	0.034



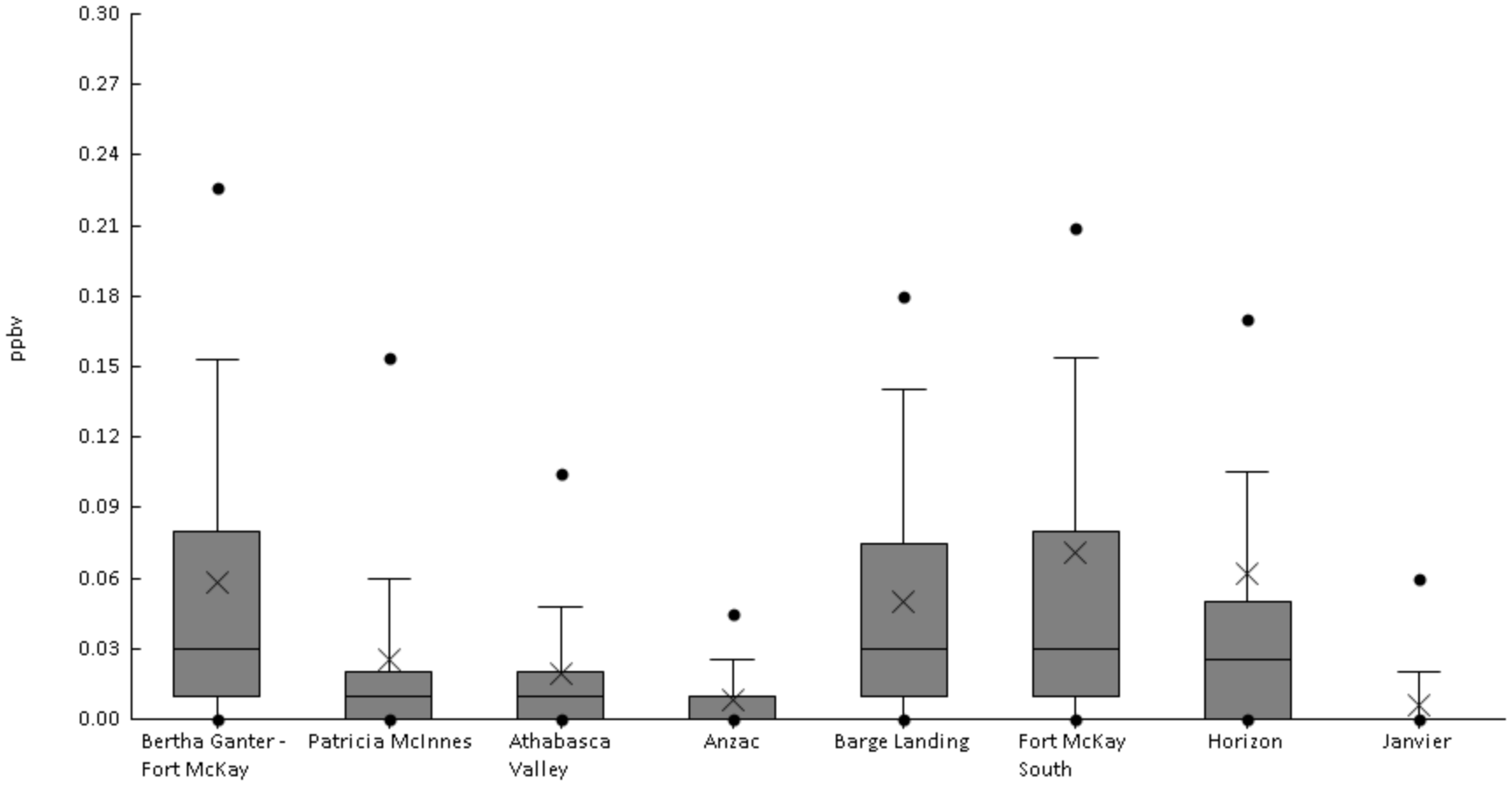
Volatile Organic Compounds - n-Hexane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	97%	0	0.01	0.027	0.05	0.16	0.25	0.48	0.73	0.97	0.21	0.22
AMS 6	Patricia McInnes	61	90%	0	0	6E-3	0.038	0.07	0.15	0.31	0.38	0.96	0.13	0.17
AMS 7	Athabasca Valley	61	95%	0	5.5E-3	0.02	0.05	0.07	0.13	0.39	0.53	1	0.13	0.17
AMS 14	Anzac	60	92%	0	0	0.015	0.03	0.06	0.12	0.18	0.26	0.42	0.085	0.081
AMS 9	Barge Landing	60	92%	0	0	0.01	0.06	0.18	0.27	0.56	0.97	5.1	0.33	0.72
AMS 13	Fort McKay South	61	97%	0	0.01	0.02	0.048	0.11	0.26	0.56	0.97	1.6	0.23	0.3
AMS 15	Horizon	60	90%	0	0	5E-3	0.025	0.07	0.18	0.36	0.54	3.9	0.19	0.51
AMS 22	Janvier	20	100%	0.01	0.01	0.015	0.03	0.045	0.06	0.075	0.62	1.2	0.099	0.25



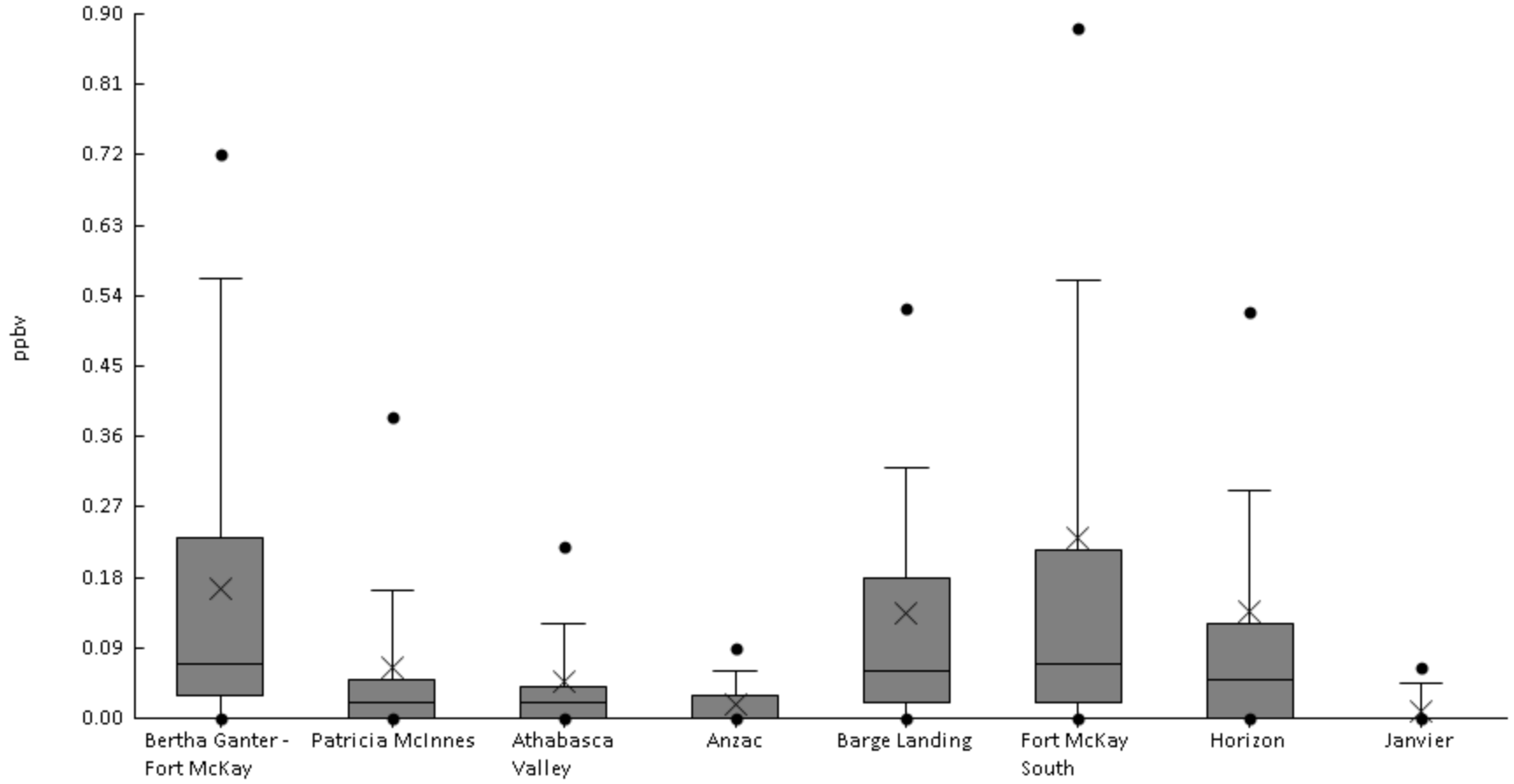
Volatile Organic Compounds - n-Nonane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	84%	0	0	0	0.01	0.03	0.08	0.15	0.23	0.3	0.058	0.068
AMS 6	Patricia McInnes	61	54%	0	0	0	0	0.01	0.02	0.06	0.15	0.35	0.025	0.058
AMS 7	Athabasca Valley	61	56%	0	0	0	0	0.01	0.02	0.048	0.1	0.23	0.019	0.038
AMS 14	Anzac	60	33%	0	0	0	0	0	0.01	0.025	0.045	0.09	8.3E-3	0.017
AMS 9	Barge Landing	60	80%	0	0	0	0.01	0.03	0.075	0.14	0.18	0.25	0.05	0.059
AMS 13	Fort McKay South	61	79%	0	0	0	0.01	0.03	0.08	0.15	0.21	0.73	0.071	0.13
AMS 15	Horizon	60	72%	0	0	0	0	0.025	0.05	0.11	0.17	1.5	0.062	0.19
AMS 22	Janvier	20	10%	0	0	0	0	0	0	0.02	0.06	0.08	6E-3	0.02



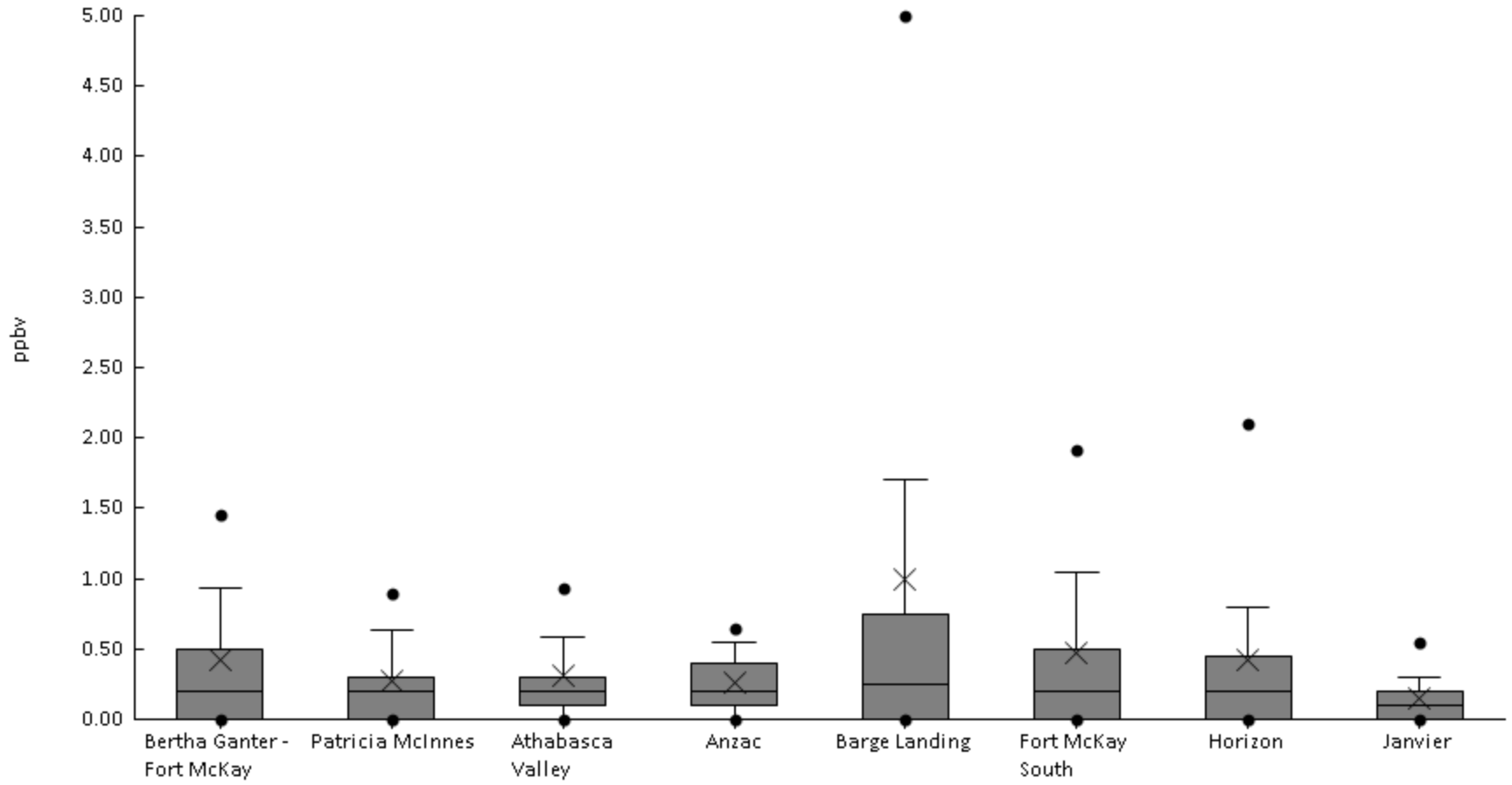
Volatile Organic Compounds - n-Octane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	85%	0	0	0	0.03	0.07	0.23	0.56	0.72	0.86	0.16	0.22
AMS 6	Patricia McInnes	61	56%	0	0	0	0	0.02	0.05	0.16	0.38	0.99	0.064	0.16
AMS 7	Athabasca Valley	61	57%	0	0	0	0	0.02	0.04	0.12	0.22	0.64	0.047	0.099
AMS 14	Anzac	60	40%	0	0	0	0	0	0.03	0.06	0.09	0.12	0.018	0.029
AMS 9	Barge Landing	60	77%	0	0	0	0.02	0.06	0.18	0.32	0.53	0.87	0.13	0.19
AMS 13	Fort McKay South	61	79%	0	0	0	0.02	0.07	0.22	0.56	0.88	2.7	0.23	0.5
AMS 15	Horizon	60	73%	0	0	0	0	0.05	0.12	0.29	0.52	2.2	0.14	0.31
AMS 22	Janvier	20	15%	0	0	0	0	0	0	0.045	0.065	0.07	8E-3	0.021



Volatile Organic Compounds - n-Pentane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	74%	0	0	0	0	0.2	0.5	0.93	1.5	6.5	0.42	0.88
AMS 6	Patricia McInnes	61	74%	0	0	0	0	0.2	0.3	0.64	0.89	2.3	0.27	0.36
AMS 7	Athabasca Valley	61	80%	0	0	0	0.1	0.2	0.3	0.58	0.93	3.1	0.31	0.48
AMS 14	Anzac	60	77%	0	0	0	0.1	0.2	0.4	0.55	0.65	1.4	0.26	0.26
AMS 9	Barge Landing	60	72%	0	0	0	0	0.25	0.75	1.7	5	17	0.99	2.5
AMS 13	Fort McKay South	61	74%	0	0	0	0	0.2	0.5	1	1.9	6	0.47	0.88
AMS 15	Horizon	60	68%	0	0	0	0	0.2	0.45	0.8	2.1	4.2	0.42	0.81
AMS 22	Janvier	20	70%	0	0	0	0	0.1	0.2	0.3	0.55	0.8	0.16	0.18



Volatile Organic Compounds - n-Propylbenzene (ppbv) - 2017

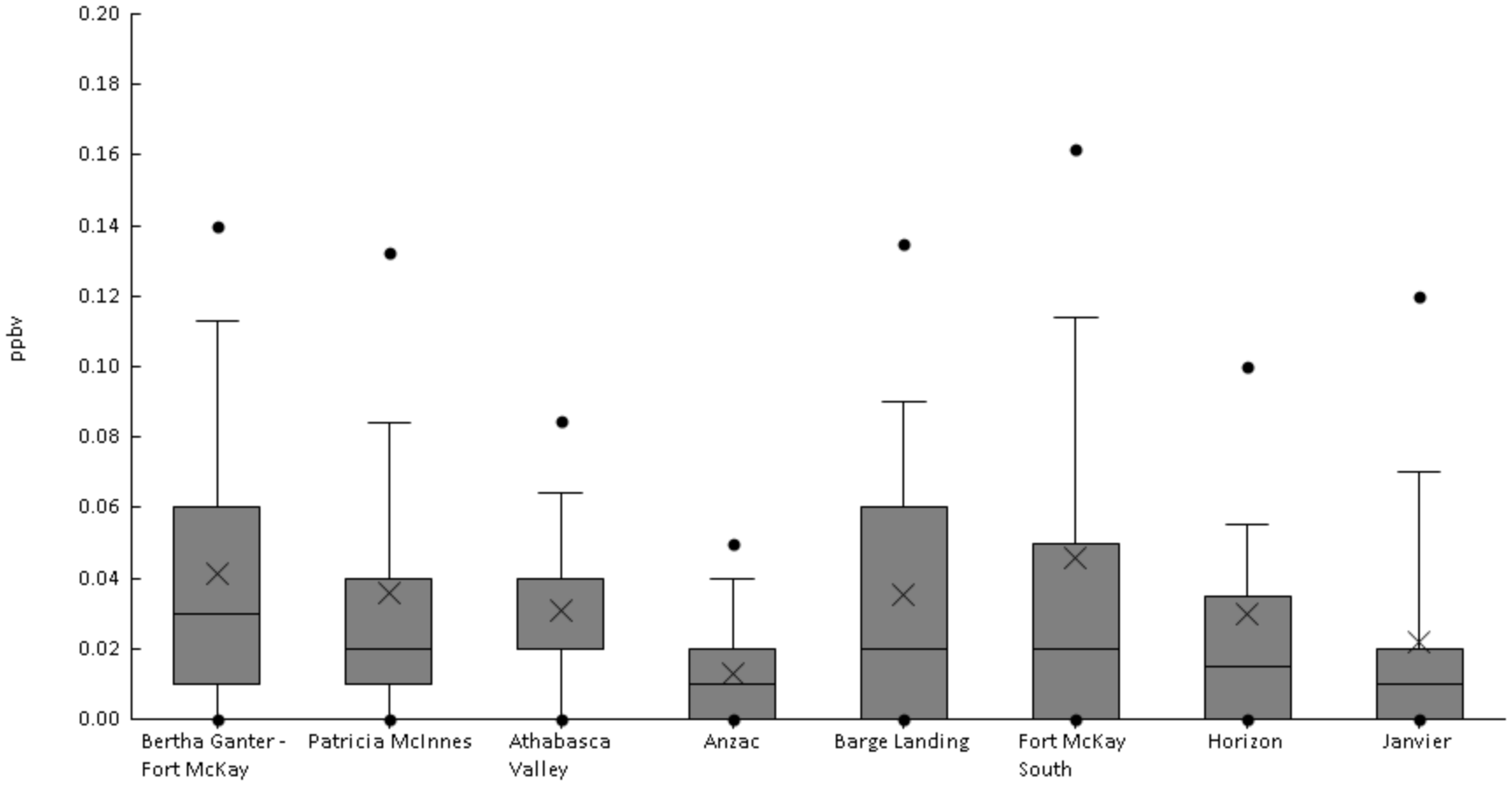
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	3%	0	0	0	0	0	0	0	0	0.09	2.4E-3	0.014
AMS 6	Patricia McInnes	61	5%	0	0	0	0	0	0	0	0.031	0.09	3.9E-3	0.018
AMS 7	Athabasca Valley	61	5%	0	0	0	0	0	0	0	0.022	0.07	2.8E-3	0.013
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	5%	0	0	0	0	0	0	0	0.025	0.09	3.3E-3	0.015
AMS 13	Fort McKay South	61	3%	0	0	0	0	0	0	0	0	0.11	3.3E-3	0.018
AMS 15	Horizon	60	5%	0	0	0	0	0	0	0	0.03	0.13	4.7E-3	0.022
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - n-Undecane (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.5	8.2E-3	0.064
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - o-Xylene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	81%	0	0	0	0.01	0.03	0.06	0.11	0.14	0.17	0.041	0.044
AMS 6	Patricia McInnes	61	85%	0	0	0	0.01	0.02	0.04	0.084	0.13	0.21	0.036	0.042
AMS 7	Athabasca Valley	61	89%	0	0	0	0.02	0.02	0.04	0.064	0.085	0.15	0.031	0.026
AMS 14	Anzac	60	55%	0	0	0	0	0.01	0.02	0.04	0.05	0.07	0.013	0.017
AMS 9	Barge Landing	60	72%	0	0	0	0	0.02	0.06	0.09	0.14	0.16	0.036	0.041
AMS 13	Fort McKay South	61	72%	0	0	0	0	0.02	0.05	0.11	0.16	0.41	0.046	0.076
AMS 15	Horizon	60	58%	0	0	0	0	0.015	0.035	0.055	0.1	0.51	0.03	0.069
AMS 22	Janvier	20	70%	0	0	0	0	0.01	0.02	0.07	0.12	0.13	0.022	0.035

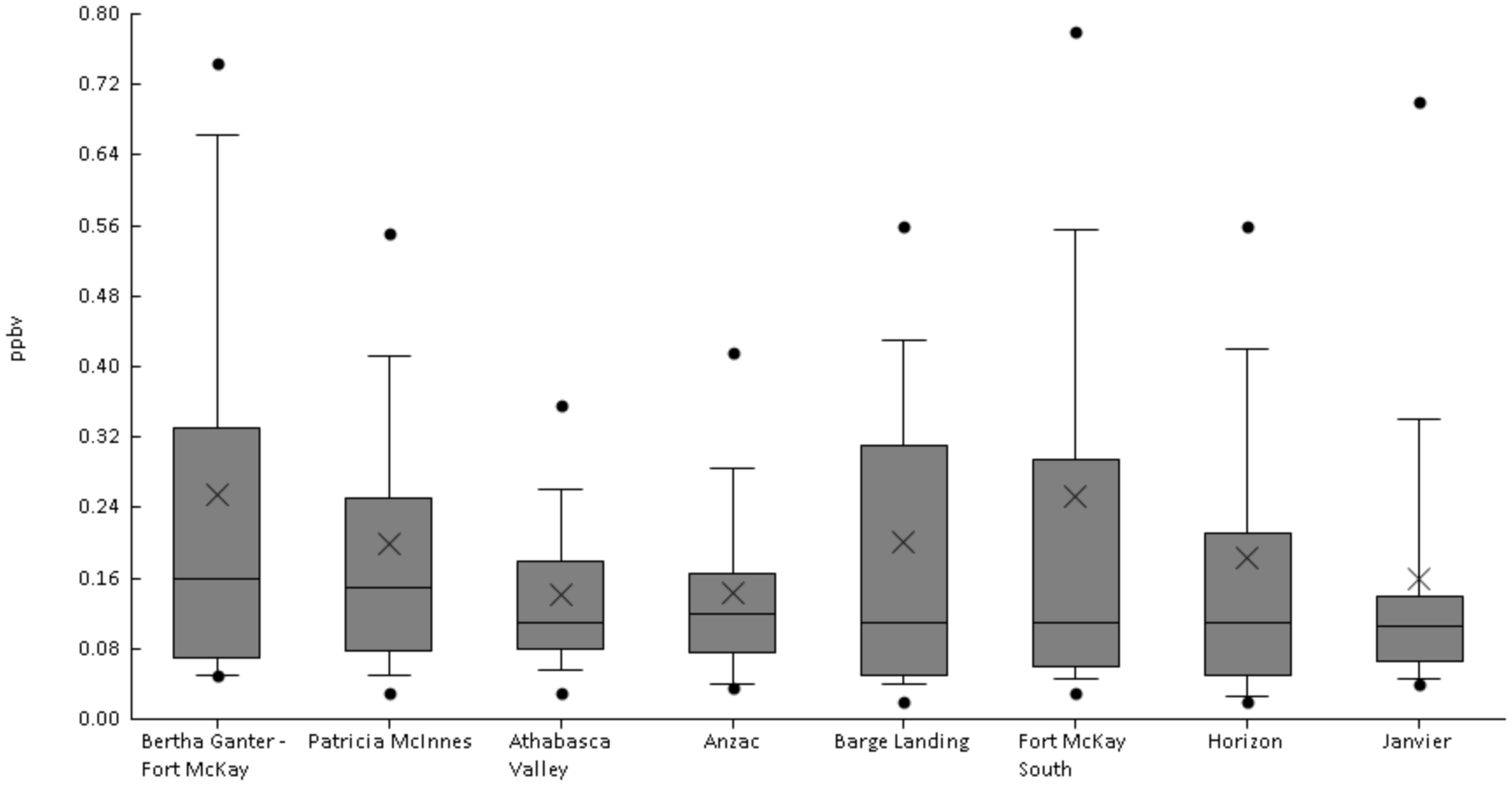


Volatile Organic Compounds - Styrene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	5%	0	0	0	0	0	0	0	0.02	0.11	3.4E-3	0.016
AMS 6	Patricia McInnes	61	5%	0	0	0	0	0	0	0	0.018	0.09	3.6E-3	0.017
AMS 7	Athabasca Valley	61	7%	0	0	0	0	0	0	0	0.04	0.08	3.6E-3	0.014
AMS 14	Anzac	60	10%	0	0	0	0	0	0	0.02	0.045	0.07	5.2E-3	0.016
AMS 9	Barge Landing	60	8%	0	0	0	0	0	0	0	0.07	0.14	7E-3	0.025
AMS 13	Fort McKay South	61	5%	0	0	0	0	0	0	0	0.018	0.16	5.1E-3	0.025
AMS 15	Horizon	60	7%	0	0	0	0	0	0	0	0.04	0.09	3.7E-3	0.015
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - Toluene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	100%	0.03	0.05	0.05	0.07	0.16	0.33	0.66	0.74	1.3	0.26	0.25
AMS 6	Patricia McInnes	61	98%	0	0.03	0.05	0.078	0.15	0.25	0.41	0.55	0.93	0.2	0.18
AMS 7	Athabasca Valley	61	98%	0	0.03	0.056	0.08	0.11	0.18	0.26	0.36	0.49	0.14	0.097
AMS 14	Anzac	60	98%	0	0.035	0.04	0.075	0.12	0.17	0.29	0.42	0.45	0.14	0.1
AMS 9	Barge Landing	60	98%	0	0.02	0.04	0.05	0.11	0.31	0.43	0.56	1.2	0.2	0.22
AMS 13	Fort McKay South	61	100%	0.02	0.03	0.046	0.06	0.11	0.3	0.56	0.78	2.1	0.25	0.37
AMS 15	Horizon	60	98%	0	0.02	0.025	0.05	0.11	0.21	0.42	0.56	1.7	0.18	0.26
AMS 22	Janvier	20	100%	0.04	0.04	0.045	0.065	0.11	0.14	0.34	0.7	0.92	0.16	0.2



Volatile Organic Compounds - trans-2-Butene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	42%	0	0	0	0	0	0.02	0.06	0.068	0.12	0.016	0.027
AMS 6	Patricia McInnes	61	43%	0	0	0	0	0	0.02	0.054	0.085	0.11	0.017	0.028
AMS 7	Athabasca Valley	61	33%	0	0	0	0	0	0.02	0.048	0.075	0.1	0.013	0.025
AMS 14	Anzac	60	35%	0	0	0	0	0	0.02	0.06	0.065	0.09	0.014	0.024
AMS 9	Barge Landing	60	30%	0	0	0	0	0	0.02	0.055	0.065	0.11	0.013	0.026
AMS 13	Fort McKay South	61	33%	0	0	0	0	0	0.023	0.06	0.09	0.13	0.016	0.03
AMS 15	Horizon	60	33%	0	0	0	0	0	0.015	0.065	0.085	0.21	0.017	0.037
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - trans-2-Hexene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	0.3	4.9E-3	0.038
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 9	Barge Landing	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

Volatile Organic Compounds - trans-2-Pentene (ppbv) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	62	10%	0	0	0	0	0	0	6E-3	0.034	0.09	4.5E-3	0.016
AMS 6	Patricia McInnes	61	11%	0	0	0	0	0	0	0.02	0.048	0.09	5.6E-3	0.018
AMS 7	Athabasca Valley	61	10%	0	0	0	0	0	0	8E-3	0.039	0.08	4.6E-3	0.016
AMS 14	Anzac	60	8%	0	0	0	0	0	0	0	0.025	0.05	2.7E-3	9.5E-3
AMS 9	Barge Landing	60	5%	0	0	0	0	0	0	0	0.01	0.09	3.2E-3	0.016
AMS 13	Fort McKay South	61	7%	0	0	0	0	0	0	0	0.025	0.1	3.9E-3	0.018
AMS 15	Horizon	60	3%	0	0	0	0	0	0	0	0	0.08	2.5E-3	0.014
AMS 22	Janvier	20	0%	0	0	0	0	0	0	0	0	0	0	0

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER - IONS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS BY:

PM ions: Atmospheric Research & Analysis, Inc.
Morrisville, NC

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER ($PM_{2.5}$) - IONS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

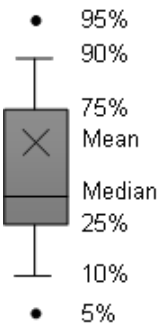
LABORATORY ANALYSIS BY:

PM ions: Atmospheric Research & Analysis, Inc.
Morrisville, NC

FILE CONTENTS DESCRIPTION	Partisol Sampler Measurements of Mass, Ions by IC and Metals by ICP-MS
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection values (MDL.) are provided with each observation
UNITS	µg/m^3 (microgram per cubic meter)
OBSERVATION TYPE	Particles
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Filtration with PM_{10} Inlet for PM_{10} and with PM_{10} Inlet/Very Sharp Cut Cyclone for $PM_{2.5}$
PARTICLE DIAMETER	< 2.5 µm or < 10 µm
MEDIUM	47 mm Teflon Filter
ANALYTICALMETHODS	MASS by Microbalance
	ELEMENTS by Inductively Coupled Plasma Mass Spectrometry (ICP/MS)
	IONS by Ion Chromatography (IC)
SAMPLE PREPARATION	DI Water extraction for IC analysis and Acid Digestion for ICP/MS Analysis
ANALYTICAL LABORATORY	Atmospheric Research & Analysis Inc
USER NOTE 1	Data are not blank corrected
USER NOTE 2	Volume is given at actual conditions of temperature and pressure during sampling as measured by the sampler
USER NOTE 3	Blank sample concentration (µg/m^3) is calculated using expected actual volume of sampler
VOLUME STANDARDIZATION	Actual Volume at Ambient Conditions (since 01-Jan-2011)
SAMPLING INSTRUMENT TYPE	For PM_{10} FRM Partisol PM_{10} sampler
	For $PM_{2.5}$ FRM Partisol $PM_{2.5}$ sampler

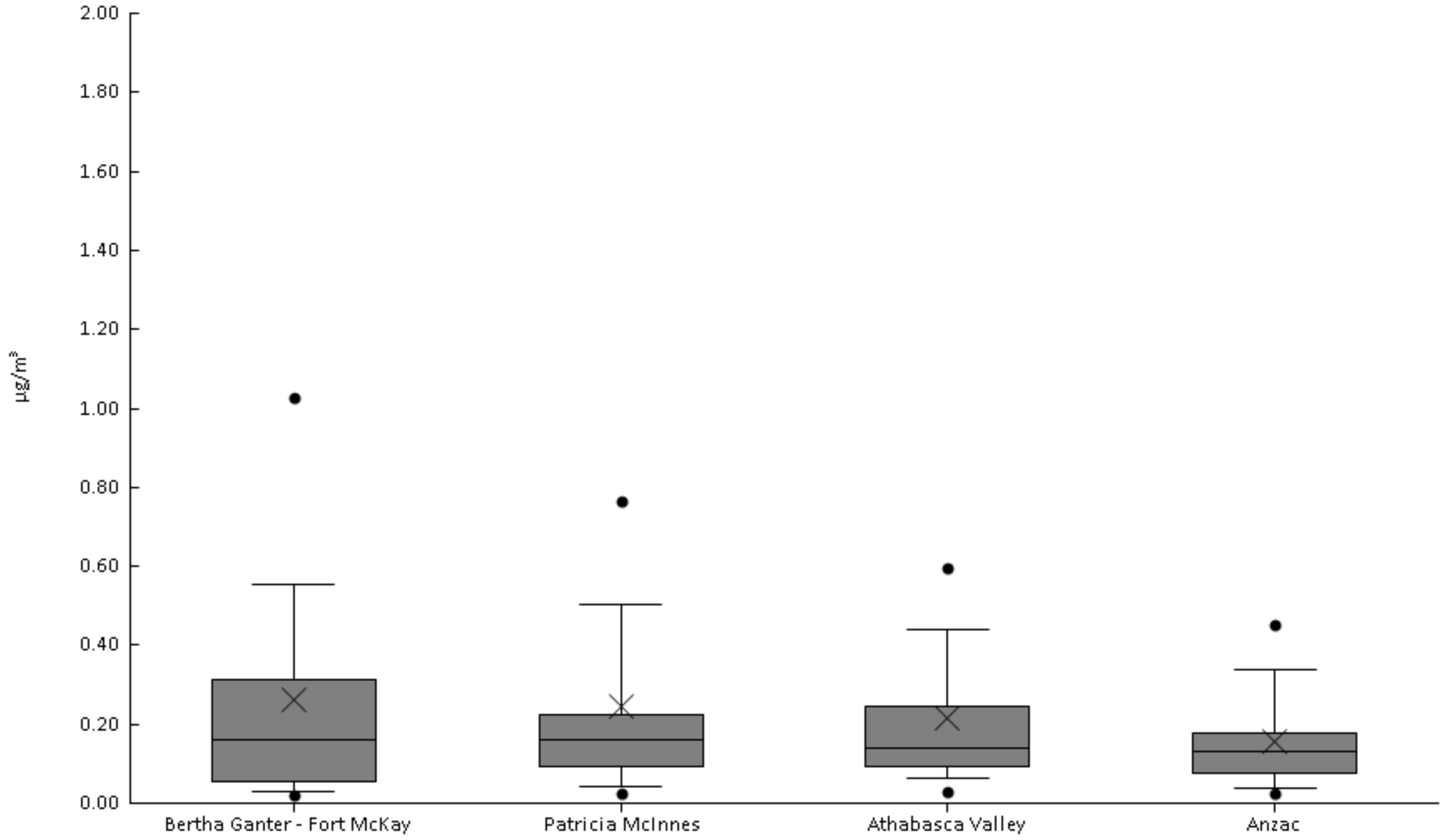
FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



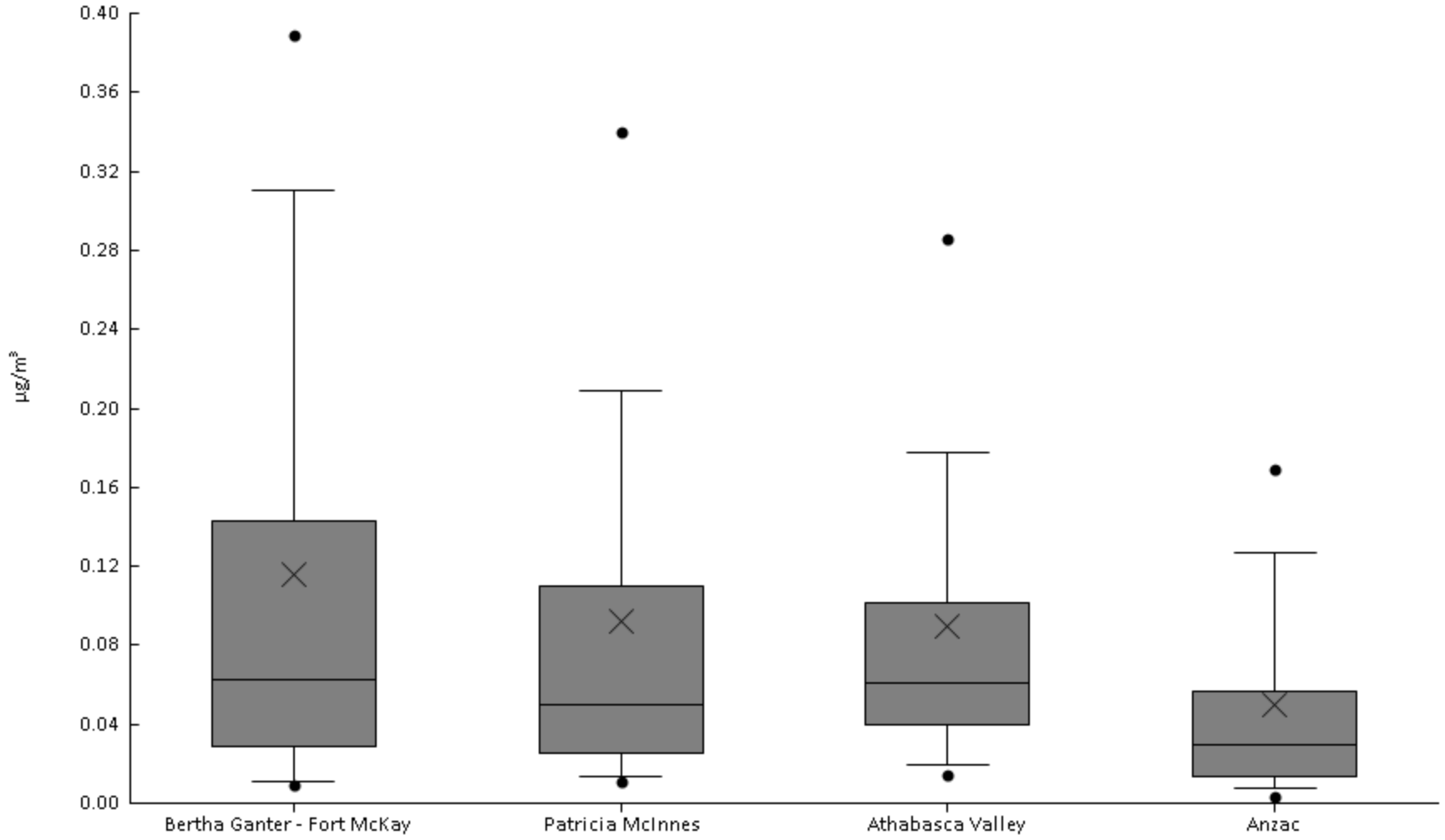
Particulate Matter (PM2.5 IONS) - Ammonium (as N) (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.017	0.019	0.028	0.056	0.16	0.31	0.55	1	1.7	0.26	0.32
AMS 6	Patricia McInnes	60	100%	0.017	0.024	0.044	0.091	0.16	0.23	0.5	0.77	1.9	0.25	0.31
AMS 7	Athabasca Valley	61	100%	0.017	0.03	0.062	0.095	0.14	0.25	0.44	0.6	1.7	0.22	0.25
AMS 14	Anzac	58	100%	0.016	0.024	0.039	0.075	0.13	0.18	0.34	0.45	0.6	0.16	0.12



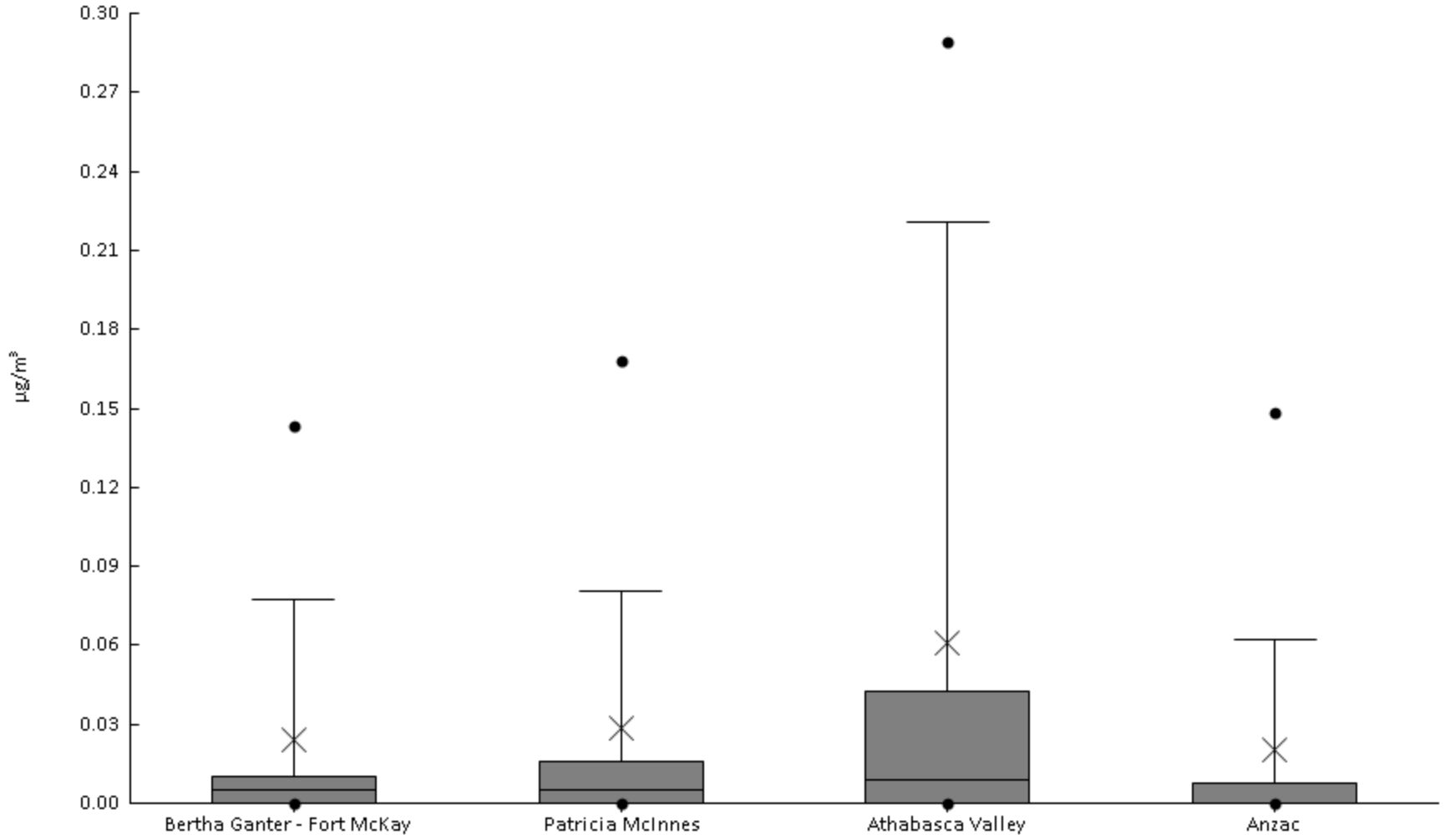
Particulate Matter (PM2.5 IONS) - Calcium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	7.5E-3	9.4E-3	0.011	0.028	0.063	0.14	0.31	0.39	0.66	0.12	0.13
AMS 6	Patricia McInnes	60	98%	0	0.011	0.013	0.025	0.05	0.11	0.21	0.34	0.52	0.092	0.11
AMS 7	Athabasca Valley	61	100%	0.013	0.014	0.02	0.039	0.061	0.1	0.18	0.29	0.41	0.089	0.082
AMS 14	Anzac	58	95%	0	3E-3	7.5E-3	0.014	0.03	0.056	0.13	0.17	0.31	0.05	0.061



Particulate Matter (PM2.5 IONS) - Chloride (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	52%	0	0	0	0	5E-3	0.01	0.078	0.14	0.32	0.024	0.061
AMS 6	Patricia McInnes	60	63%	0	0	0	0	5E-3	0.016	0.081	0.17	0.39	0.029	0.073
AMS 7	Athabasca Valley	61	72%	0	0	0	0	9E-3	0.042	0.22	0.29	0.7	0.061	0.12
AMS 14	Anzac	58	43%	0	0	0	0	0	7.5E-3	0.062	0.15	0.31	0.02	0.056

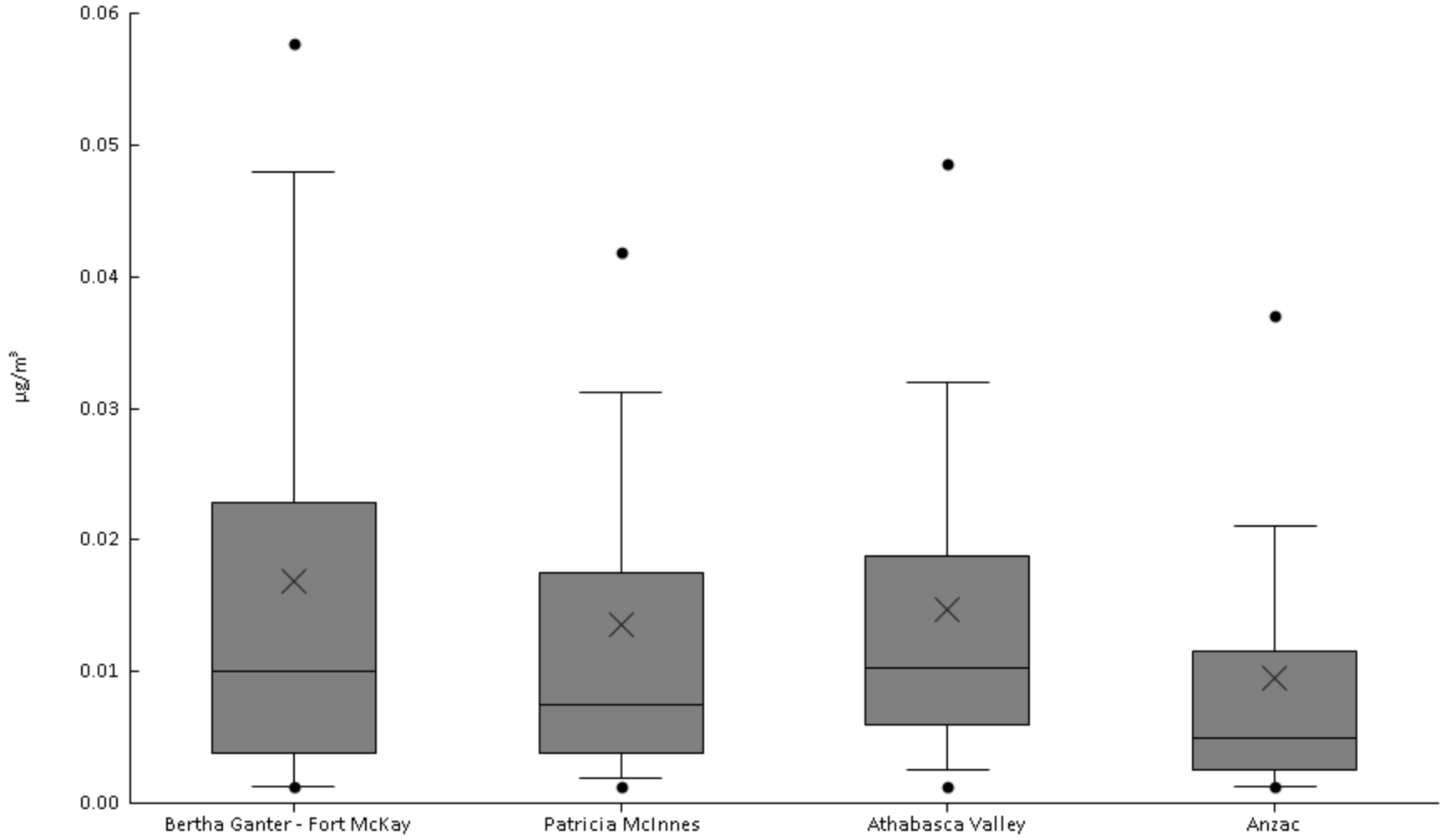


Particulate Matter (PM2.5 IONS) - Fluoride (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	13%	0	0	0	0	0	0	8.8E-3	0.01	0.014	1.4E-3	3.6E-3
AMS 6	Patricia McInnes	60	15%	0	0	0	0	0	0	6.9E-3	8.8E-3	0.034	1.6E-3	5E-3
AMS 7	Athabasca Valley	59	14%	0	0	0	0	0	0	7E-3	0.01	0.013	1.2E-3	3.2E-3
AMS 14	Anzac	57	14%	0	0	0	0	0	0	8.3E-3	0.011	0.029	1.6E-3	4.8E-3

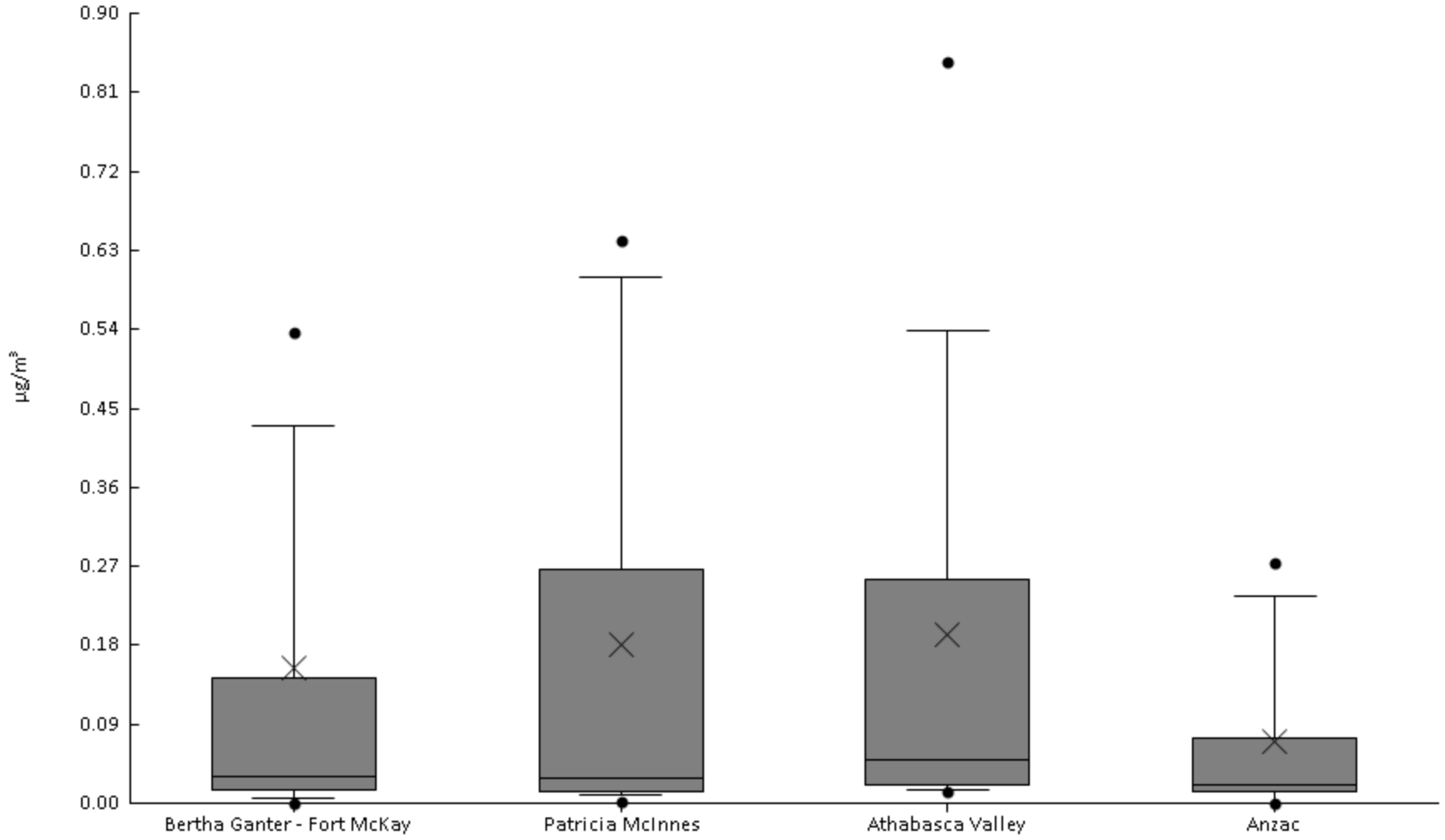
Particulate Matter (PM2.5 IONS) - Magnesium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1.3E-3	1.3E-3	1.3E-3	3.8E-3	0.01	0.023	0.048	0.058	0.07	0.017	0.018
AMS 6	Patricia McInnes	60	100%	1.3E-3	1.3E-3	1.9E-3	3.8E-3	7.5E-3	0.018	0.031	0.042	0.079	0.014	0.014
AMS 7	Athabasca Valley	61	100%	1.3E-3	1.3E-3	2.5E-3	5.9E-3	0.01	0.019	0.032	0.049	0.063	0.015	0.013
AMS 14	Anzac	57	96%	0	1.3E-3	1.3E-3	2.5E-3	5E-3	0.012	0.021	0.037	0.064	9.5E-3	0.012



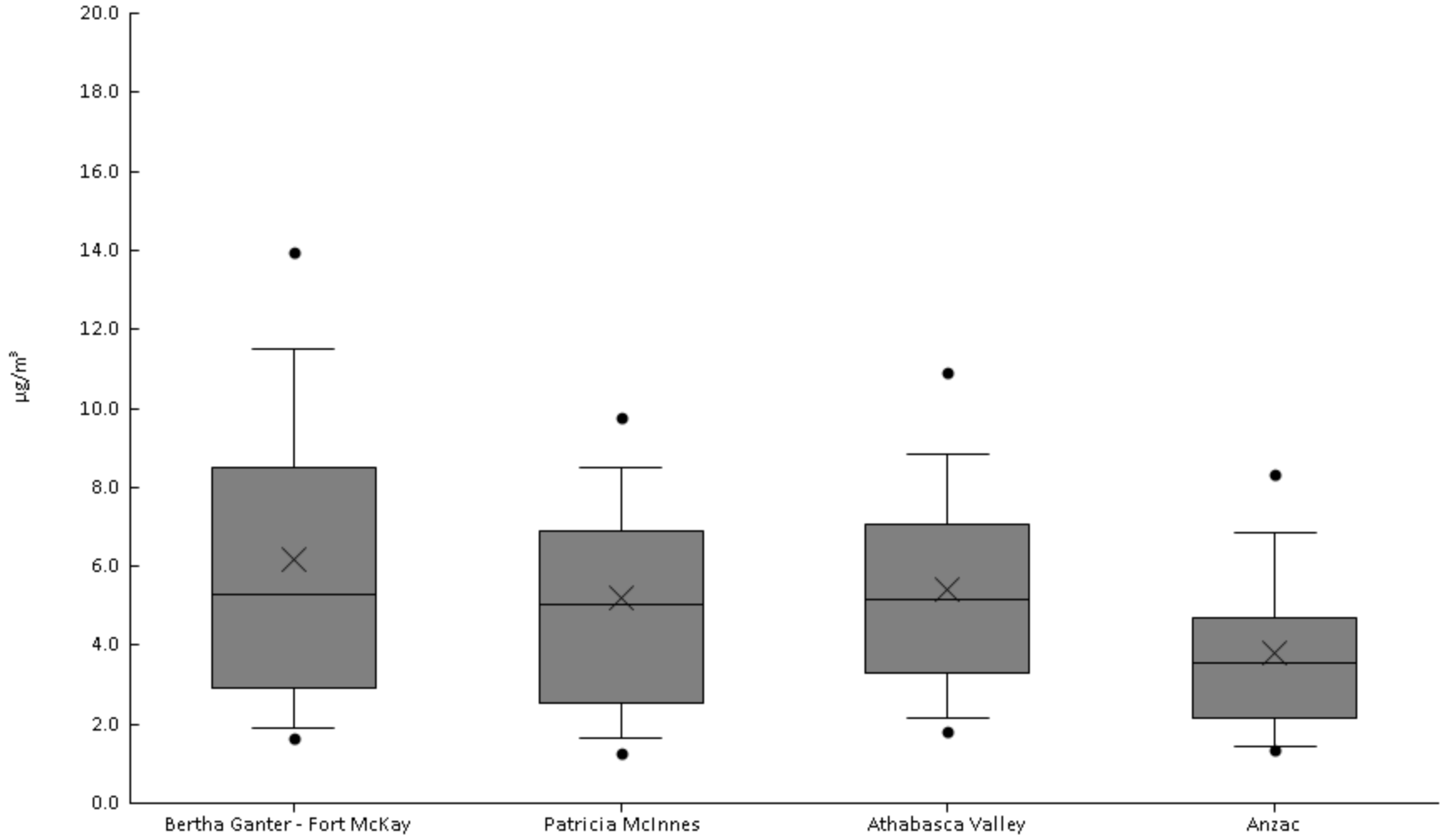
Particulate Matter (PM2.5 IONS) - Nitrate (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	90%	0	0	6E-3	0.015	0.03	0.14	0.43	0.54	2	0.16	0.33
AMS 6	Patricia McInnes	60	93%	0	2.2E-3	0.01	0.014	0.028	0.27	0.6	0.64	1.8	0.18	0.32
AMS 7	Athabasca Valley	60	98%	0	0.013	0.015	0.02	0.05	0.26	0.54	0.84	1.3	0.19	0.28
AMS 14	Anzac	58	86%	0	0	0	0.013	0.021	0.075	0.24	0.27	0.73	0.07	0.12



Particulate Matter (PM2.5 IONS) - Particulate Matter (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.95	1.6	1.9	2.9	5.3	8.5	11	14	25	6.2	4.5
AMS 6	Patricia McInnes	60	100%	0.66	1.3	1.6	2.6	5	6.9	8.5	9.8	17	5.2	3.2
AMS 7	Athabasca Valley	61	100%	0.95	1.8	2.2	3.3	5.2	7.1	8.8	11	14	5.4	2.8
AMS 14	Anzac	58	100%	0.81	1.4	1.4	2.2	3.6	4.7	6.9	8.3	10	3.8	2.1

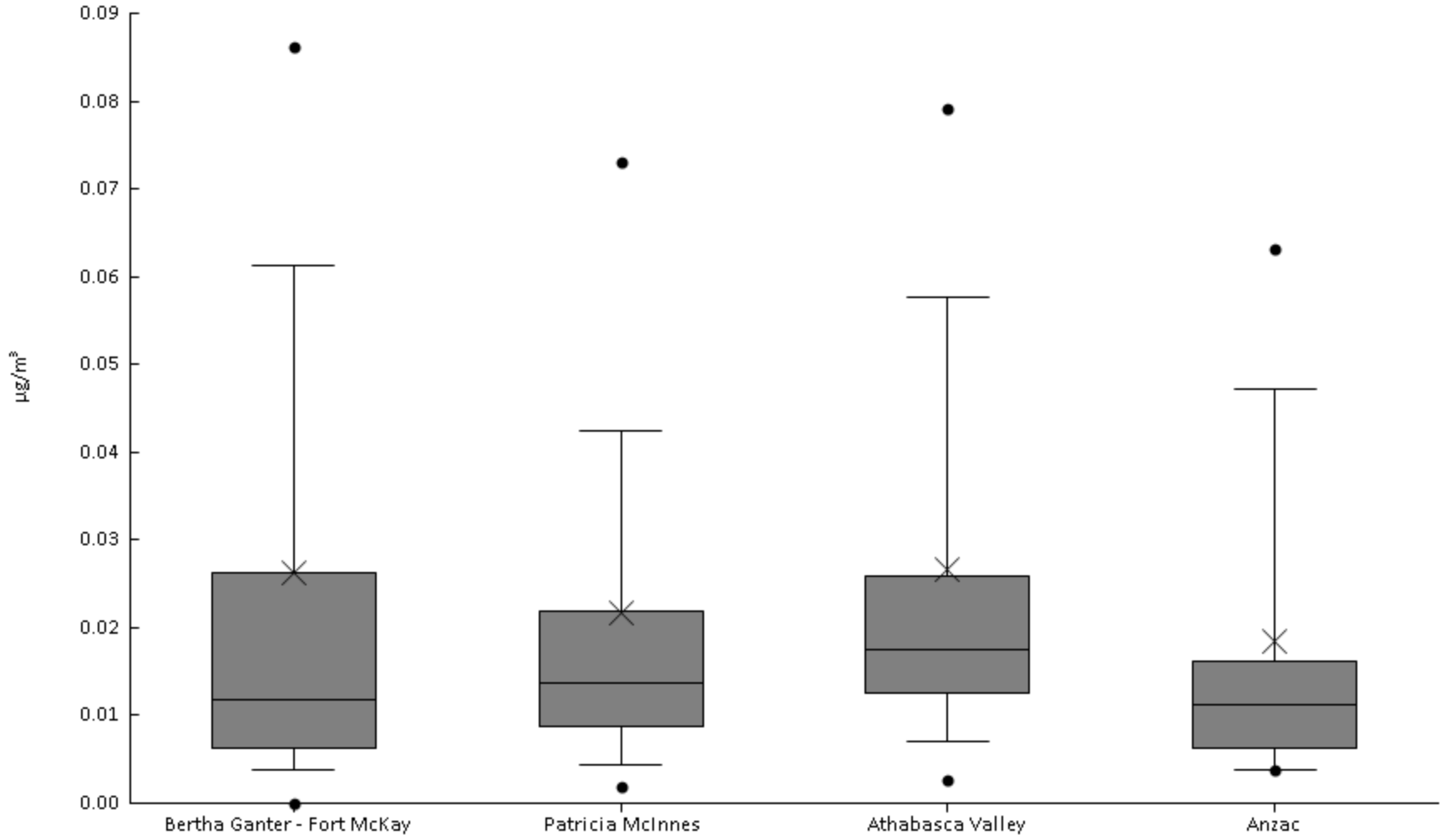


Particulate Matter (PM2.5 IONS) - Phosphate (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 14	Anzac	58	0%	0	0	0	0	0	0	0	0	0	0	0

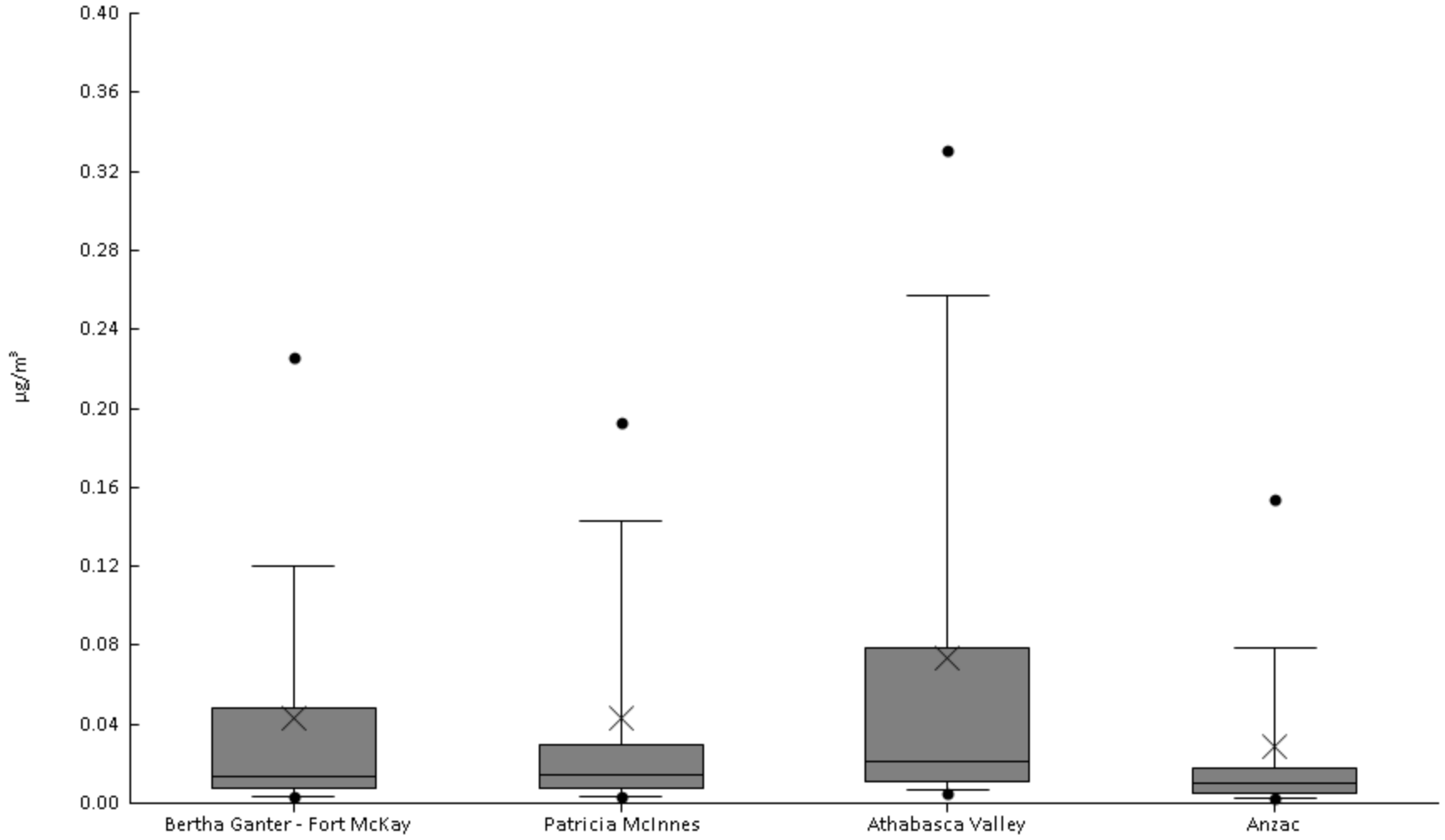
Particulate Matter (PM2.5 IONS) - Potassium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	92%	0	0	3.8E-3	6.3E-3	0.012	0.026	0.061	0.086	0.27	0.026	0.044
AMS 6	Patricia McInnes	60	93%	0	1.9E-3	4.4E-3	8.8E-3	0.014	0.022	0.043	0.073	0.18	0.022	0.029
AMS 7	Athabasca Valley	61	95%	0	2.8E-3	7E-3	0.013	0.018	0.026	0.058	0.079	0.18	0.027	0.03
AMS 14	Anzac	58	97%	0	3.8E-3	3.8E-3	6.3E-3	0.011	0.016	0.047	0.063	0.14	0.018	0.025



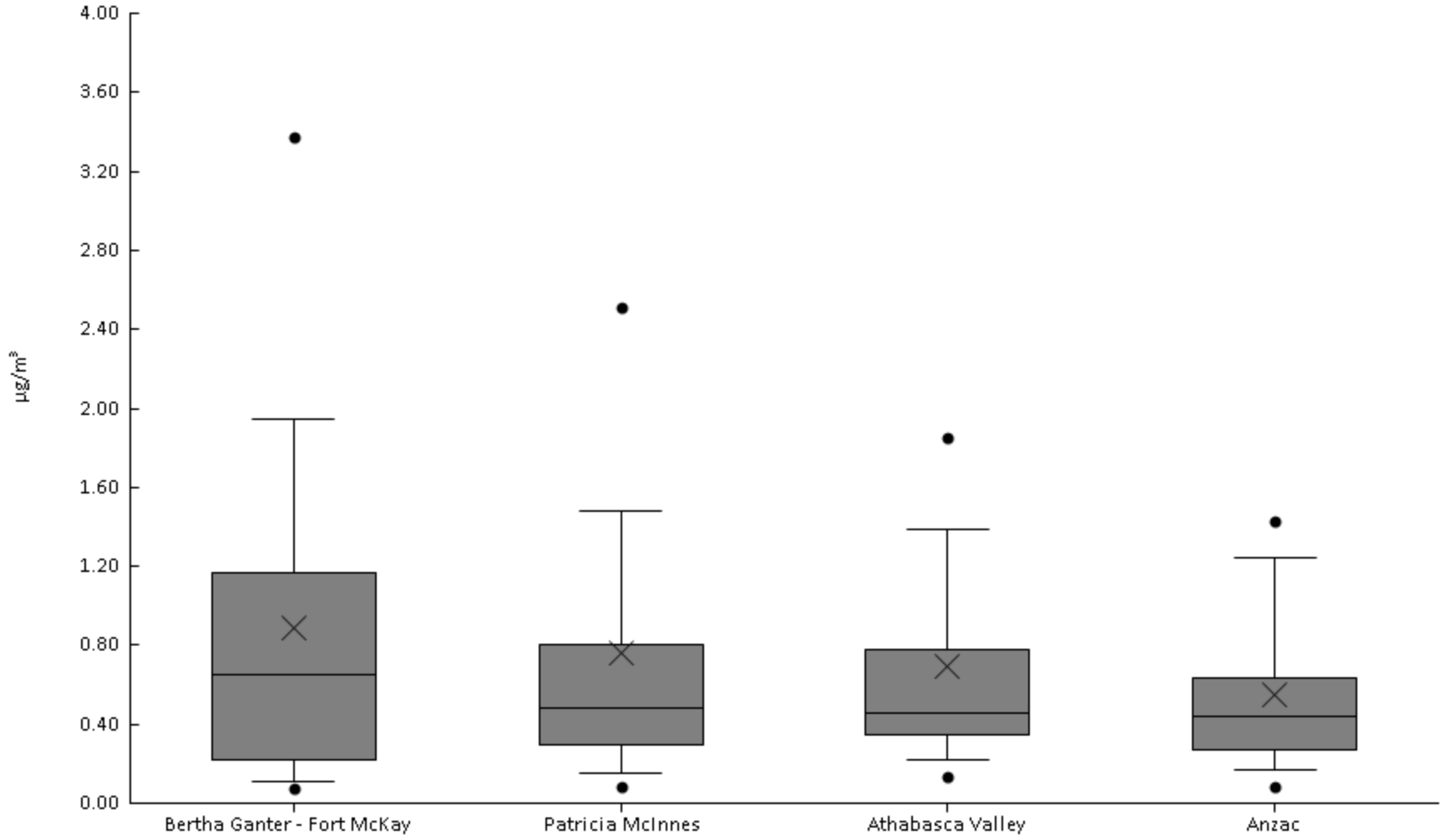
Particulate Matter (PM2.5 IONS) - Sodium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	97%	0	3.2E-3	3.8E-3	7.5E-3	0.014	0.048	0.12	0.23	0.29	0.043	0.068
AMS 6	Patricia McInnes	60	100%	2.5E-3	3.8E-3	3.8E-3	7.5E-3	0.014	0.029	0.14	0.19	0.34	0.043	0.072
AMS 7	Athabasca Valley	60	100%	3.8E-3	5E-3	6.9E-3	0.011	0.021	0.079	0.26	0.33	0.53	0.074	0.11
AMS 14	Anzac	58	100%	2.5E-3	2.5E-3	2.5E-3	5E-3	0.01	0.018	0.079	0.15	0.26	0.029	0.051



Particulate Matter (PM2.5 IONS) - Sulphate (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.058	0.073	0.11	0.22	0.65	1.2	1.9	3.4	4.1	0.89	0.95
AMS 6	Patricia McInnes	60	100%	0.041	0.084	0.15	0.3	0.49	0.8	1.5	2.5	5.7	0.76	0.88
AMS 7	Athabasca Valley	61	100%	0.061	0.13	0.22	0.34	0.46	0.78	1.4	1.8	5.1	0.7	0.73
AMS 14	Anzac	58	100%	0.049	0.088	0.17	0.27	0.44	0.63	1.2	1.4	2.1	0.55	0.42



REVISIONS

Station Name		**Travel Blank**	
Station #			
Sample Date		**22-Oct**	
Particulate Size			
Total Air Volume (m^3)		**24**	
Compound Name	**MDL (µg/sample)**	**Results (µg/m^3)**	**QC Flag**
Particulate Matter	1.00	-9999	M1
Calcium	0.16	-9999	M1
Magnesium	0.03	-9999	M1
Potassium	0.09	-9999	M1
Sodium	0.05	-9999	M1
Chloride	0.12	-9999	M1
Fluoride	0.15	-9999	M1
Nitrate	0.20	-9999	M1
Sulphate	0.25	-9999	M1
Phosphate	0.26	-9999	M1
Ammonium (as N)	0.02	-9999	M1

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER (PM_{10}) - IONS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

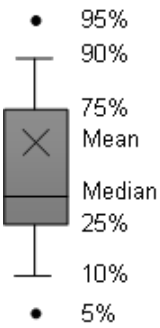
LABORATORY ANALYSIS BY:

PM ions: Atmospheric Research & Analysis, Inc.
Morrisville, NC

FILE CONTENTS DESCRIPTION	Partisol Sampler Measurements of Mass, Ions by IC and Metals by ICP-MS
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection values (MDL.) are provided with each observation
UNITS	µg/m^3 (microgram per cubic meter)
OBSERVATION TYPE	Particles
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Filtration with PM_{10} Inlet for PM_{10} and with PM_{10} Inlet/Very Sharp Cut Cyclone for $PM_{2.5}$
PARTICLE DIAMETER	< 2.5 µm or < 10 µm
MEDIUM	47 mm Teflon Filter
ANALYTICALMETHODS	MASS by Microbalance
	ELEMENTS by Inductively Coupled Plasma Mass Spectrometry (ICP/MS)
	IONS by Ion Chromatography (IC)
SAMPLE PREPARATION	DI Water extraction for IC analysis and Acid Digestion for ICP/MS Analysis
ANALYTICAL LABORATORY	Atmospheric Research & Analysis Inc
USER NOTE 1	Data are not blank corrected
USER NOTE 2	Volume is given at actual conditions of temperature and pressure during sampling as measured by the sampler
USER NOTE 3	Blank sample concentration (µg/m^3) is calculated using expected actual volume of sampler
VOLUME STANDARDIZATION	Actual Volume at Ambient Conditions (since 01-Jan-2011)
SAMPLING INSTRUMENT TYPE	For PM_{10} FRM Partisol PM_{10} sampler
	For $PM_{2.5}$ FRM Partisol $PM_{2.5}$ sampler

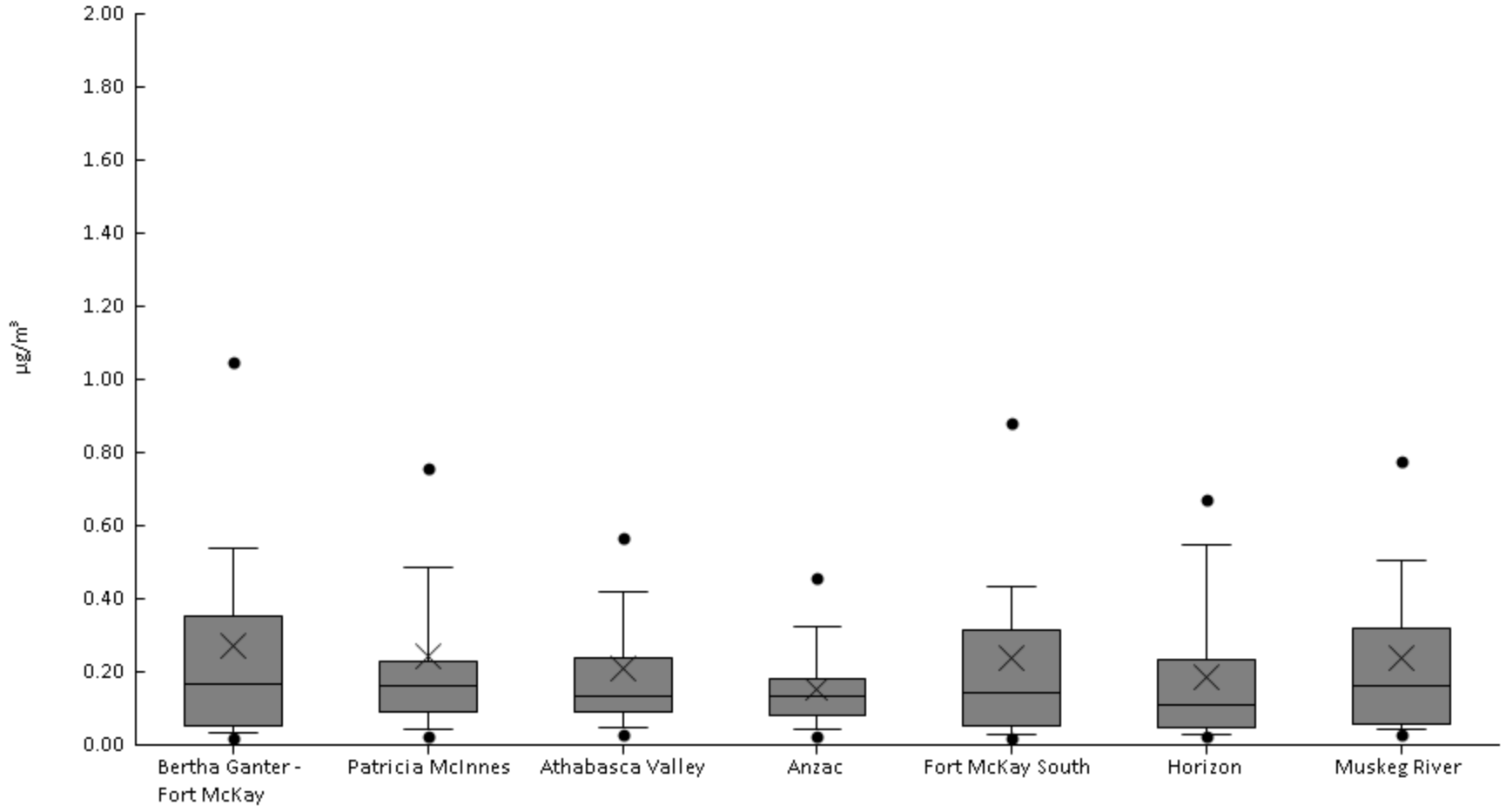
FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



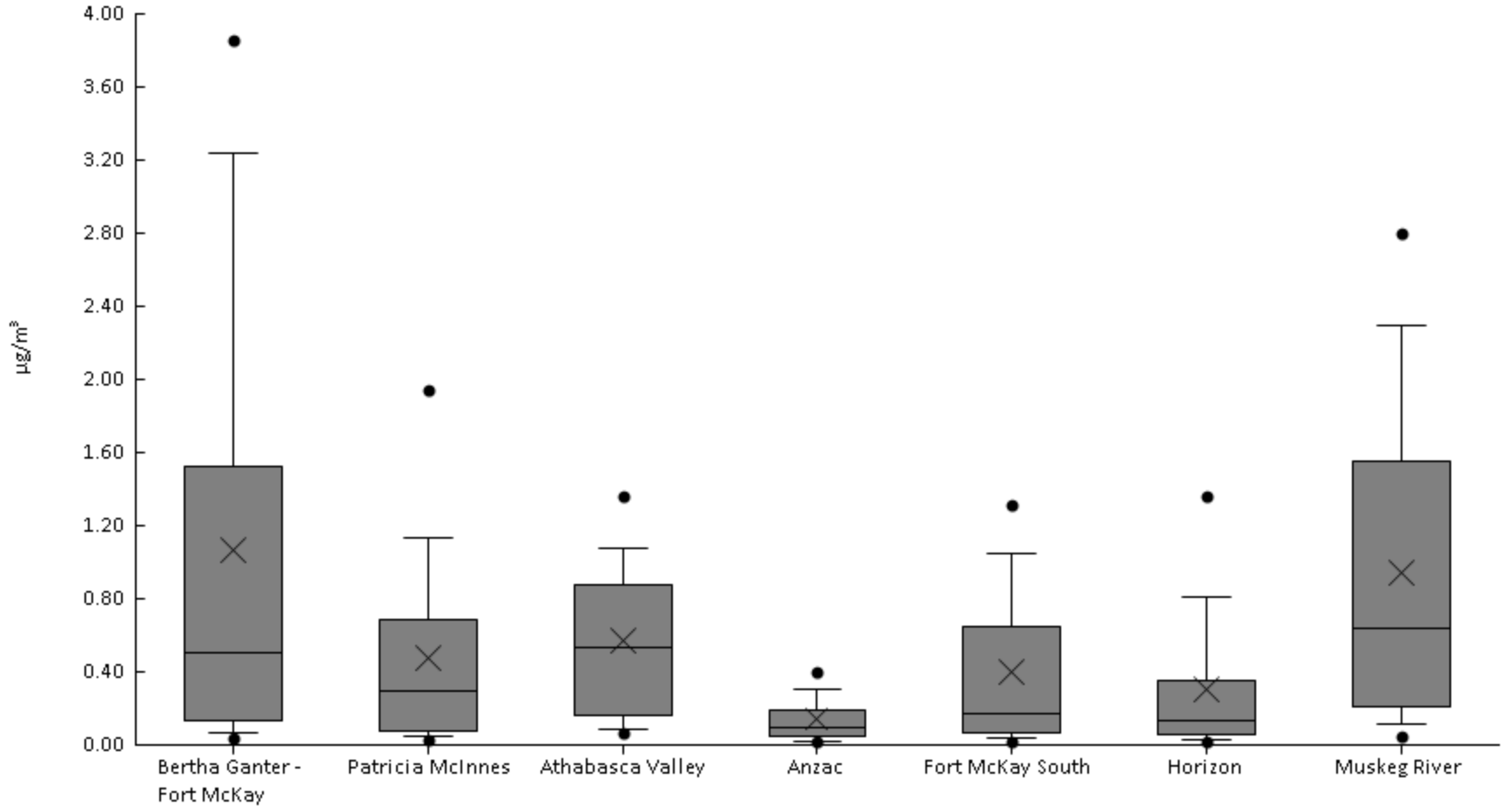
Particulate Matter (PM10 IONS) - Ammonium (as N) (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.011	0.021	0.031	0.054	0.17	0.35	0.54	1	1.7	0.27	0.33
AMS 6	Patricia McInnes	60	100%	0.015	0.024	0.043	0.088	0.16	0.23	0.49	0.76	2	0.24	0.31
AMS 7	Athabasca Valley	61	100%	0.017	0.029	0.049	0.091	0.13	0.24	0.42	0.57	1.6	0.21	0.24
AMS 14	Anzac	60	100%	0.017	0.025	0.044	0.08	0.13	0.18	0.32	0.46	0.6	0.15	0.12
AMS 13	Fort McKay South	59	100%	0.018	0.02	0.03	0.051	0.14	0.32	0.44	0.88	1.6	0.24	0.3
AMS 15	Horizon	59	100%	0.017	0.023	0.028	0.05	0.11	0.23	0.55	0.67	0.78	0.19	0.2
AMS 16	Muskeg River	58	100%	0.013	0.03	0.041	0.059	0.16	0.32	0.5	0.77	1.7	0.24	0.28



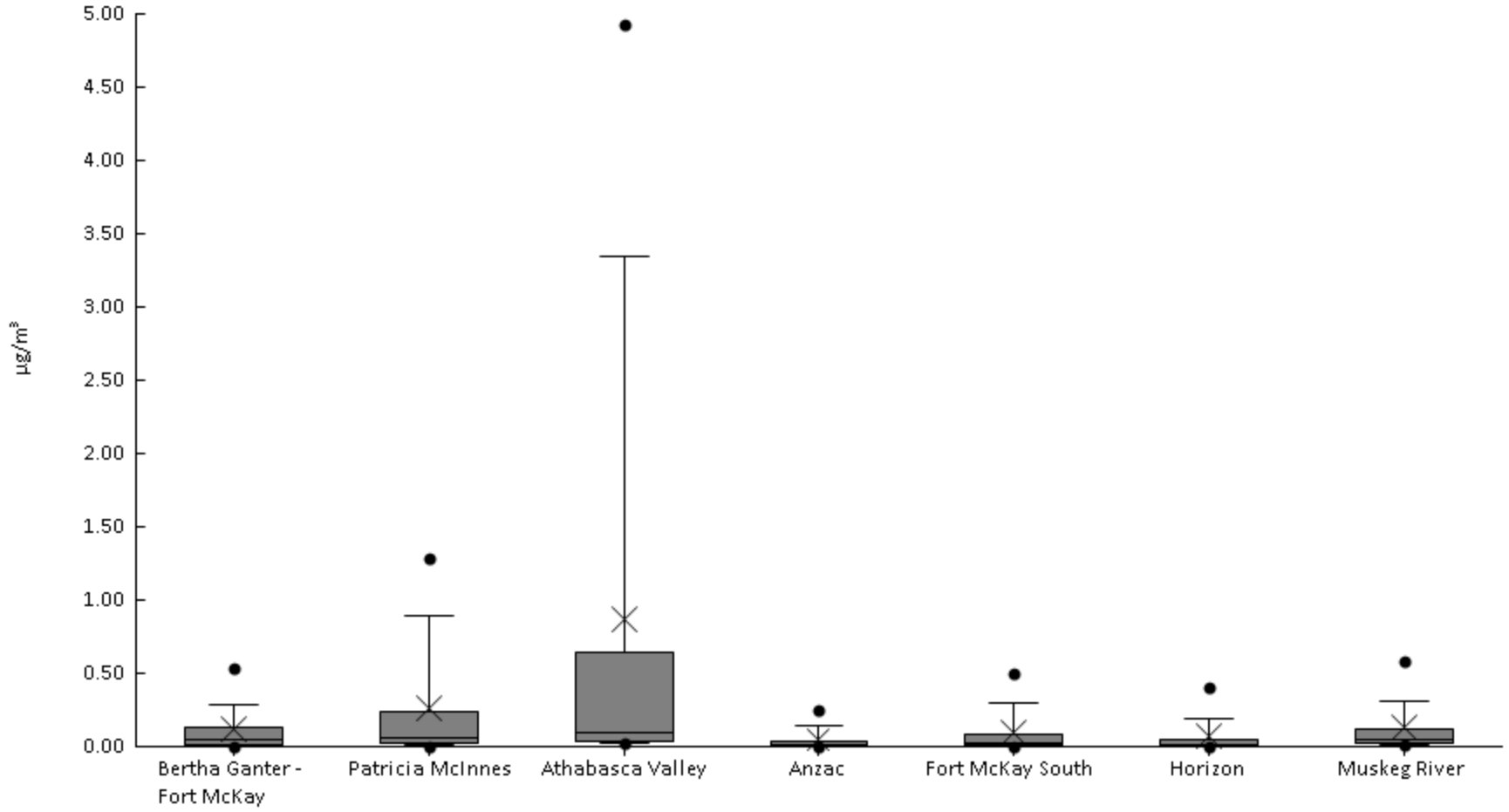
Particulate Matter (PM10 IONS) - Calcium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.024	0.037	0.067	0.14	0.5	1.5	3.2	3.9	4.6	1.1	1.2
AMS 6	Patricia McInnes	60	100%	0.015	0.031	0.048	0.076	0.3	0.69	1.1	1.9	2.8	0.48	0.59
AMS 7	Athabasca Valley	61	100%	0.05	0.069	0.081	0.17	0.53	0.88	1.1	1.4	2.1	0.57	0.46
AMS 14	Anzac	60	100%	0.013	0.019	0.023	0.044	0.094	0.19	0.31	0.4	0.68	0.14	0.14
AMS 13	Fort McKay South	59	100%	0.016	0.024	0.041	0.068	0.17	0.65	1.1	1.3	1.4	0.4	0.42
AMS 15	Horizon	59	100%	0.018	0.021	0.033	0.057	0.14	0.35	0.81	1.4	1.7	0.3	0.39
AMS 16	Muskeg River	58	100%	0.025	0.052	0.11	0.21	0.64	1.6	2.3	2.8	2.9	0.94	0.85



Particulate Matter (PM10 IONS) - Chloride (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	93%	0	0	6.5E-3	0.016	0.046	0.13	0.28	0.54	0.76	0.11	0.16
AMS 6	Patricia McInnes	60	98%	0	5.6E-3	0.01	0.021	0.063	0.24	0.89	1.3	2.7	0.26	0.49
AMS 7	Athabasca Valley	61	100%	8.8E-3	0.018	0.022	0.033	0.096	0.65	3.3	4.9	7.4	0.87	1.7
AMS 14	Anzac	60	88%	0	0	0	5.1E-3	0.014	0.03	0.14	0.25	0.81	0.049	0.12
AMS 13	Fort McKay South	59	90%	0	0	2.5E-3	0.011	0.024	0.079	0.3	0.5	0.66	0.089	0.15
AMS 15	Horizon	59	92%	0	0	5E-3	7.8E-3	0.018	0.05	0.19	0.41	0.62	0.067	0.13
AMS 16	Muskeg River	58	98%	0	6.3E-3	0.011	0.02	0.049	0.12	0.31	0.59	1.2	0.13	0.22



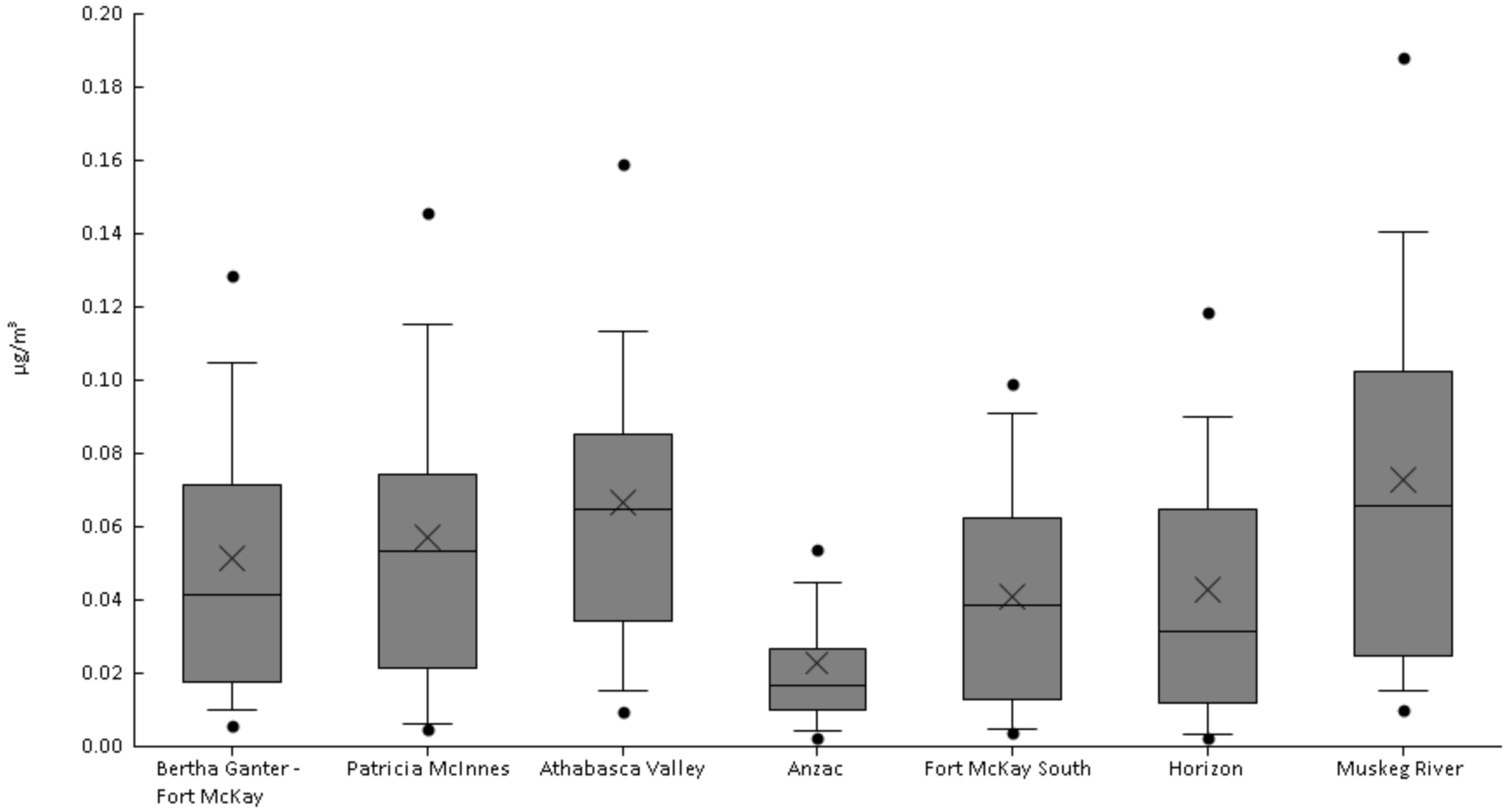
WBEA

Particulate Matter (PM10 IONS) - Fluoride (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	23%	0	0	0	0	0	0	0.011	0.014	0.016	2.4E-3	4.7E-3
AMS 6	Patricia McInnes	59	22%	0	0	0	0	0	0	9.5E-3	0.012	0.014	2.2E-3	4.2E-3
AMS 7	Athabasca Valley	61	26%	0	0	0	0	0	6.3E-3	0.011	0.015	0.025	2.8E-3	5.4E-3
AMS 14	Anzac	60	17%	0	0	0	0	0	0	6.3E-3	8.1E-3	0.028	1.5E-3	4.3E-3
AMS 13	Fort McKay South	59	20%	0	0	0	0	0	0	0.01	0.01	0.015	2E-3	4.1E-3
AMS 15	Horizon	59	17%	0	0	0	0	0	0	7.5E-3	0.011	0.013	1.5E-3	3.5E-3
AMS 16	Muskeg River	58	14%	0	0	0	0	0	0	8.4E-3	0.011	0.02	1.5E-3	4E-3

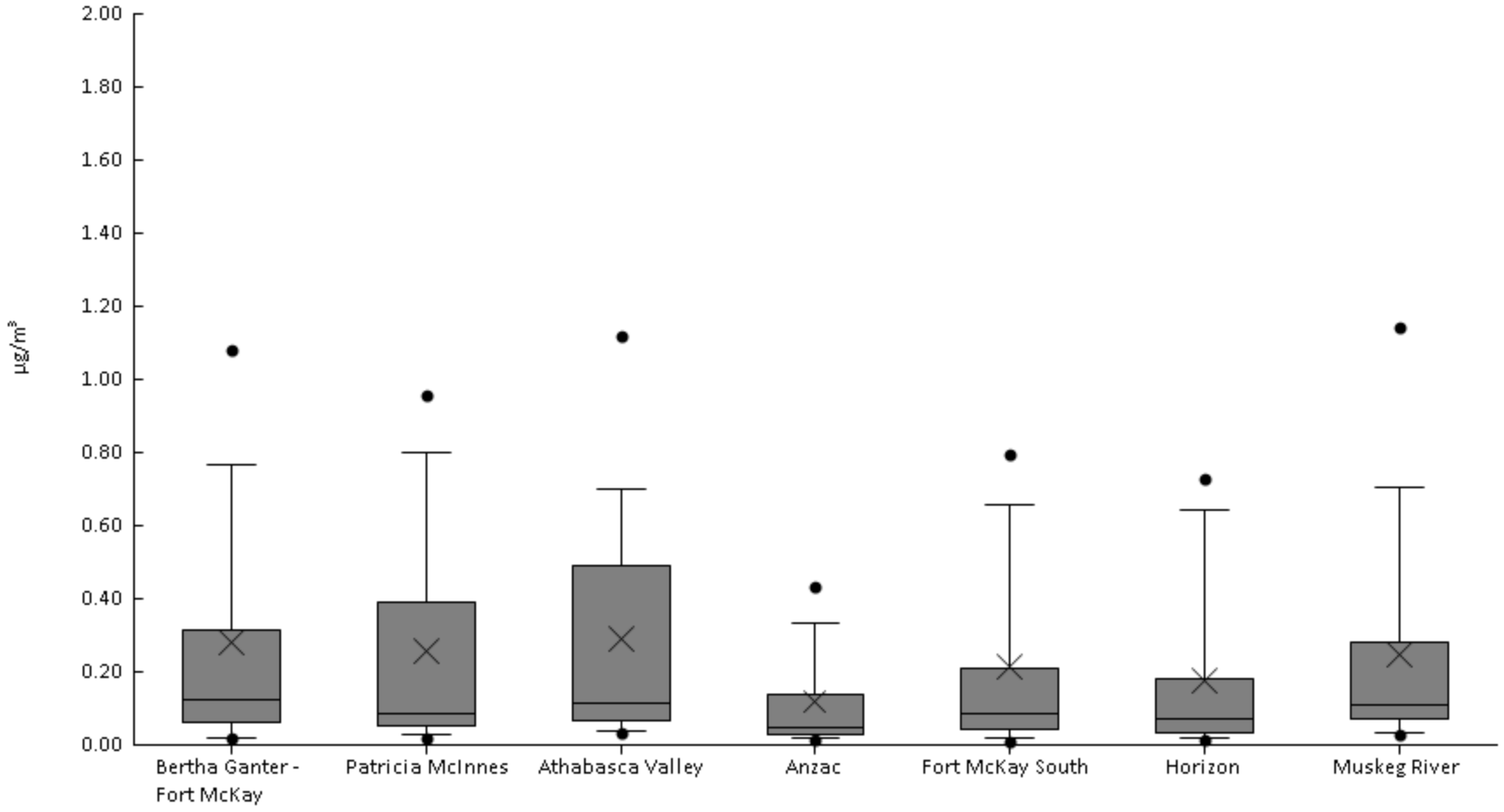
Particulate Matter (PM10 IONS) - Magnesium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	2.5E-3	5.7E-3	0.01	0.018	0.041	0.072	0.11	0.13	0.22	0.051	0.043
AMS 6	Patricia McInnes	60	100%	2.5E-3	5E-3	6.3E-3	0.021	0.053	0.074	0.12	0.15	0.22	0.057	0.046
AMS 7	Athabasca Valley	61	100%	7.5E-3	9.4E-3	0.015	0.034	0.065	0.085	0.11	0.16	0.21	0.066	0.043
AMS 14	Anzac	60	100%	2.5E-3	2.5E-3	4.4E-3	0.01	0.017	0.027	0.045	0.054	0.14	0.023	0.022
AMS 13	Fort McKay South	59	100%	2.5E-3	3.8E-3	5E-3	0.013	0.039	0.062	0.091	0.099	0.17	0.041	0.034
AMS 15	Horizon	59	100%	1.3E-3	2.5E-3	3.5E-3	0.012	0.031	0.065	0.09	0.12	0.21	0.043	0.04
AMS 16	Muskeg River	58	100%	3.8E-3	0.01	0.015	0.025	0.066	0.1	0.14	0.19	0.21	0.073	0.053



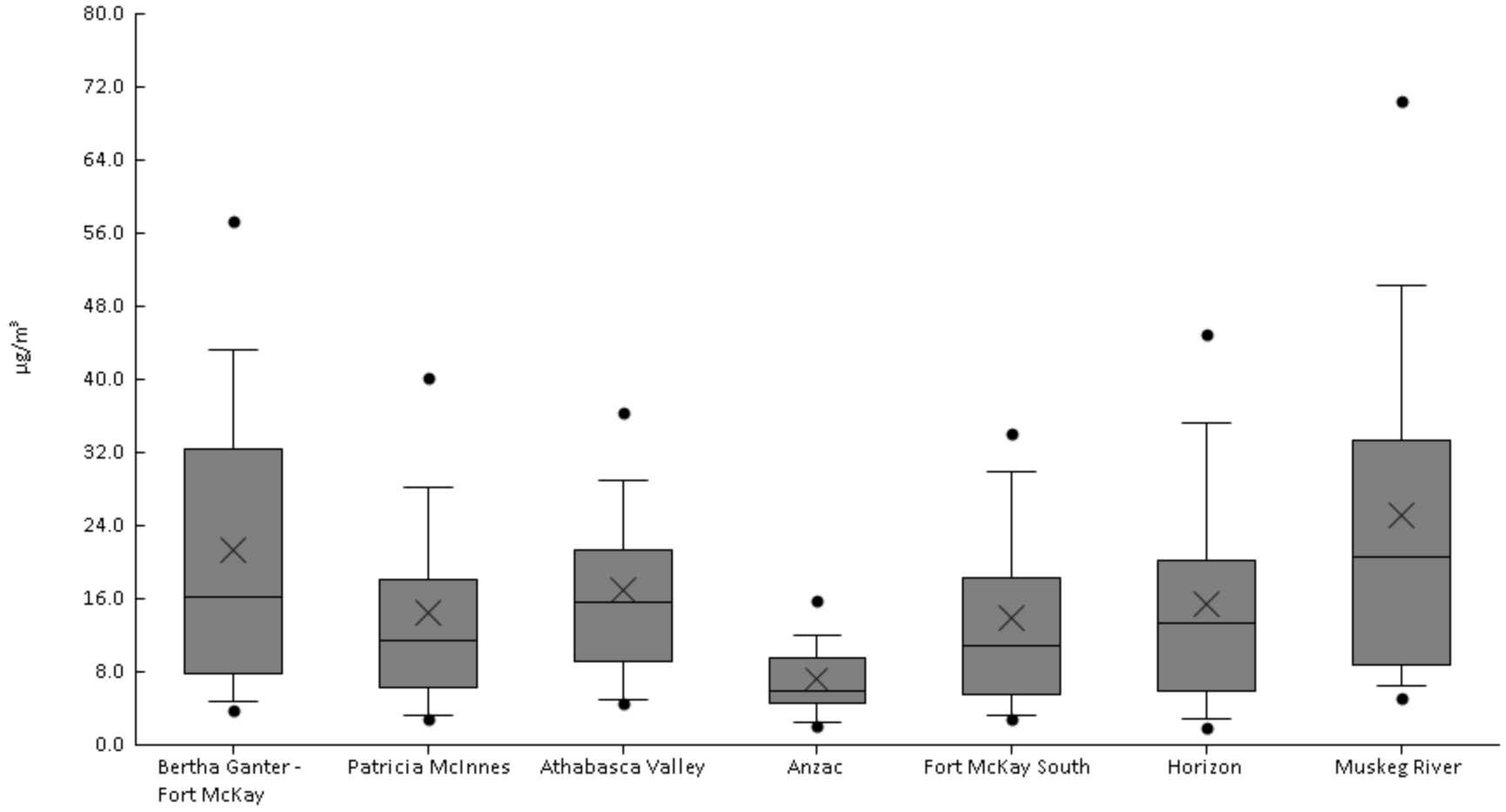
Particulate Matter (PM10 IONS) - Nitrate (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.016	0.018	0.02	0.063	0.12	0.31	0.77	1.1	2.3	0.28	0.42
AMS 6	Patricia McInnes	60	100%	0.013	0.02	0.026	0.051	0.086	0.39	0.8	0.96	1.9	0.26	0.37
AMS 7	Athabasca Valley	61	100%	0.016	0.033	0.039	0.065	0.12	0.49	0.7	1.1	1.5	0.29	0.34
AMS 14	Anzac	60	98%	0	0.013	0.019	0.028	0.046	0.14	0.33	0.44	0.7	0.12	0.16
AMS 13	Fort McKay South	59	97%	0	0.011	0.017	0.043	0.086	0.21	0.66	0.79	2.1	0.21	0.36
AMS 15	Horizon	59	98%	0	0.016	0.019	0.031	0.07	0.18	0.64	0.73	1.3	0.17	0.26
AMS 16	Muskeg River	58	100%	0.024	0.029	0.035	0.073	0.11	0.28	0.7	1.1	1.3	0.25	0.32



Particulate Matter (PM10 IONS) - Particulate Matter (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1.6	3.8	4.8	7.8	16	32	43	57	76	21	17
AMS 6	Patricia McInnes	60	100%	1.5	2.8	3.2	6.3	11	18	28	40	58	14	12
AMS 7	Athabasca Valley	61	100%	3.6	4.6	5	9.2	16	21	29	36	60	17	11
AMS 14	Anzac	60	100%	1.5	2	2.5	4.6	6	9.5	12	16	25	7.2	4.7
AMS 13	Fort McKay South	59	100%	2.4	2.8	3.2	5.4	11	18	30	34	51	14	11
AMS 15	Horizon	59	100%	0.92	1.9	2.9	5.9	13	20	35	45	58	15	13
AMS 16	Muskeg River	58	100%	3.9	5.2	6.5	8.7	21	33	50	70	86	25	20

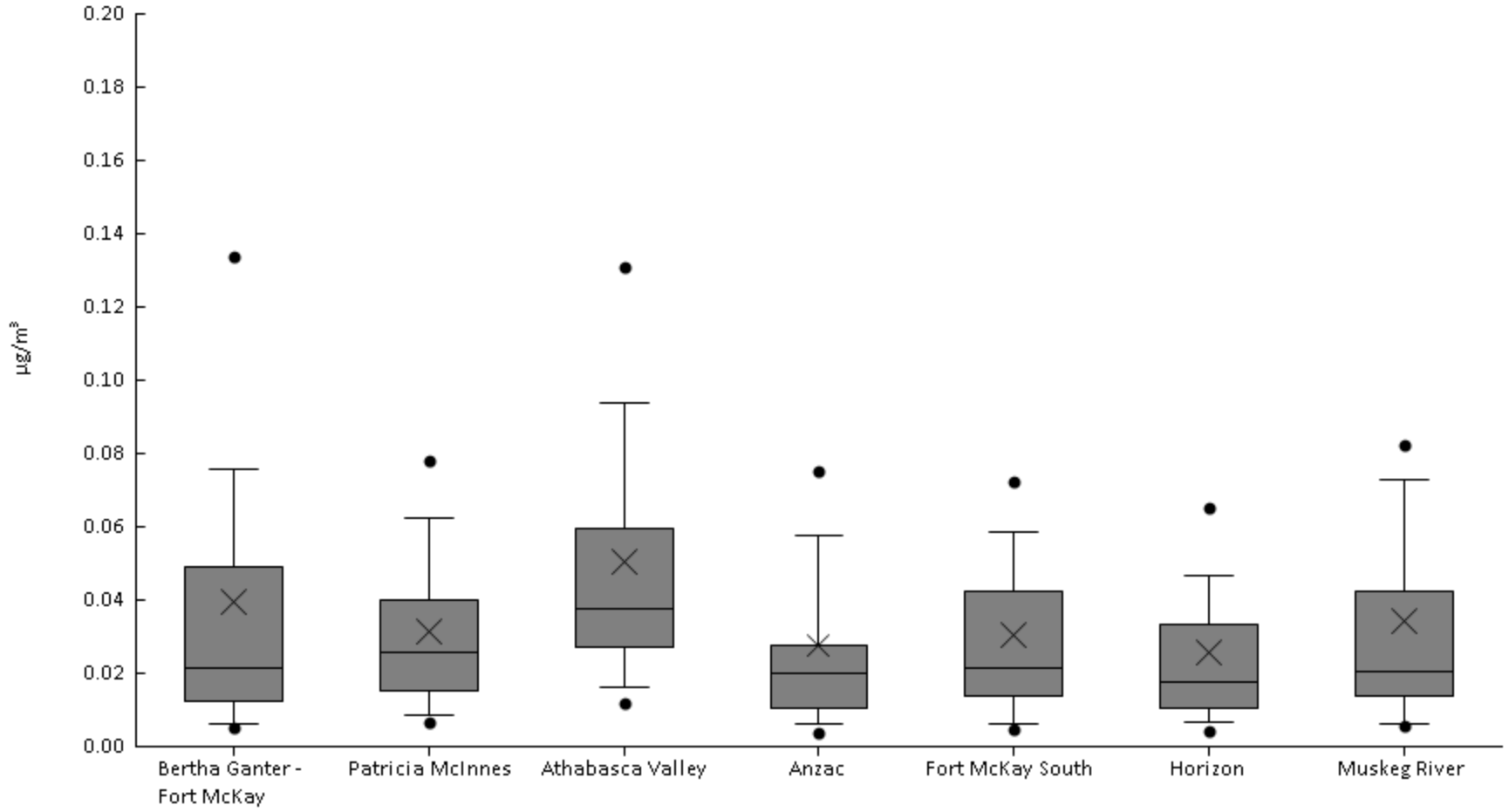


Particulate Matter (PM10 IONS) - Phosphate (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 6	Patricia McInnes	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 7	Athabasca Valley	61	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 14	Anzac	60	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 13	Fort McKay South	59	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 15	Horizon	59	0%	0	0	0	0	0	0	0	0	0	0	0
AMS 16	Muskeg River	58	0%	0	0	0	0	0	0	0	0	0	0	0

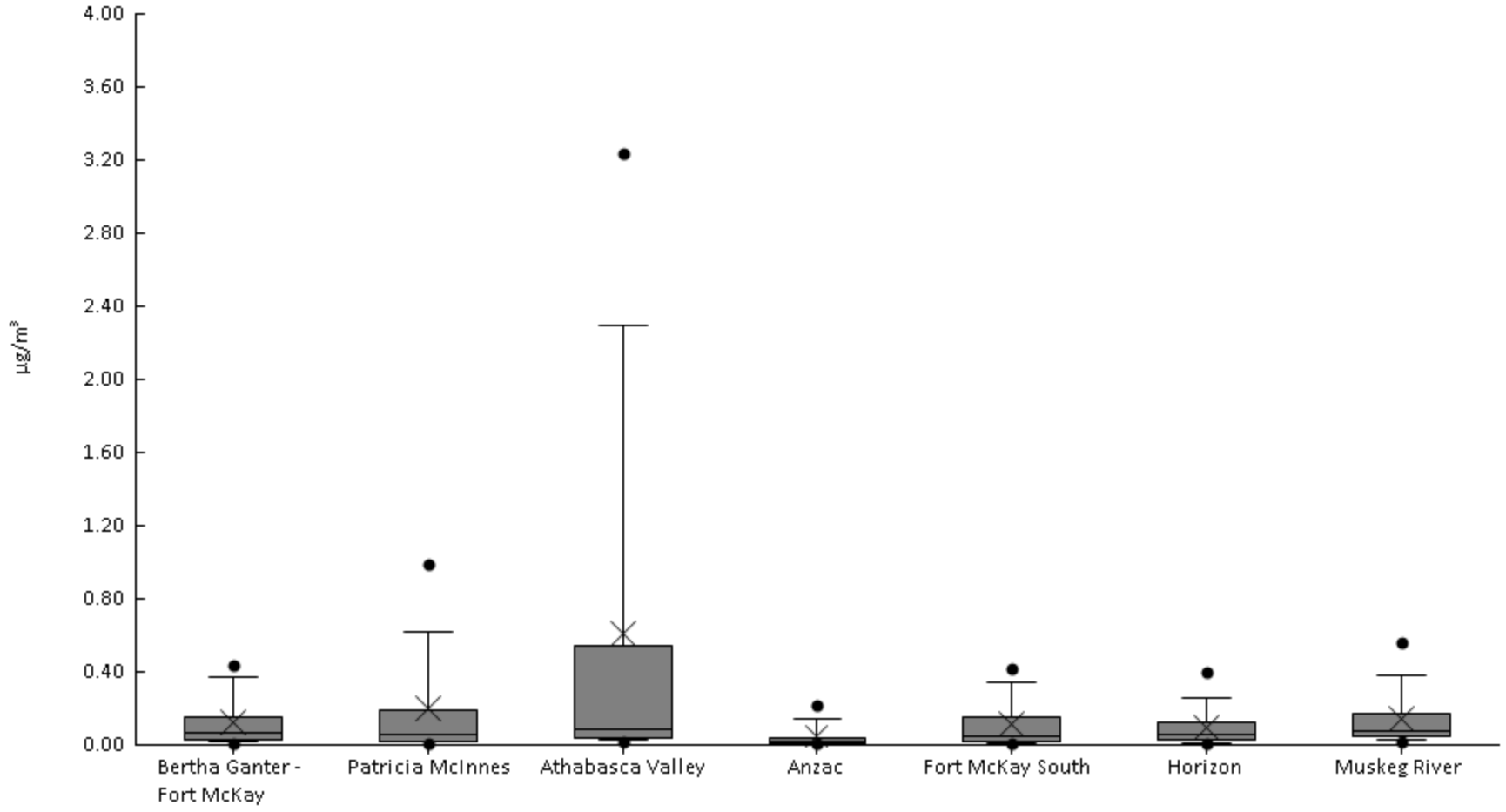
Particulate Matter (PM10 IONS) - Potassium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	98%	0	5.1E-3	6.3E-3	0.013	0.021	0.049	0.076	0.13	0.29	0.04	0.049
AMS 6	Patricia McInnes	60	100%	3.8E-3	6.9E-3	8.8E-3	0.015	0.026	0.04	0.063	0.078	0.13	0.032	0.024
AMS 7	Athabasca Valley	61	100%	5E-3	0.012	0.016	0.027	0.038	0.059	0.094	0.13	0.23	0.051	0.043
AMS 14	Anzac	60	98%	0	3.8E-3	6.3E-3	0.011	0.02	0.028	0.057	0.075	0.15	0.027	0.027
AMS 13	Fort McKay South	59	100%	3.8E-3	5E-3	6.3E-3	0.014	0.021	0.042	0.059	0.073	0.17	0.03	0.029
AMS 15	Horizon	59	98%	0	4.3E-3	6.8E-3	0.01	0.018	0.033	0.047	0.065	0.15	0.026	0.025
AMS 16	Muskeg River	58	97%	0	5.5E-3	6.3E-3	0.014	0.021	0.043	0.073	0.082	0.23	0.034	0.037



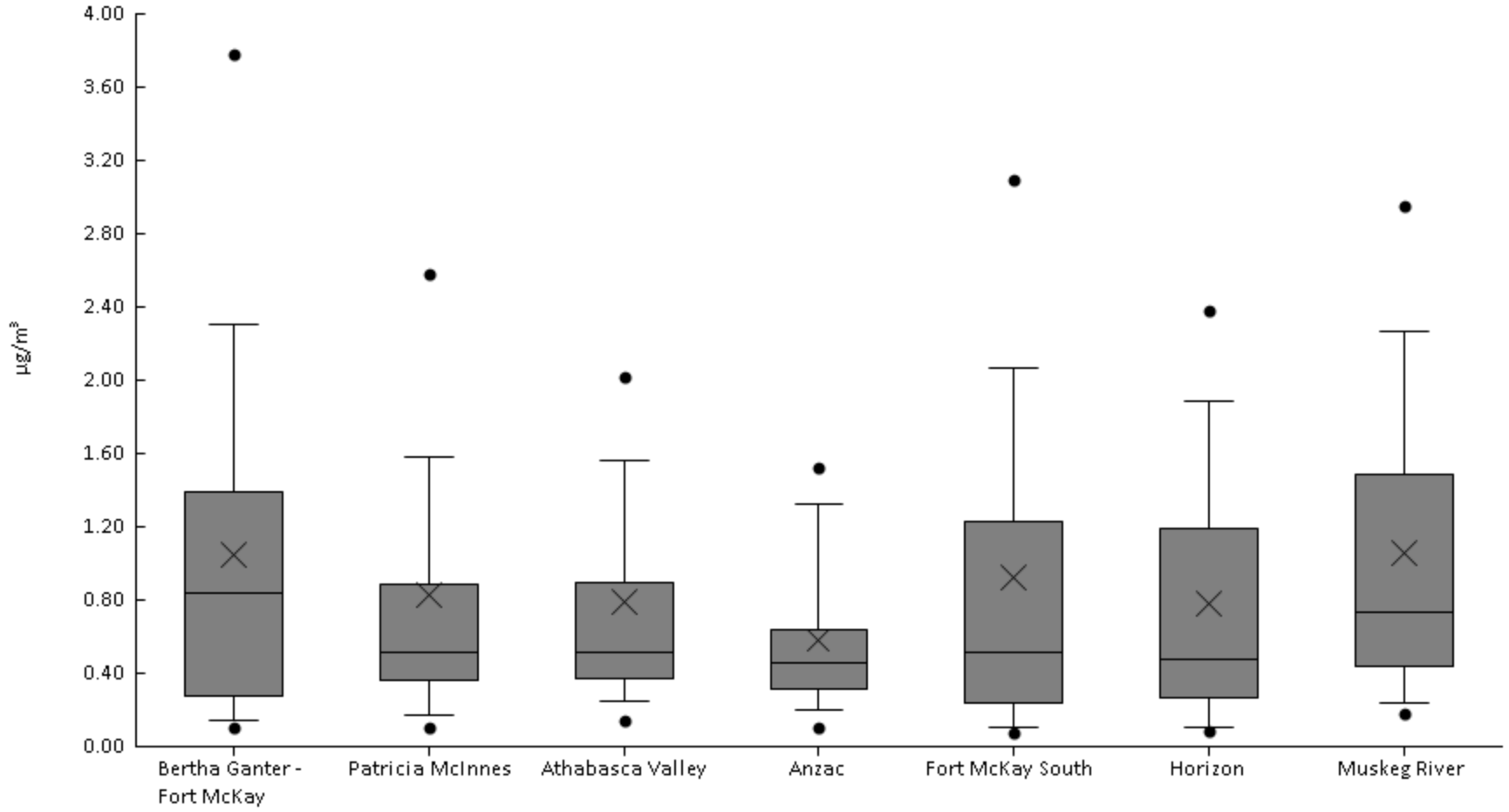
Particulate Matter (PM10 IONS) - Sodium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	5E-3	7.5E-3	0.015	0.029	0.071	0.15	0.37	0.43	0.56	0.12	0.14
AMS 6	Patricia McInnes	60	100%	6.3E-3	0.011	0.015	0.021	0.061	0.2	0.62	1	1.9	0.2	0.34
AMS 7	Athabasca Valley	61	100%	6.3E-3	0.021	0.029	0.041	0.085	0.54	2.3	3.2	4.8	0.61	1.1
AMS 14	Anzac	60	100%	3.8E-3	5E-3	6.3E-3	0.012	0.02	0.041	0.14	0.22	0.55	0.051	0.087
AMS 13	Fort McKay South	59	100%	3.8E-3	6.3E-3	0.012	0.022	0.051	0.15	0.34	0.42	0.53	0.11	0.13
AMS 15	Horizon	59	100%	3.8E-3	5.6E-3	0.014	0.027	0.055	0.12	0.26	0.4	0.46	0.097	0.11
AMS 16	Muskeg River	58	100%	7.5E-3	0.021	0.028	0.044	0.075	0.17	0.38	0.56	0.84	0.15	0.17



Particulate Matter (PM10 IONS) - Sulphate (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.071	0.11	0.14	0.28	0.84	1.4	2.3	3.8	4.3	1	1
AMS 6	Patricia McInnes	60	100%	0.084	0.11	0.17	0.36	0.51	0.88	1.6	2.6	6.1	0.83	0.93
AMS 7	Athabasca Valley	61	100%	0.091	0.14	0.24	0.37	0.51	0.9	1.6	2	5.5	0.79	0.8
AMS 14	Anzac	60	100%	0.061	0.1	0.2	0.31	0.46	0.64	1.3	1.5	2.1	0.58	0.43
AMS 13	Fort McKay South	59	100%	0.058	0.073	0.11	0.24	0.52	1.2	2.1	3.1	4.1	0.92	0.92
AMS 15	Horizon	59	100%	0.075	0.087	0.11	0.27	0.48	1.2	1.9	2.4	2.9	0.78	0.7
AMS 16	Muskeg River	58	100%	0.14	0.19	0.24	0.44	0.74	1.5	2.3	2.9	4.8	1.1	0.91



REVISIONS

Station Name		Fort McKay South		Travel Blank	
Station #		AMS 13			
Sample Date		13-Apr		13-Apr	
Particulate Size		PM10		PM10	
Total Air Volume (m^3)		20.8		24	
Compound Name	MDL (µg/sample)	Results (µg/m^3)	QC Flag	Results (µg/m^3)	QC Flag
Particulate Matter	1.00	16.16	V6	0.17	V0
Calcium	0.16	0.96	V6	0.00	V1
Magnesium	0.03	0.05	V6	0.00	V1
Potassium	0.09	0.02	V6	0.00	V1
Sodium	0.05	0.06	V6	0.00	V1
Chloride	0.12	0.03	V6	0.00	V1
Fluoride	0.15	0.00	V6	0.00	V1
Nitrate	0.20	0.09	V6	0.00	V1
Sulphate	0.25	0.80	V6	0.00	V1
Phosphate	0.26	0.00	V6	0.00	V1
Ammonium (as N)	0.02	0.14	V6	0.00	V0

Station Name		Patricia McInnes		Travel Blank	
Station #		AMS 6			
Sample Date		06-Jul		06-Jul	
Particulate Size		PM10		PM10	
Total Air Volume (m^3)		15.2		24	
Compound Name	MDL (µg/sample)	Results (µg/m^3)	QC Flag	Results (µg/m^3)	QC Flag
Particulate Matter	1.00	25.05	V6	0.13	V0
Calcium	0.16	1.66	V6	0.00	V1
Magnesium	0.03	0.22	V6	0.00	V1
Potassium	0.09	0.03	V6	0.00	V1
Sodium	0.05	0.14	V6	0.00	V1
Chloride	0.12	0.20	V6	0.00	V1
Fluoride	0.15	0.01	V6	0.00	V1
Nitrate	0.20	0.02	V6	0.00	V1
Sulphate	0.25	0.14	V6	0.00	V1
Phosphate	0.26	0.00	V6	0.00	V1
Ammonium (as N)	0.02	0.02	V6	0.00	V1

Station Name		**Travel Blank**	
Station #			
Sample Date		**22-Oct**	
Particulate Size			
Total Air Volume (m^3)		**24**	
Compound Name	**MDL (µg/sample)**	**Results (µg/m^3)**	**QC Flag**
Particulate Matter	1.00	-9999	M1
Calcium	0.16	-9999	M1
Magnesium	0.03	-9999	M1
Potassium	0.09	-9999	M1
Sodium	0.05	-9999	M1
Chloride	0.12	-9999	M1
Fluoride	0.15	-9999	M1
Nitrate	0.20	-9999	M1
Sulphate	0.25	-9999	M1
Phosphate	0.26	-9999	M1
Ammonium (as N)	0.02	-9999	M1

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER - METALS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS BY:

PM metals: Atmospheric Research & Analysis, Inc.
Morrisville, NC

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER ($PM_{2.5}$) - METALS DATA SUMMARY 2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

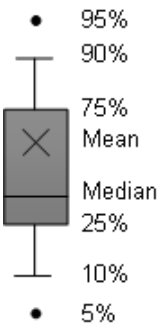
LABORATORY ANALYSIS BY:

PM metals: Atmospheric Research & Analysis, Inc.
Morrisville, NC

FILE CONTENTS DESCRIPTION	Partisol Sampler Measurements of Mass, Ions by IC and Metals by ICP-MS
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection values (MDL.) are provided with each observation
UNITS	µg/m^3 (microgram per cubic meter)
OBSERVATION TYPE	Particles
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Filtration with PM_{10} Inlet for PM_{10} and with PM_{10} Inlet/Very Sharp Cut Cyclone for $PM_{2.5}$
PARTICLE DIAMETER	< 2.5 µm or < 10 µm
MEDIUM	47 mm Teflon Filter
ANALYTICALMETHODS	MASS by Microbalance
	ELEMENTS by Inductively Coupled Plasma Mass Spectrometry (ICP/MS)
	IONS by Ion Chromatography (IC)
SAMPLE PREPARATION	DI Water extraction for IC analysis and Acid Digestion for ICP/MS Analysis
ANALYTICAL LABORATORY	Atmospheric Research & Analysis Inc
USER NOTE 1	Data are not blank corrected
USER NOTE 2	Volume is given at actual conditions of temperature and pressure during sampling as measured by the sampler
USER NOTE 3	Blank sample concentration (µg/m^3) is calculated using expected actual volume of sampler
VOLUME STANDARDIZATION	Actual Volume at Ambient Conditions (since 01-Jan-2011)
SAMPLING INSTRUMENT TYPE	For PM_{10} FRM Partisol PM_{10} sampler
	For $PM_{2.5}$ FRM Partisol $PM_{2.5}$ sampler

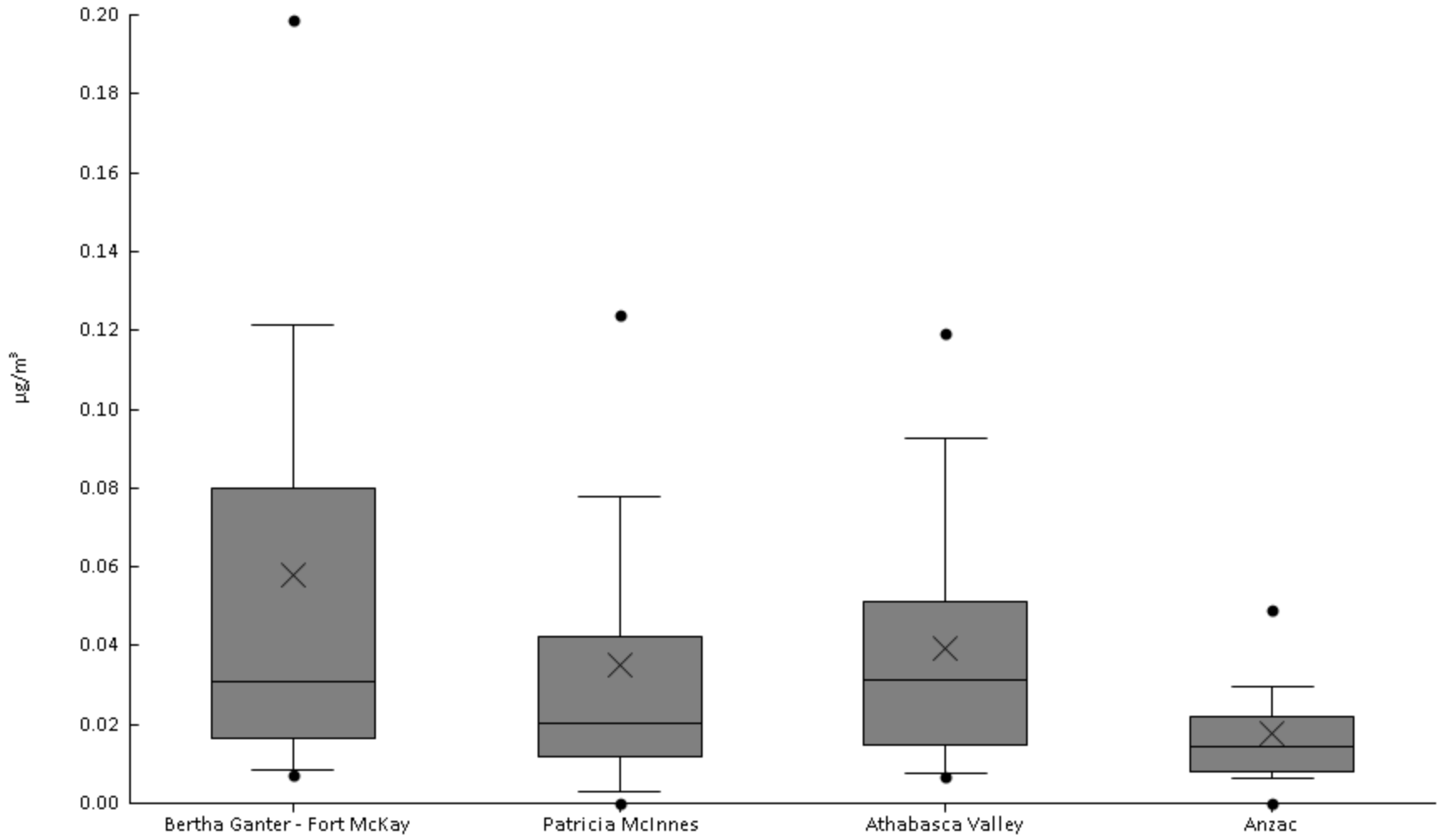
FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



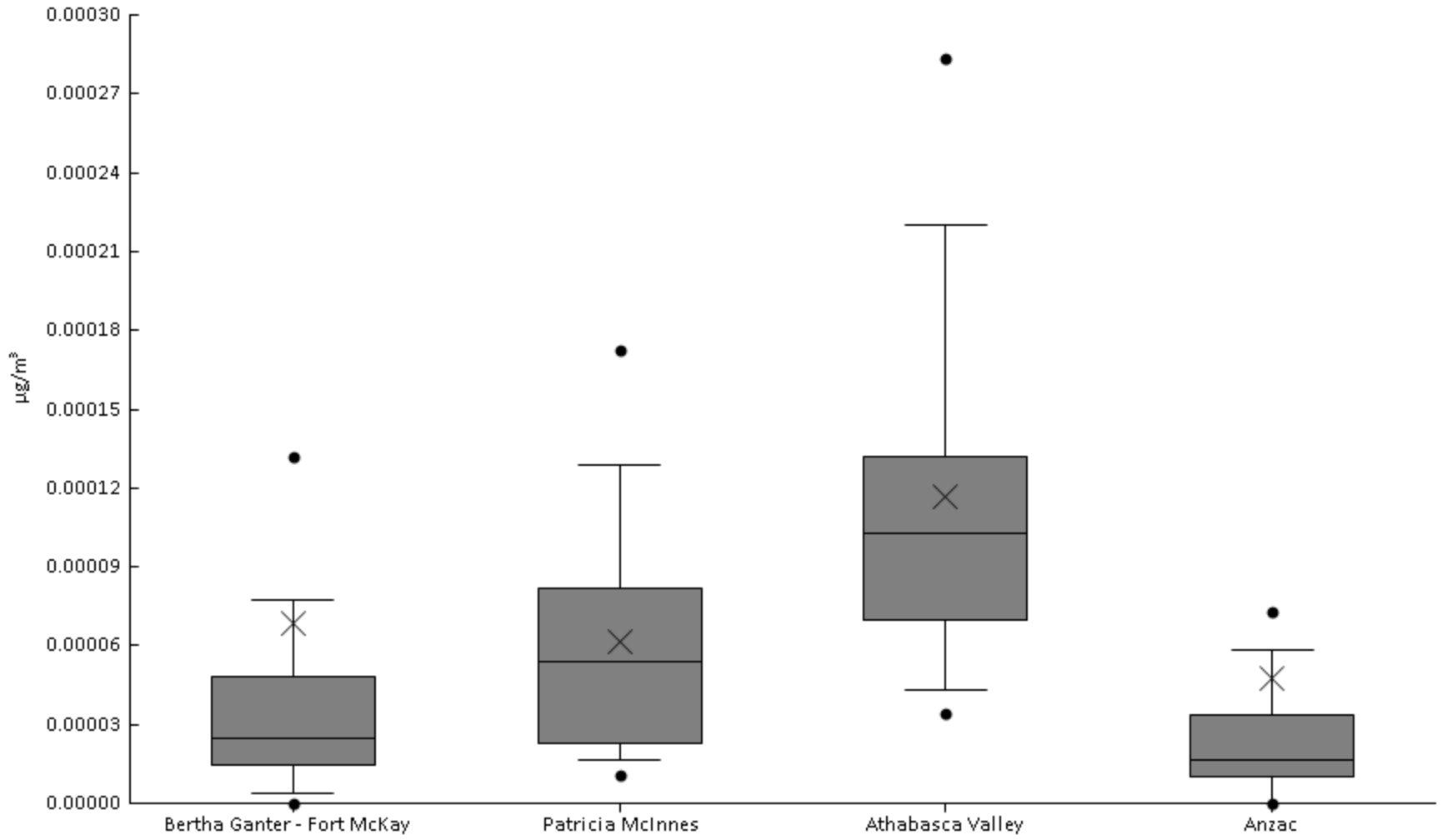
Particulate Matter (PM2.5 METALS) - Aluminum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	97%	0	7.2E-3	8.4E-3	0.016	0.031	0.08	0.12	0.2	0.39	0.058	0.066
AMS 6	Patricia McInnes	60	90%	0	0	3E-3	0.012	0.02	0.042	0.078	0.12	0.23	0.035	0.045
AMS 7	Athabasca Valley	61	97%	0	6.7E-3	7.5E-3	0.015	0.031	0.051	0.093	0.12	0.17	0.039	0.036
AMS 14	Anzac	57	93%	0	0	6.3E-3	7.9E-3	0.014	0.022	0.03	0.049	0.083	0.018	0.015



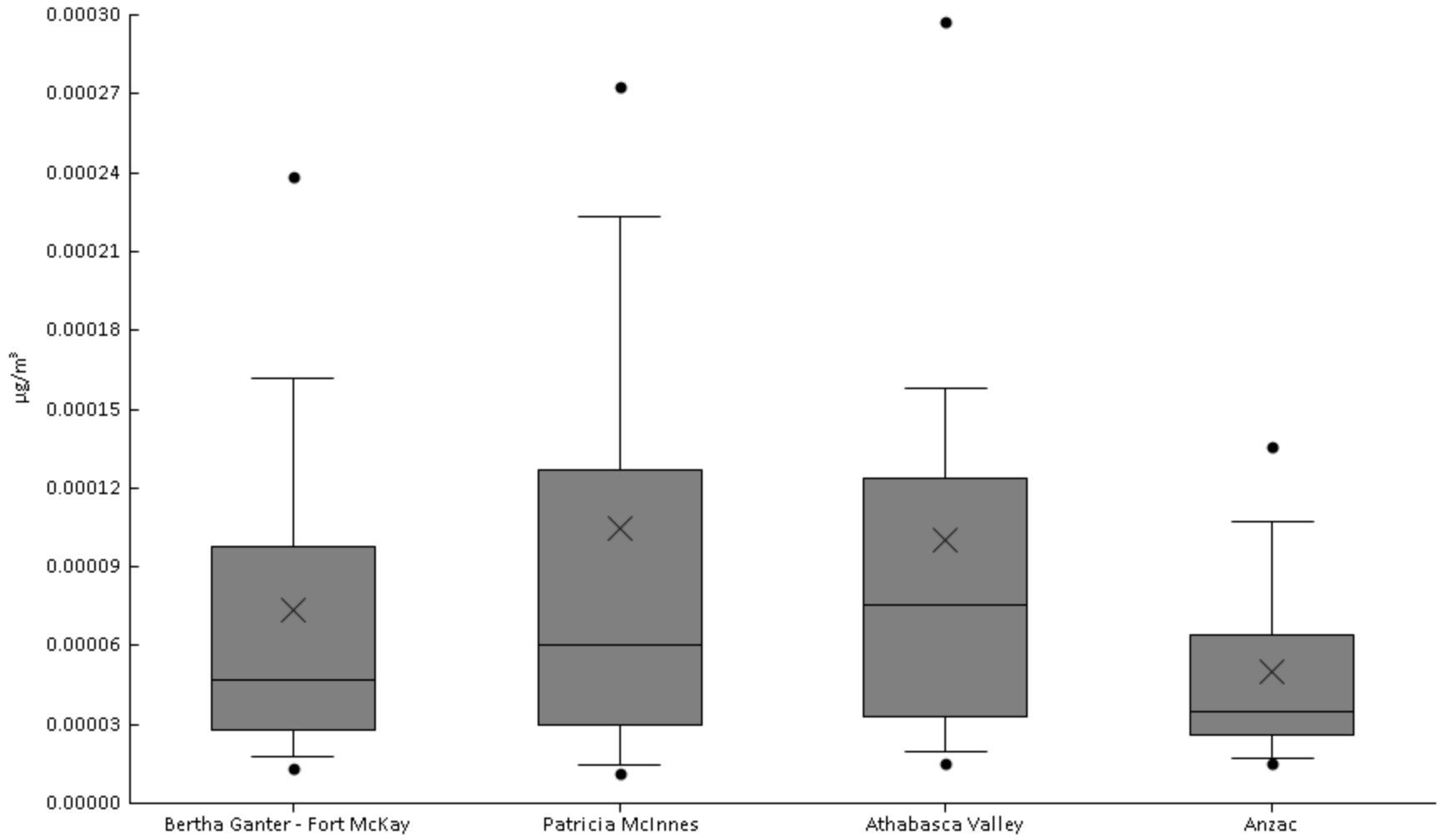
Particulate Matter (PM2.5 METALS) - Antimony (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	90%	0	0	3.8E-6	1.5E-5	2.5E-5	4.8E-5	7.7E-5	1.3E-4	2.1E-3	6.9E-5	2.7E-4
AMS 6	Patricia McInnes	60	98%	0	1.1E-5	1.6E-5	2.3E-5	5.4E-5	8.2E-5	1.3E-4	1.7E-4	1.9E-4	6.1E-5	4.7E-5
AMS 7	Athabasca Valley	61	100%	1.6E-5	3.4E-5	4.3E-5	7E-5	1E-4	1.3E-4	2.2E-4	2.8E-4	4E-4	1.2E-4	7.3E-5
AMS 14	Anzac	57	82%	0	0	0	1E-5	1.6E-5	3.4E-5	5.8E-5	7.3E-5	1.5E-3	4.7E-5	1.9E-4



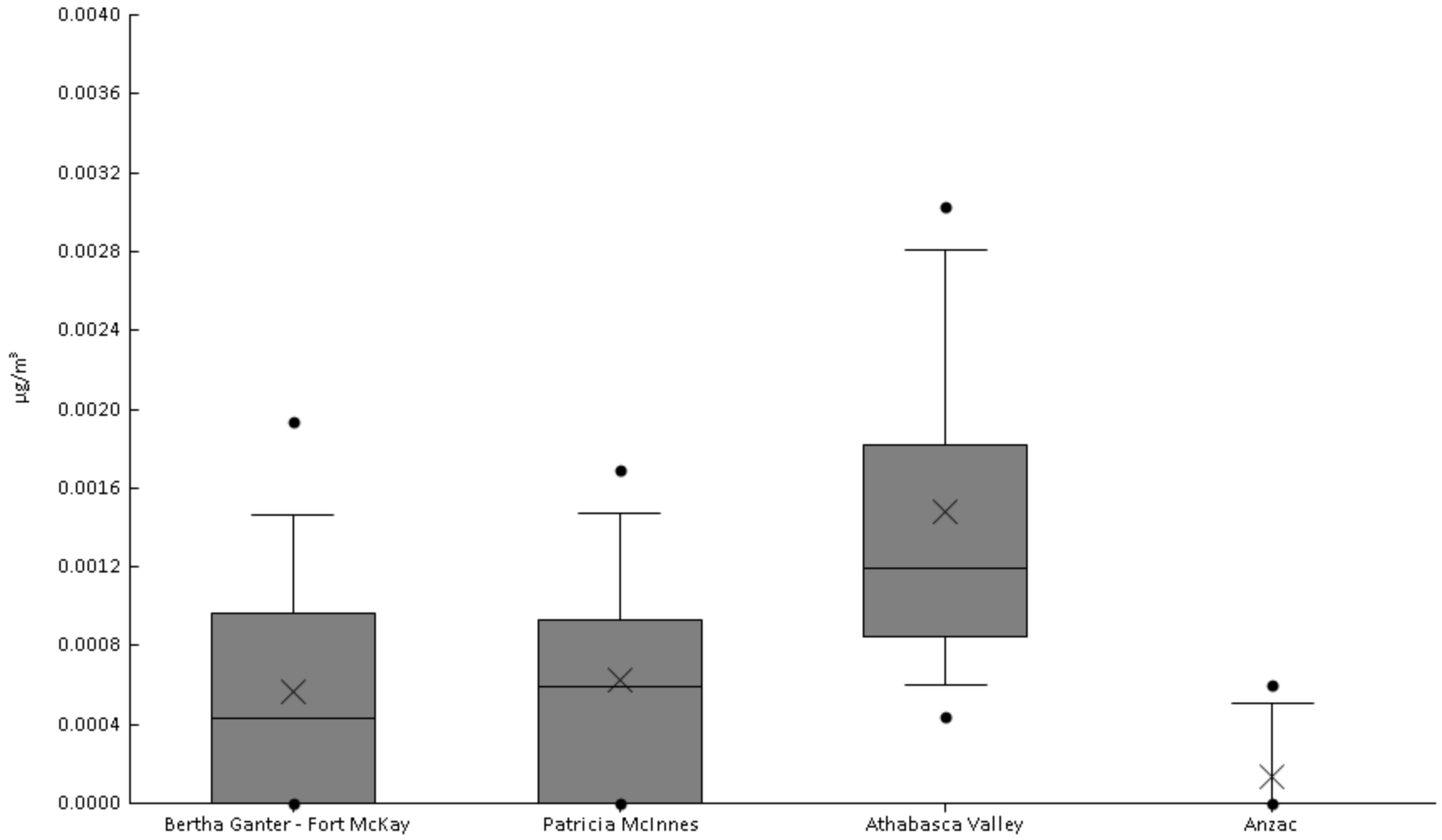
Particulate Matter (PM2.5 METALS) - Arsenic (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	6.1E-6	1.4E-5	1.8E-5	2.8E-5	4.7E-5	9.8E-5	1.6E-4	2.4E-4	3.8E-4	7.3E-5	7.4E-5
AMS 6	Patricia McInnes	60	100%	7.2E-6	1.1E-5	1.5E-5	3E-5	6E-5	1.3E-4	2.2E-4	2.7E-4	8.7E-4	1E-4	1.4E-4
AMS 7	Athabasca Valley	61	100%	1.3E-5	1.5E-5	1.9E-5	3.3E-5	7.6E-5	1.2E-4	1.6E-4	3E-4	9.2E-4	1E-4	1.3E-4
AMS 14	Anzac	57	100%	1.2E-5	1.5E-5	1.7E-5	2.6E-5	3.5E-5	6.4E-5	1.1E-4	1.4E-4	1.8E-4	5E-5	3.8E-5



Particulate Matter (PM2.5 METALS) - Barium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	56%	0	0	0	0	4.3E-4	9.6E-4	1.5E-3	1.9E-3	3.4E-3	5.7E-4	7E-4
AMS 6	Patricia McInnes	60	68%	0	0	0	0	5.9E-4	9.3E-4	1.5E-3	1.7E-3	2.5E-3	6.2E-4	5.7E-4
AMS 7	Athabasca Valley	61	98%	0	4.4E-4	6E-4	8.5E-4	1.2E-3	1.8E-3	2.8E-3	3E-3	4.6E-3	1.5E-3	9.2E-4
AMS 14	Anzac	57	21%	0	0	0	0	0	0	5.1E-4	6E-4	1.6E-3	1.3E-4	3E-4

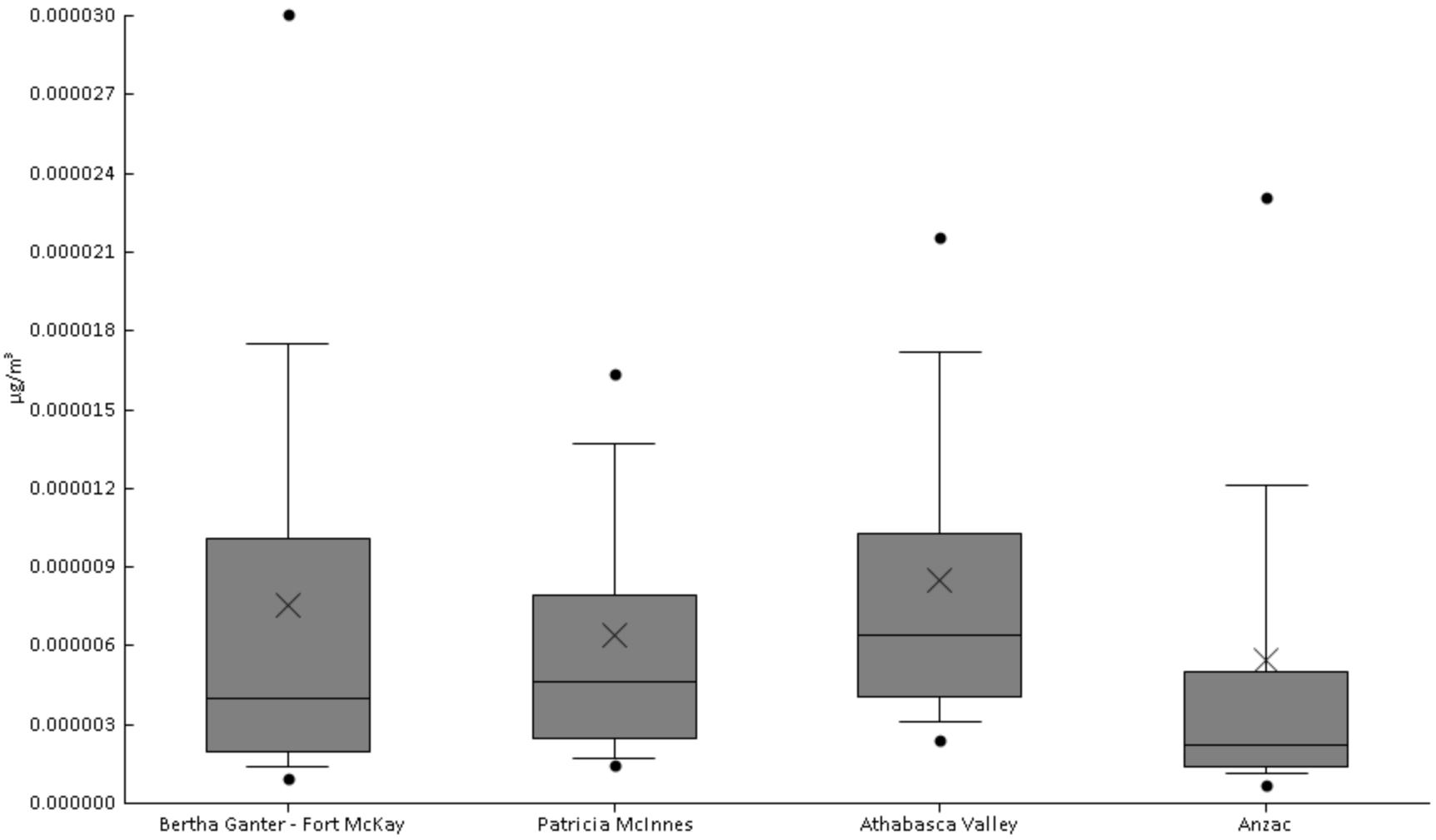


Particulate Matter (PM2.5 METALS) - Beryllium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	20%	0	0	0	0	0	0	4.9E-6	8.2E-6	1.5E-5	1.3E-6	3E-6
AMS 6	Patricia McInnes	59	10%	0	0	0	0	0	0	2.5E-6	5.8E-6	7.2E-6	5.9E-7	1.8E-6
AMS 7	Athabasca Valley	60	12%	0	0	0	0	0	0	4.2E-6	5.9E-6	6.3E-6	6.4E-7	1.8E-6
AMS 14	Anzac	53	2%	0	0	0	0	0	0	0	0	4.1E-6	7.8E-8	5.7E-7

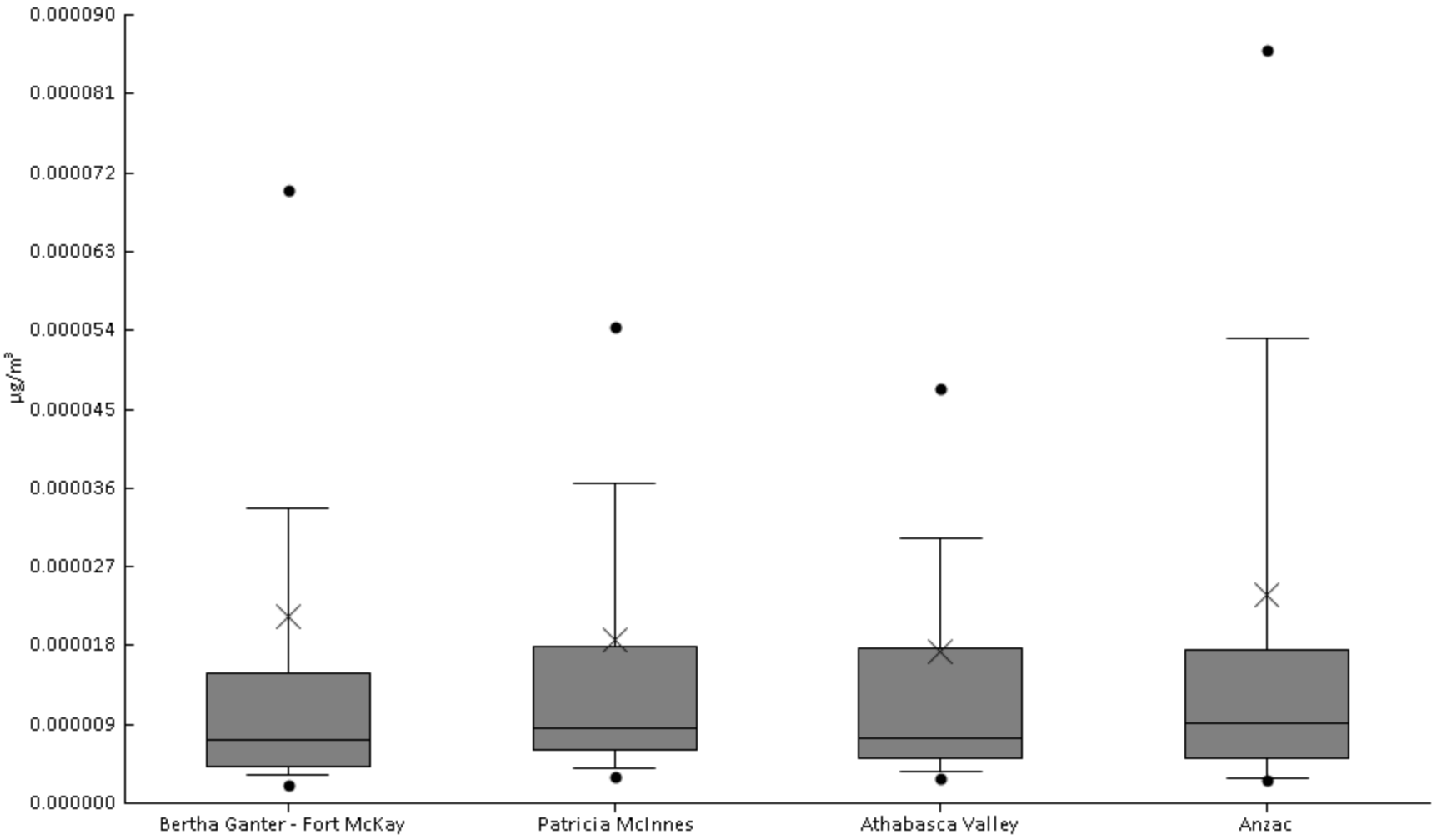
Particulate Matter (PM2.5 METALS) - Bismuth (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	54	100%	4.2E-7	9.3E-7	1.4E-6	2E-6	4E-6	1E-5	1.8E-5	3E-5	4.5E-5	7.6E-6	8.9E-6
AMS 6	Patricia McInnes	59	100%	7.2E-7	1.5E-6	1.7E-6	2.5E-6	4.6E-6	7.9E-6	1.4E-5	1.6E-5	3.4E-5	6.4E-6	5.8E-6
AMS 7	Athabasca Valley	60	100%	1.3E-6	2.4E-6	3.1E-6	4.1E-6	6.4E-6	1E-5	1.7E-5	2.2E-5	3.3E-5	8.5E-6	6.3E-6
AMS 14	Anzac	54	98%	0	6.9E-7	1.1E-6	1.4E-6	2.2E-6	5E-6	1.2E-5	2.3E-5	4.9E-5	5.4E-6	8.8E-6



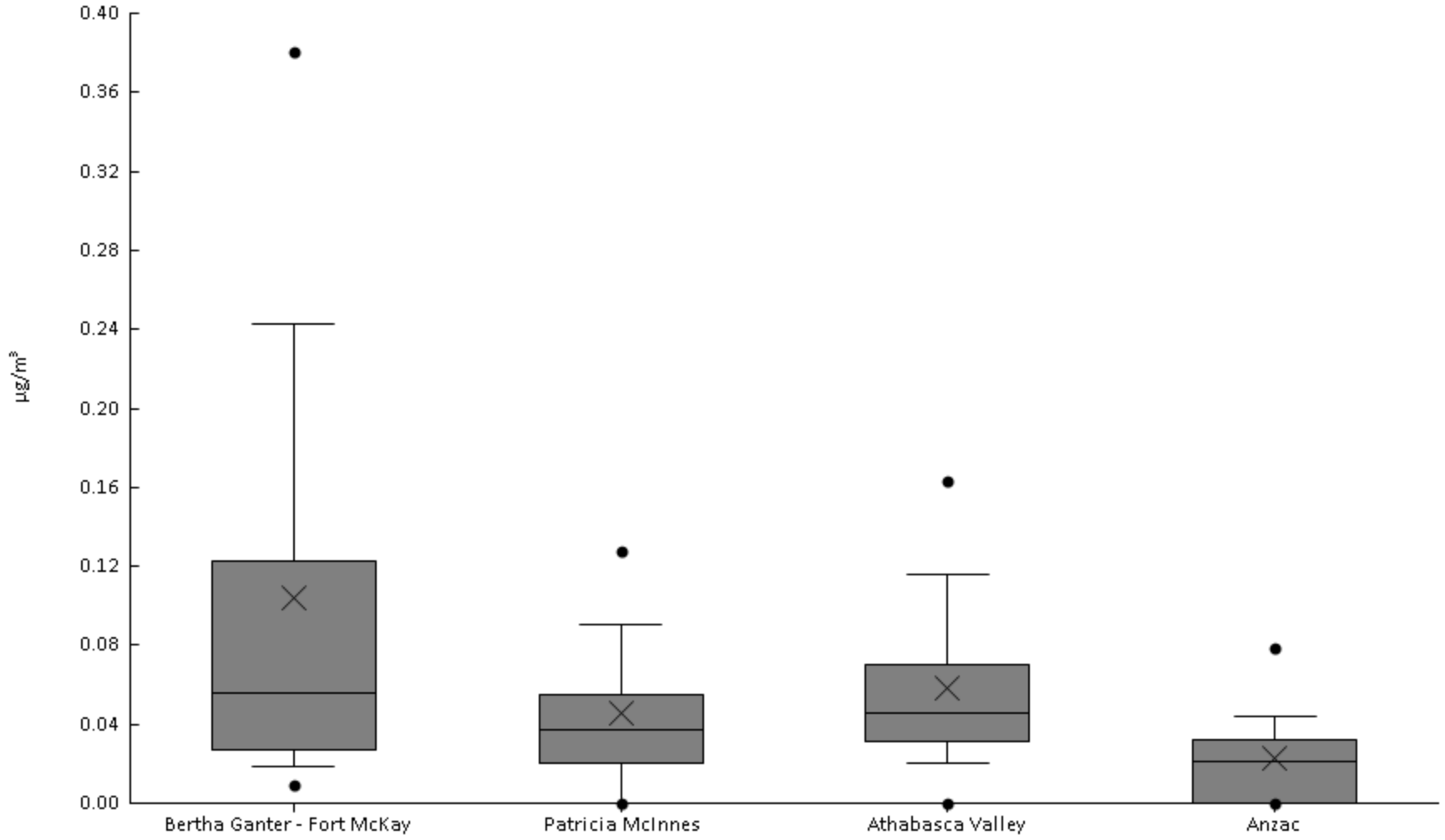
Particulate Matter (PM2.5 METALS) - Cadmium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1E-6	2.1E-6	3.2E-6	4.1E-6	7.3E-6	1.5E-5	3.4E-5	7E-5	4E-4	2.1E-5	5.6E-5
AMS 6	Patricia McInnes	60	100%	2.4E-6	3E-6	3.9E-6	6E-6	8.5E-6	1.8E-5	3.7E-5	5.5E-5	2.1E-4	1.9E-5	3.3E-5
AMS 7	Athabasca Valley	61	100%	1.7E-6	2.9E-6	3.6E-6	5.2E-6	7.4E-6	1.8E-5	3E-5	4.7E-5	2.8E-4	1.7E-5	3.7E-5
AMS 14	Anzac	56	100%	2.2E-6	2.7E-6	2.8E-6	5.2E-6	9.1E-6	1.8E-5	5.3E-5	8.6E-5	3.3E-4	2.4E-5	5.3E-5



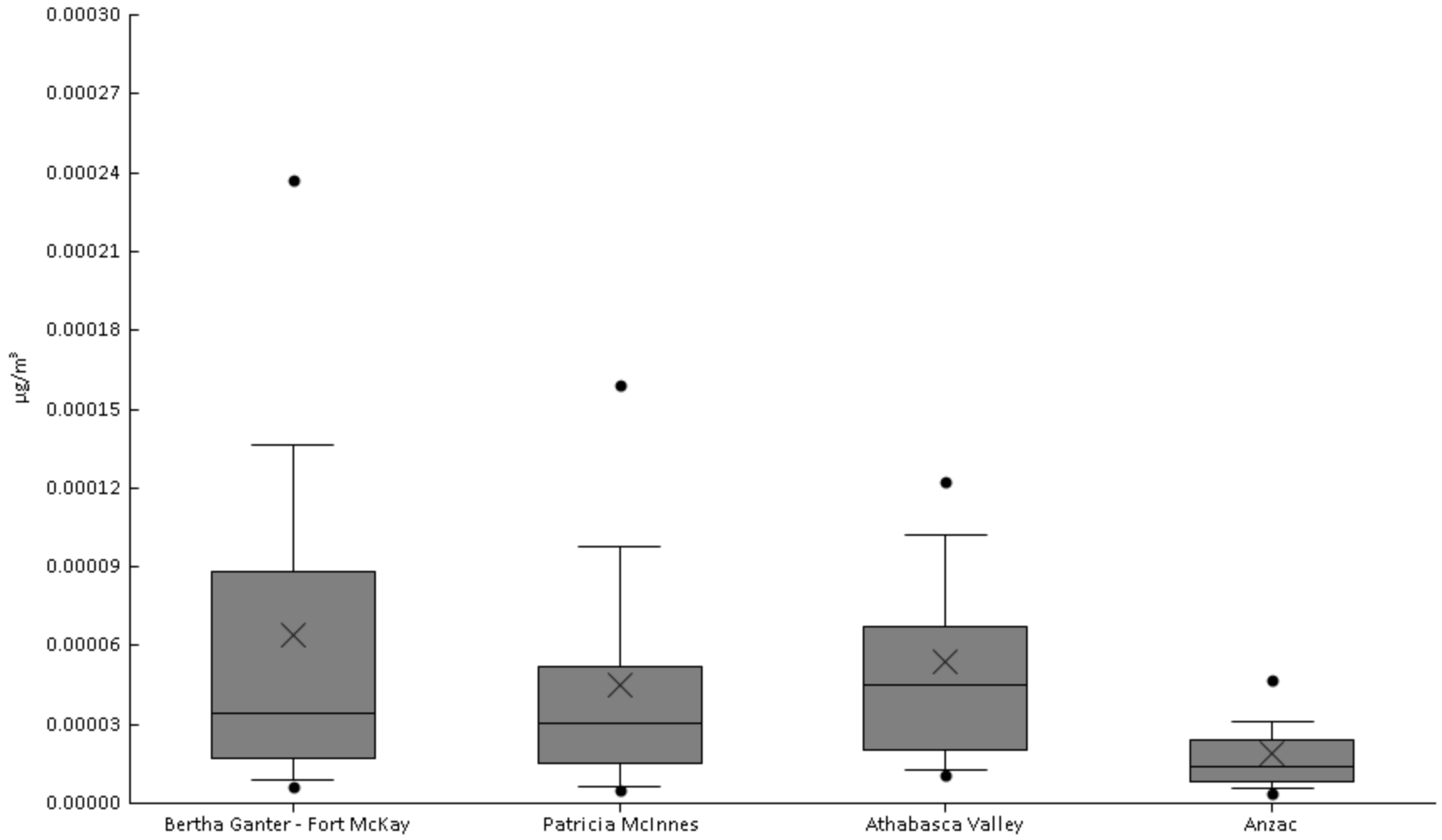
Particulate Matter (PM2.5 METALS) - Calcium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	95%	0	9.6E-3	0.019	0.027	0.056	0.12	0.24	0.38	0.69	0.1	0.13
AMS 6	Patricia McInnes	60	83%	0	0	0	0.02	0.037	0.055	0.091	0.13	0.26	0.045	0.047
AMS 7	Athabasca Valley	61	92%	0	0	0.02	0.031	0.046	0.07	0.12	0.16	0.24	0.059	0.047
AMS 14	Anzac	56	62%	0	0	0	0	0.021	0.032	0.044	0.079	0.12	0.022	0.025



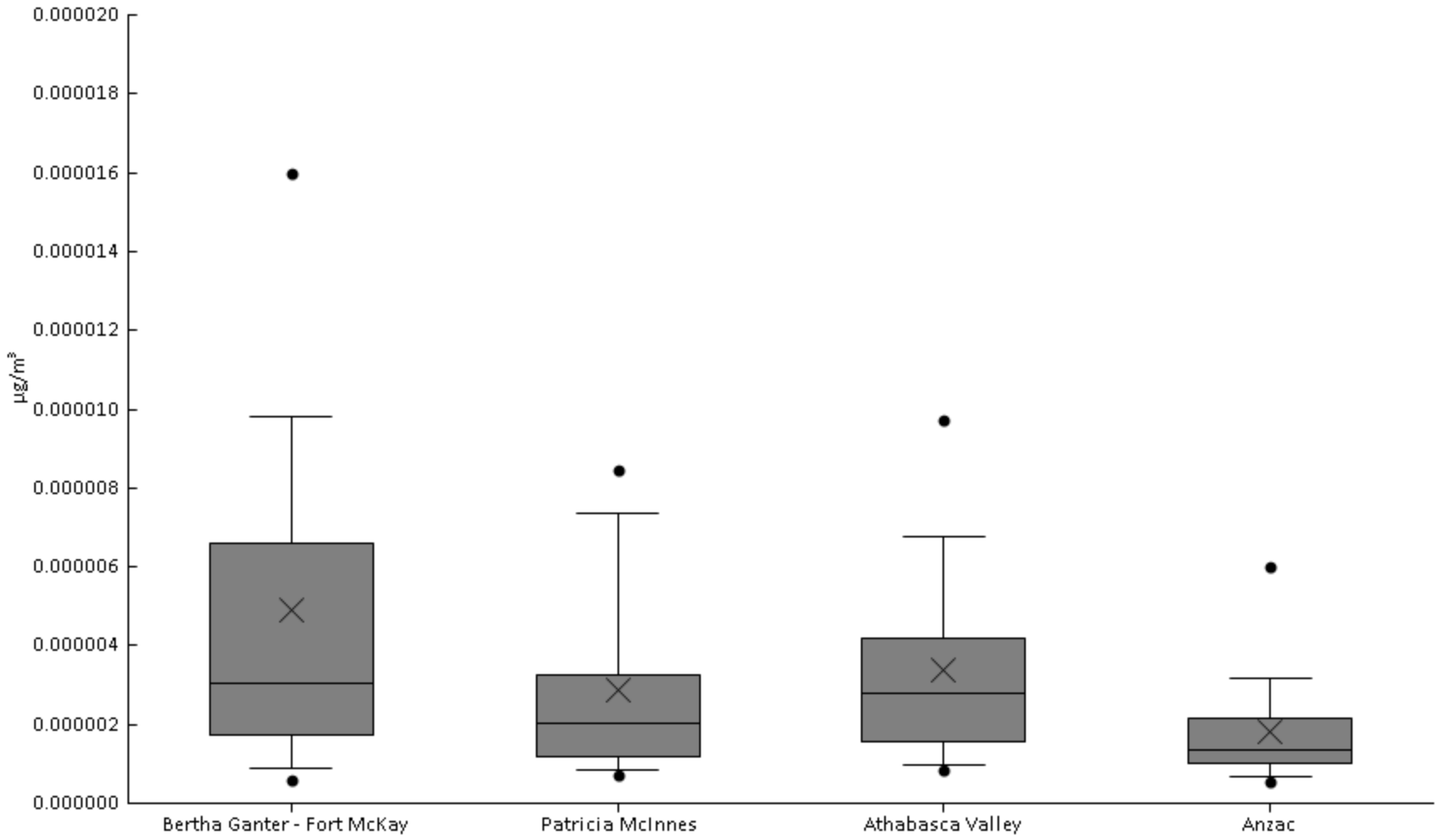
Particulate Matter (PM2.5 METALS) - Cerium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	4E-6	6.5E-6	8.8E-6	1.7E-5	3.5E-5	8.8E-5	1.4E-4	2.4E-4	4.1E-4	6.4E-5	7.5E-5
AMS 6	Patricia McInnes	60	100%	4.5E-6	5.3E-6	6.4E-6	1.5E-5	3.1E-5	5.2E-5	9.7E-5	1.6E-4	2.2E-4	4.5E-5	4.8E-5
AMS 7	Athabasca Valley	61	100%	6.3E-6	1.1E-5	1.3E-5	2E-5	4.5E-5	6.7E-5	1E-4	1.2E-4	3.5E-4	5.4E-5	5.1E-5
AMS 14	Anzac	57	100%	2.9E-6	3.9E-6	5.8E-6	8.5E-6	1.4E-5	2.4E-5	3.1E-5	4.7E-5	9.5E-5	1.9E-5	1.6E-5



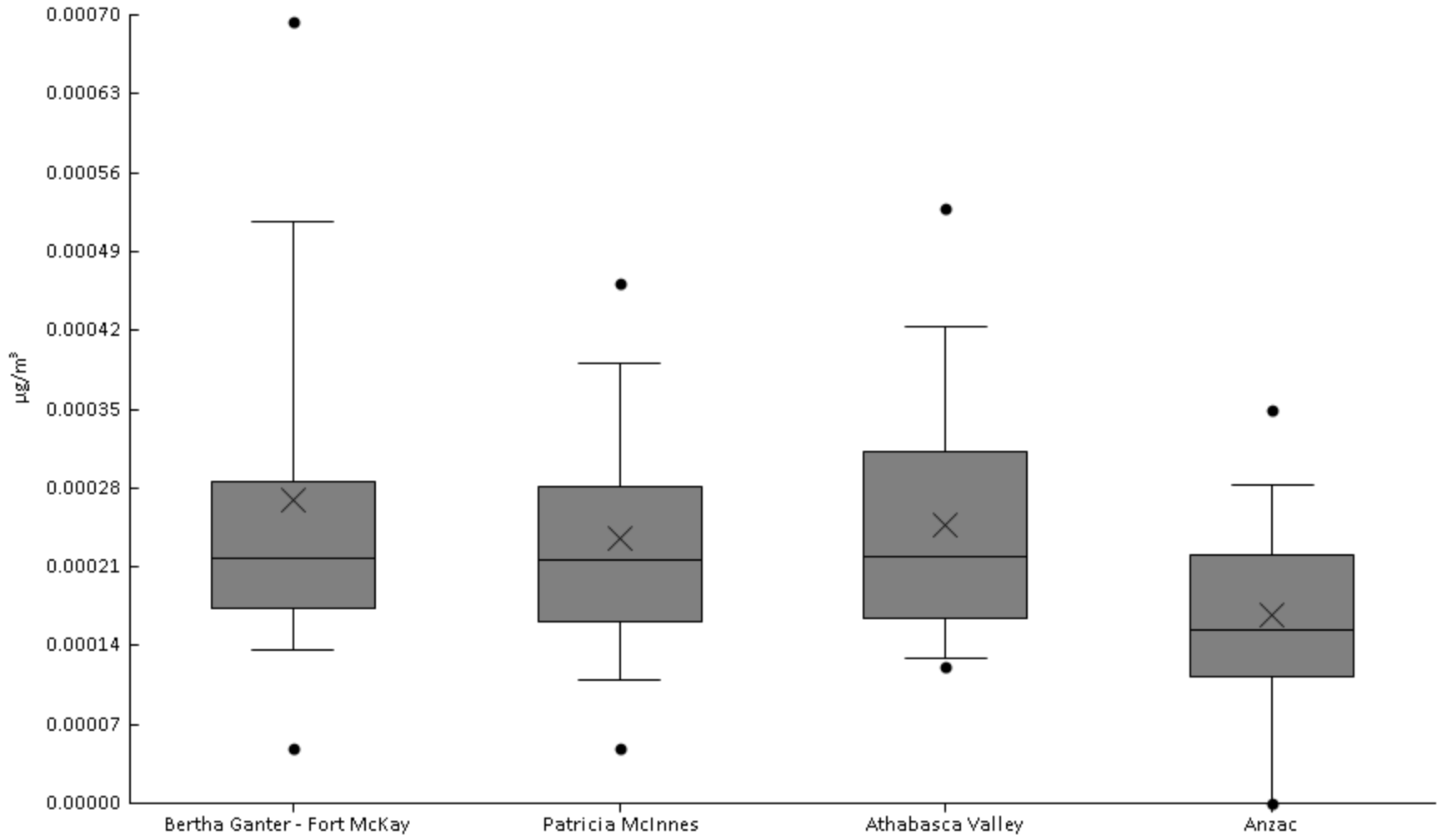
Particulate Matter (PM2.5 METALS) - Cesium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	4.7E-7	6.1E-7	8.9E-7	1.7E-6	3E-6	6.6E-6	9.8E-6	1.6E-5	3.2E-5	4.9E-6	5.2E-6
AMS 6	Patricia McInnes	60	100%	5.3E-7	7.1E-7	8.3E-7	1.2E-6	2E-6	3.3E-6	7.4E-6	8.5E-6	1.5E-5	2.9E-6	2.8E-6
AMS 7	Athabasca Valley	61	100%	7.7E-7	8.6E-7	9.9E-7	1.6E-6	2.8E-6	4.2E-6	6.8E-6	9.7E-6	1.2E-5	3.4E-6	2.6E-6
AMS 14	Anzac	57	98%	0	5.6E-7	6.8E-7	1E-6	1.4E-6	2.1E-6	3.2E-6	6E-6	6.3E-6	1.8E-6	1.4E-6



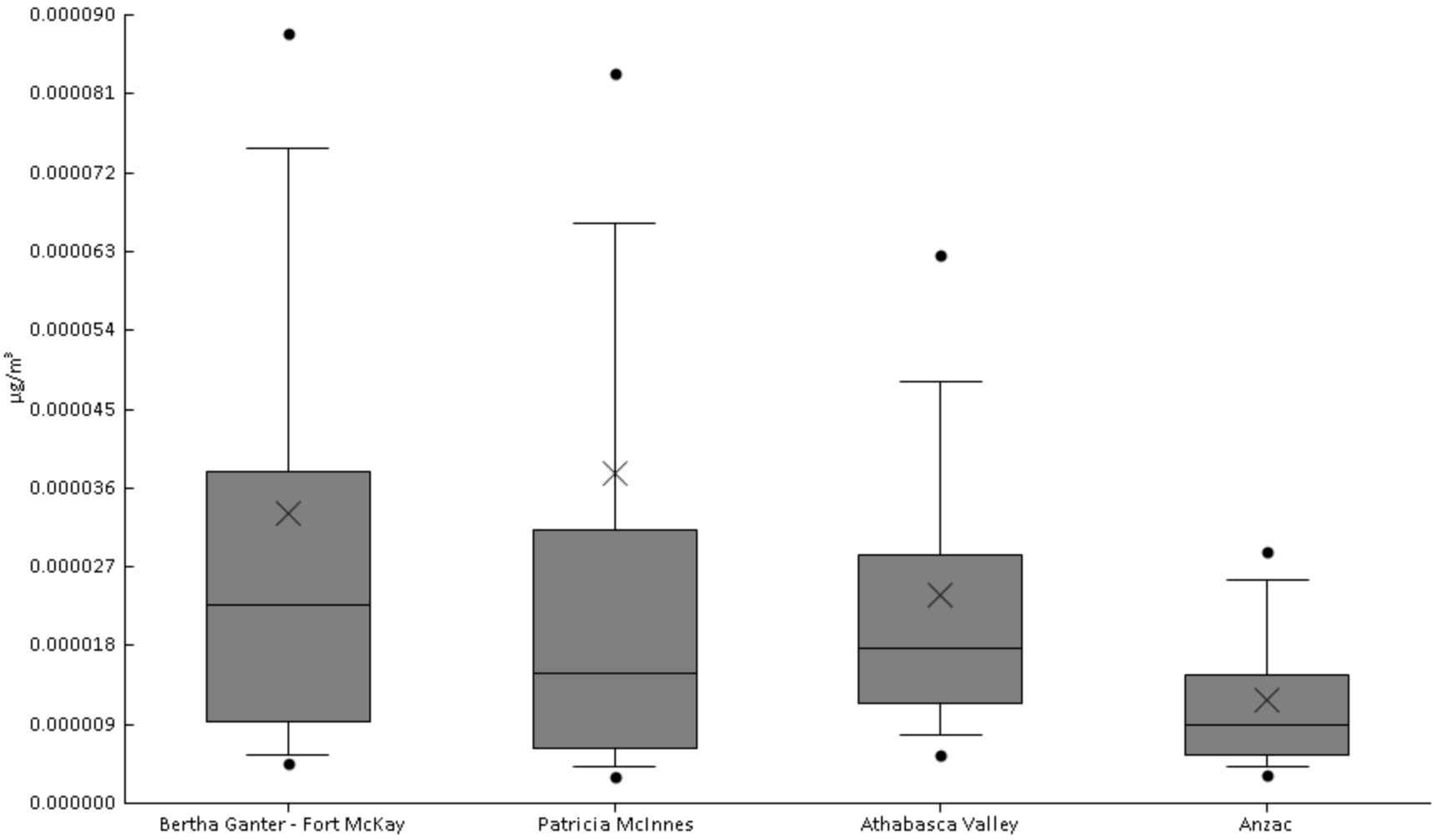
Particulate Matter (PM2.5 METALS) - Chromium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	59	95%	0	4.9E-5	1.4E-4	1.7E-4	2.2E-4	2.9E-4	5.2E-4	6.9E-4	9.3E-4	2.7E-4	1.8E-4
AMS 6	Patricia McInnes	60	95%	0	4.9E-5	1.1E-4	1.6E-4	2.2E-4	2.8E-4	3.9E-4	4.6E-4	6E-4	2.4E-4	1.2E-4
AMS 7	Athabasca Valley	61	100%	1.1E-4	1.2E-4	1.3E-4	1.6E-4	2.2E-4	3.1E-4	4.2E-4	5.3E-4	5.8E-4	2.5E-4	1.2E-4
AMS 14	Anzac	55	89%	0	0	0	1.1E-4	1.5E-4	2.2E-4	2.8E-4	3.5E-4	5.8E-4	1.7E-4	1E-4



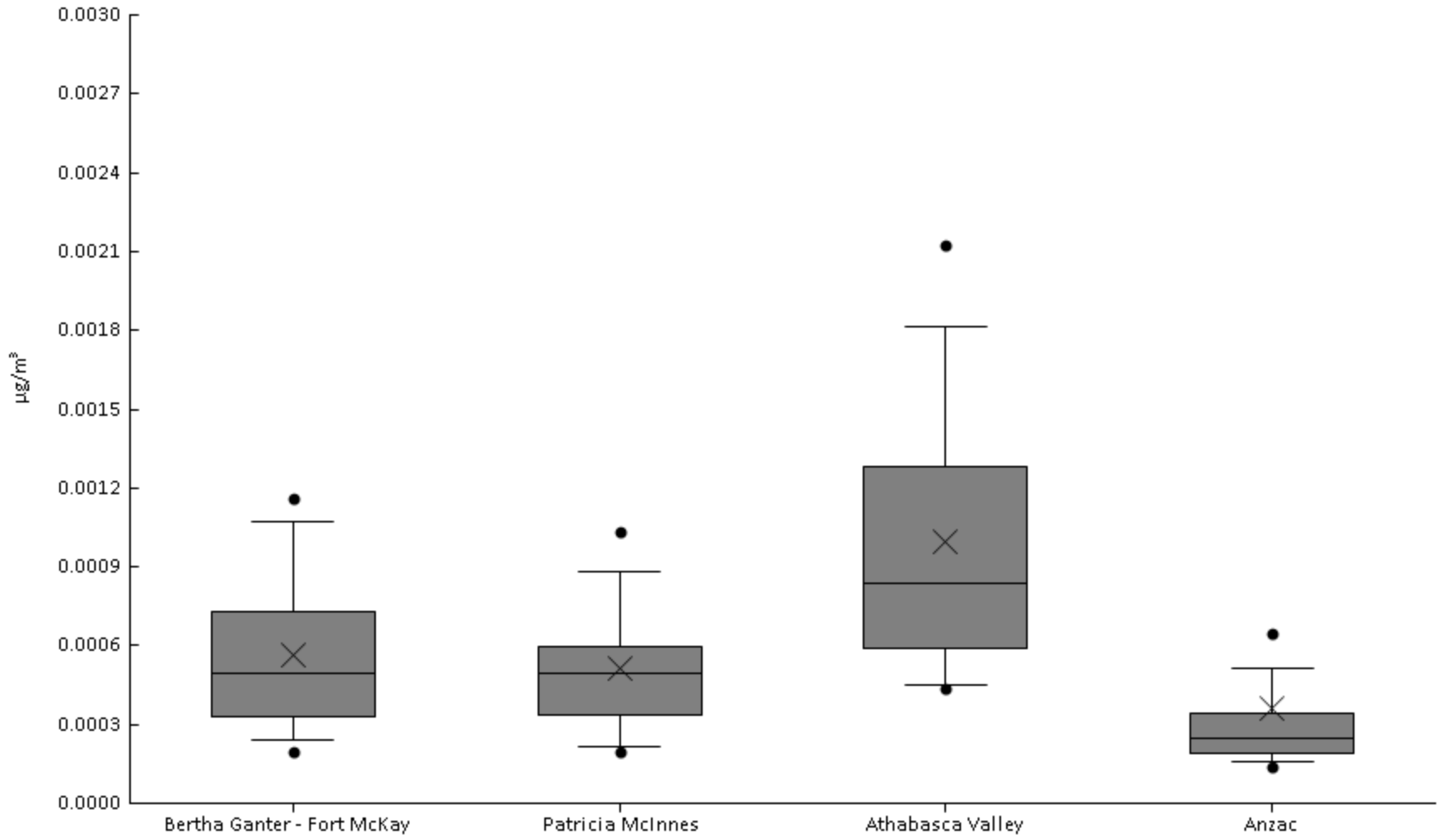
Particulate Matter (PM2.5 METALS) - Cobalt (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	2.9E-6	4.5E-6	5.6E-6	9.3E-6	2.3E-5	3.8E-5	7.5E-5	8.8E-5	3E-4	3.3E-5	4.3E-5
AMS 6	Patricia McInnes	60	100%	2.7E-6	3.1E-6	4.2E-6	6.4E-6	1.5E-5	3.1E-5	6.6E-5	8.3E-5	8.2E-4	3.8E-5	1.1E-4
AMS 7	Athabasca Valley	61	100%	4.7E-6	5.6E-6	7.8E-6	1.1E-5	1.8E-5	2.8E-5	4.8E-5	6.3E-5	1.1E-4	2.4E-5	1.9E-5
AMS 14	Anzac	56	100%	2.9E-6	3.3E-6	4.2E-6	5.5E-6	8.9E-6	1.5E-5	2.5E-5	2.9E-5	4.2E-5	1.2E-5	8.5E-6



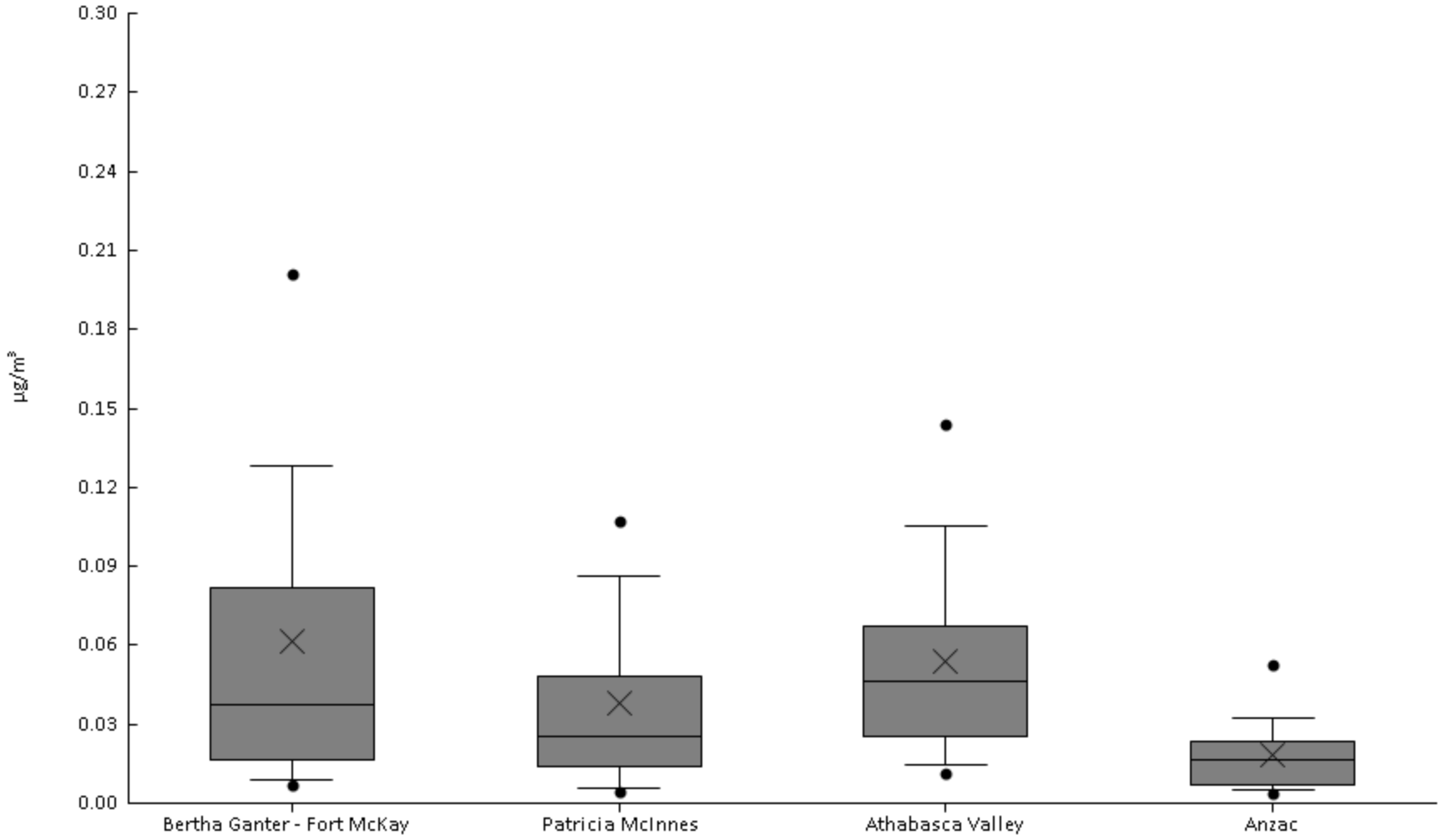
Particulate Matter (PM2.5 METALS) - Copper (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	59	100%	1.5E-4	2E-4	2.4E-4	3.3E-4	4.9E-4	7.3E-4	1.1E-3	1.2E-3	1.5E-3	5.7E-4	3E-4
AMS 6	Patricia McInnes	58	100%	1.8E-4	1.9E-4	2.2E-4	3.4E-4	5E-4	6E-4	8.8E-4	1E-3	1.2E-3	5.1E-4	2.4E-4
AMS 7	Athabasca Valley	61	100%	2.1E-4	4.3E-4	4.5E-4	5.9E-4	8.4E-4	1.3E-3	1.8E-3	2.1E-3	2.9E-3	9.9E-4	5.5E-4
AMS 14	Anzac	53	100%	1.3E-4	1.4E-4	1.6E-4	1.9E-4	2.5E-4	3.4E-4	5.1E-4	6.5E-4	3.5E-3	3.6E-4	5E-4



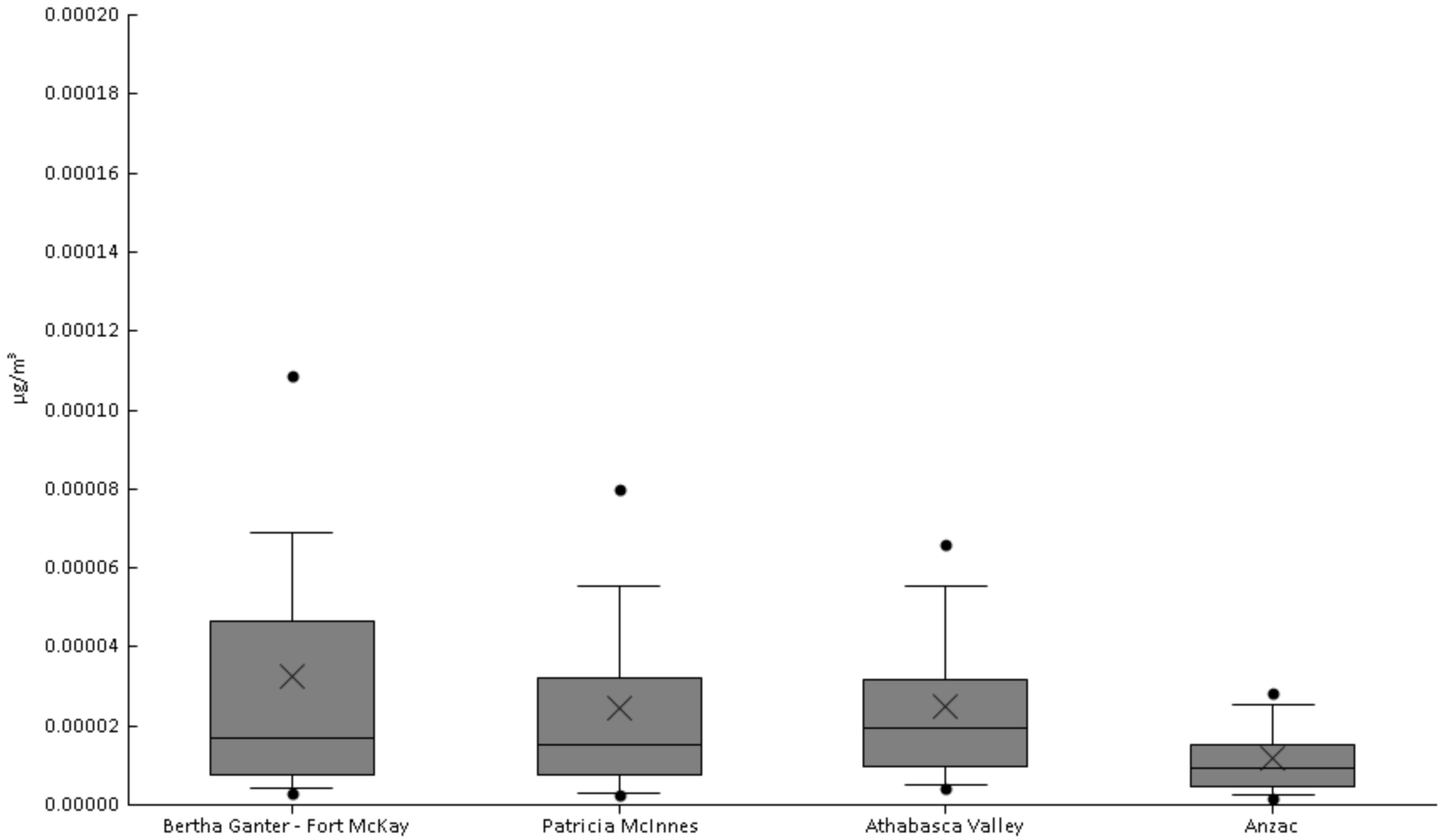
Particulate Matter (PM2.5 METALS) - Iron (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	5.6E-3	7E-3	8.7E-3	0.016	0.038	0.082	0.13	0.2	0.36	0.061	0.069
AMS 6	Patricia McInnes	60	100%	3.2E-3	4.6E-3	5.4E-3	0.014	0.026	0.048	0.087	0.11	0.23	0.038	0.042
AMS 7	Athabasca Valley	61	100%	6.8E-3	0.011	0.015	0.025	0.046	0.068	0.11	0.14	0.21	0.054	0.041
AMS 14	Anzac	57	100%	3.1E-3	3.6E-3	5.3E-3	6.9E-3	0.016	0.024	0.033	0.053	0.071	0.018	0.014



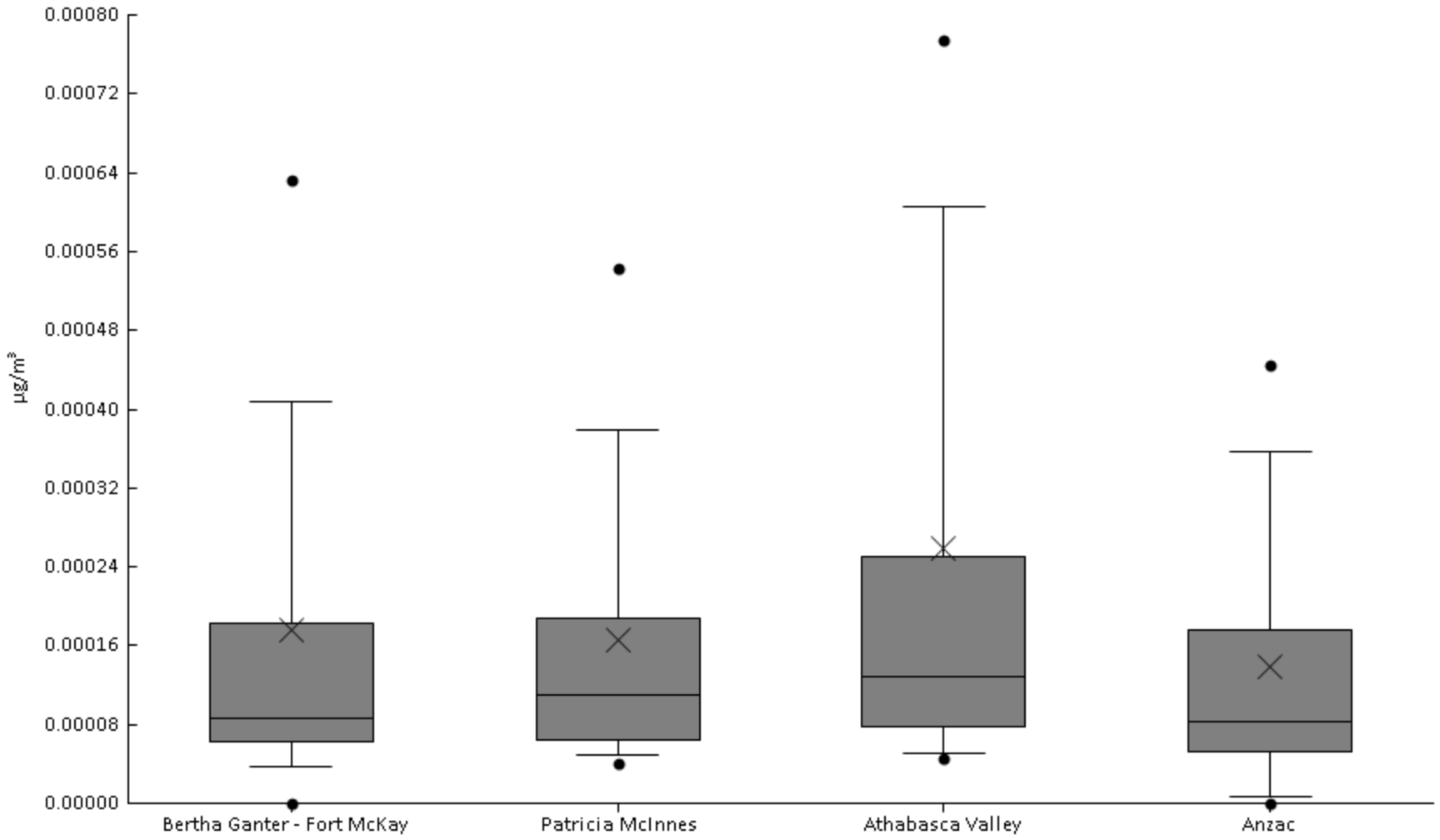
Particulate Matter (PM2.5 METALS) - Lanthanum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	2.4E-6	3.1E-6	4.1E-6	7.8E-6	1.7E-5	4.6E-5	6.9E-5	1.1E-4	2E-4	3.2E-5	3.6E-5
AMS 6	Patricia McInnes	60	100%	2.2E-6	2.4E-6	2.8E-6	7.5E-6	1.5E-5	3.2E-5	5.5E-5	8E-5	1.3E-4	2.4E-5	2.6E-5
AMS 7	Athabasca Valley	61	100%	3.6E-6	4.1E-6	5.2E-6	9.8E-6	1.9E-5	3.2E-5	5.5E-5	6.6E-5	8.7E-5	2.5E-5	2E-5
AMS 14	Anzac	56	100%	6.6E-7	1.5E-6	2.7E-6	4.5E-6	9.3E-6	1.5E-5	2.5E-5	2.8E-5	4.7E-5	1.2E-5	9.6E-6



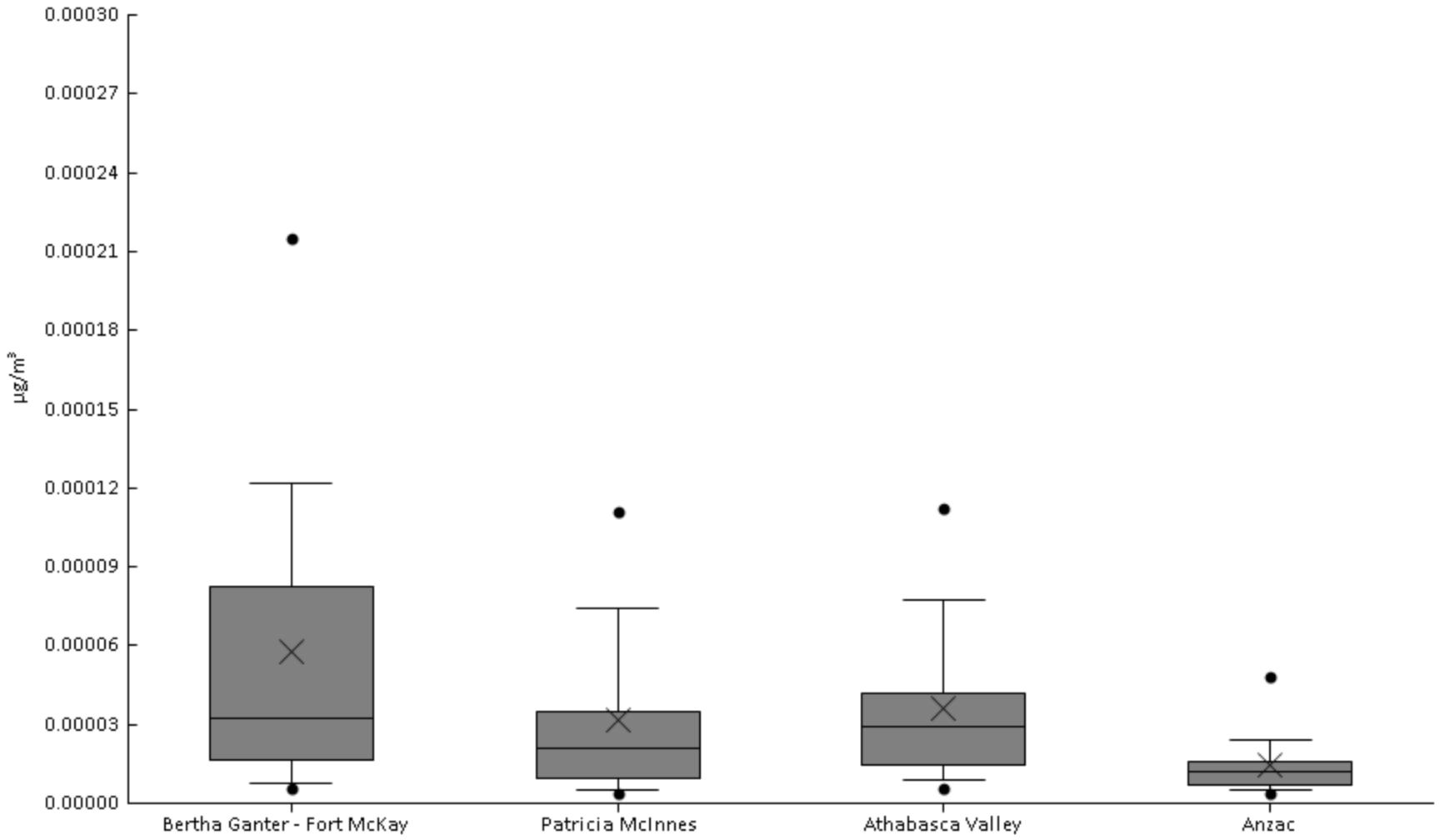
Particulate Matter (PM2.5 METALS) - Lead (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	92%	0	0	3.7E-5	6.2E-5	8.6E-5	1.8E-4	4.1E-4	6.3E-4	1.6E-3	1.8E-4	2.5E-4
AMS 6	Patricia McInnes	60	100%	3.8E-5	4E-5	4.9E-5	6.5E-5	1.1E-4	1.9E-4	3.8E-4	5.4E-4	9.9E-4	1.7E-4	1.7E-4
AMS 7	Athabasca Valley	61	98%	0	4.5E-5	5E-5	7.8E-5	1.3E-4	2.5E-4	6E-4	7.8E-4	2.7E-3	2.6E-4	4E-4
AMS 14	Anzac	57	89%	0	0	7.4E-6	5.3E-5	8.2E-5	1.8E-4	3.6E-4	4.4E-4	9.1E-4	1.4E-4	1.6E-4



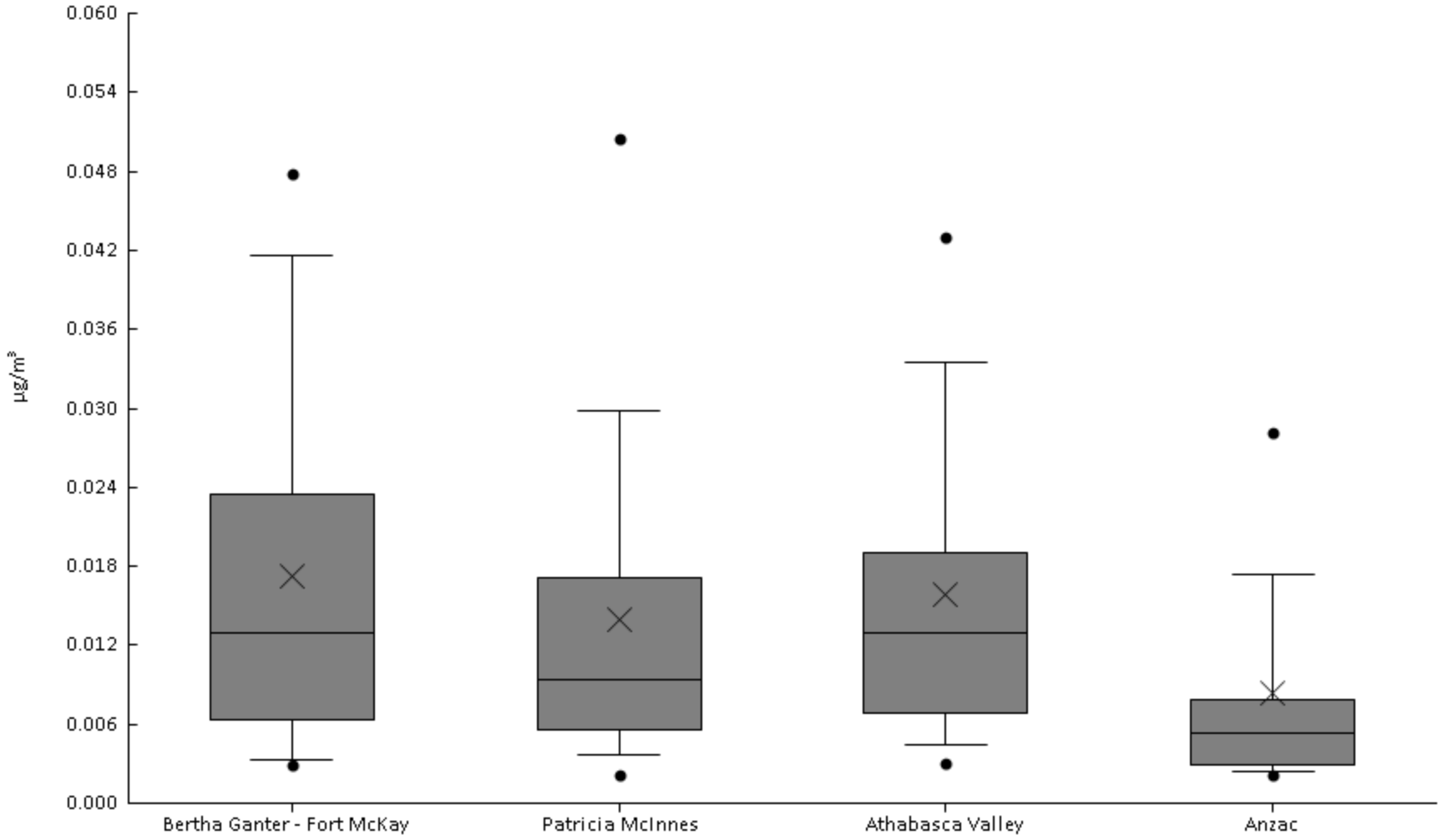
Particulate Matter (PM2.5 METALS) - Lithium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	4.5E-6	5.7E-6	7.6E-6	1.6E-5	3.2E-5	8.2E-5	1.2E-4	2.2E-4	3.4E-4	5.8E-5	6.7E-5
AMS 6	Patricia McInnes	60	97%	0	4E-6	5.3E-6	9.4E-6	2.1E-5	3.5E-5	7.4E-5	1.1E-4	2E-4	3.2E-5	3.9E-5
AMS 7	Athabasca Valley	61	98%	0	5.9E-6	9E-6	1.4E-5	2.9E-5	4.2E-5	7.7E-5	1.1E-4	1.7E-4	3.6E-5	3.3E-5
AMS 14	Anzac	56	98%	0	3.5E-6	5.1E-6	7.2E-6	1.2E-5	1.6E-5	2.4E-5	4.8E-5	5.7E-5	1.5E-5	1.2E-5



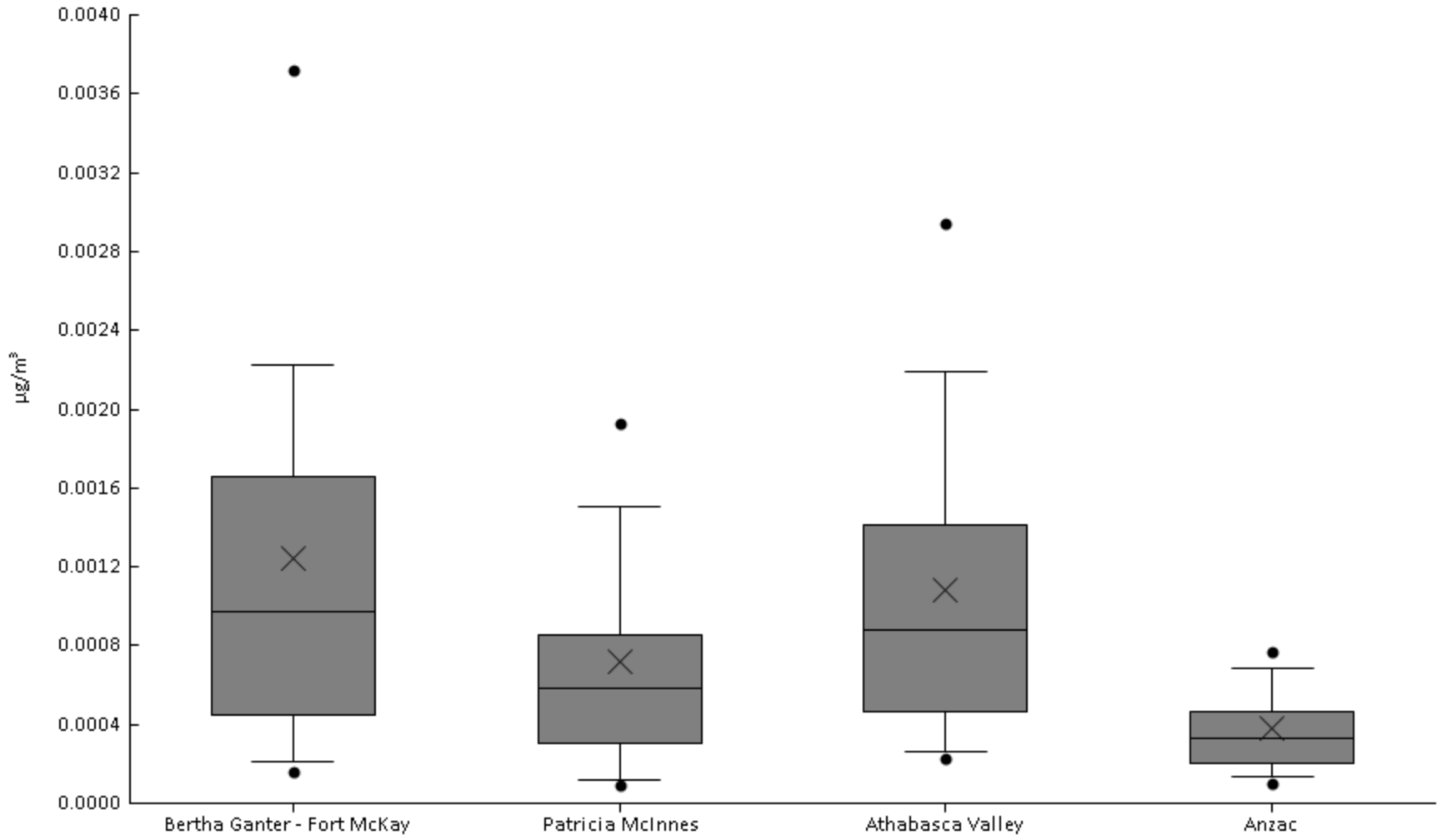
Particulate Matter (PM2.5 METALS) - Magnesium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	2E-3	2.9E-3	3.4E-3	6.3E-3	0.013	0.023	0.042	0.048	0.087	0.017	0.016
AMS 6	Patricia McInnes	60	100%	1.5E-3	2.2E-3	3.6E-3	5.6E-3	9.4E-3	0.017	0.03	0.05	0.069	0.014	0.014
AMS 7	Athabasca Valley	61	100%	1.7E-3	3E-3	4.5E-3	6.9E-3	0.013	0.019	0.033	0.043	0.07	0.016	0.013
AMS 14	Anzac	57	100%	1.4E-3	2.1E-3	2.4E-3	2.9E-3	5.4E-3	7.9E-3	0.017	0.028	0.058	8.3E-3	9.7E-3



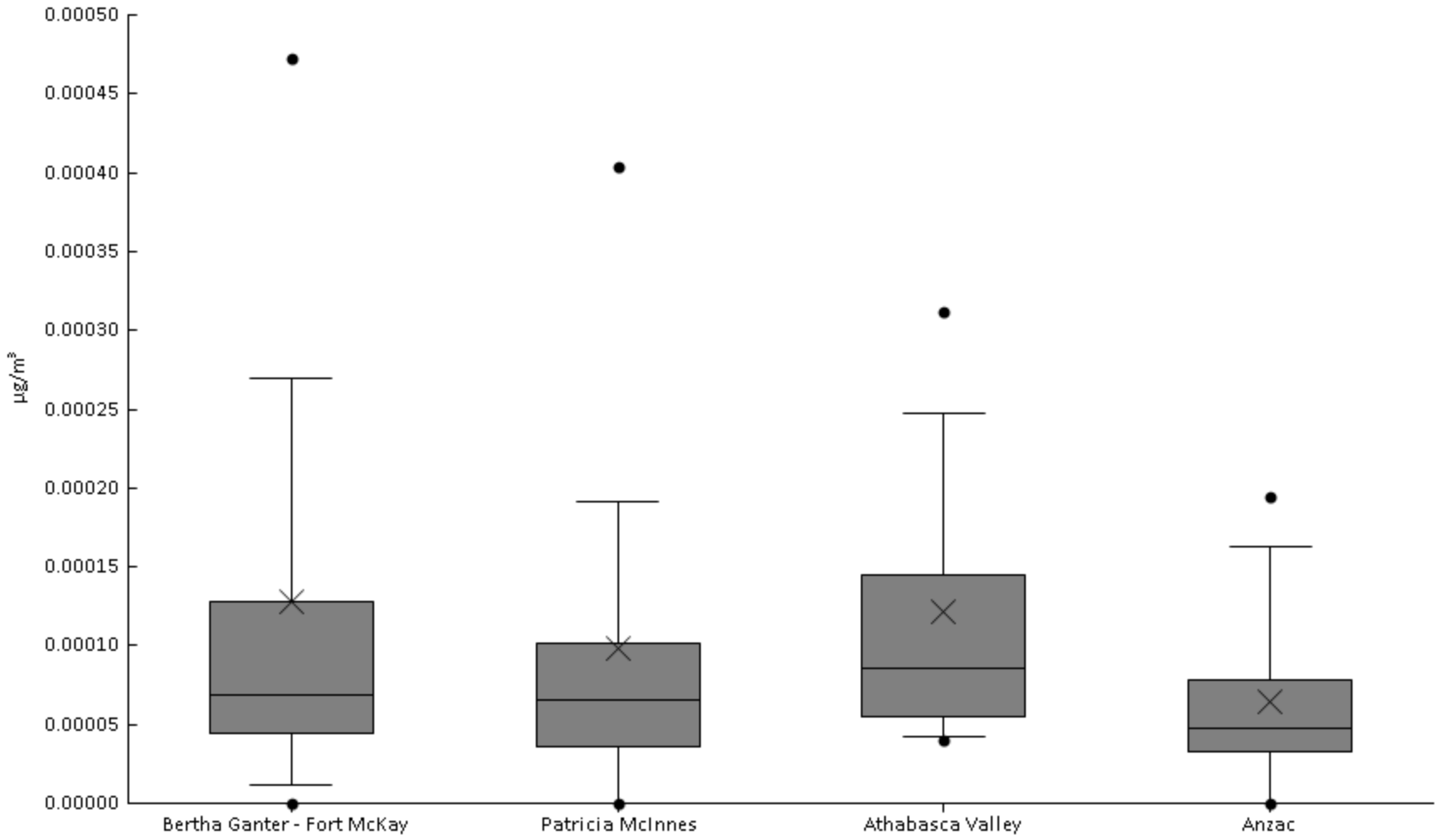
Particulate Matter (PM2.5 METALS) - Manganese (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1E-4	1.6E-4	2.1E-4	4.5E-4	9.7E-4	1.7E-3	2.2E-3	3.7E-3	6E-3	1.2E-3	1.1E-3
AMS 6	Patricia McInnes	60	100%	7.8E-5	9.6E-5	1.2E-4	3E-4	5.8E-4	8.6E-4	1.5E-3	1.9E-3	3.4E-3	7.2E-4	6.6E-4
AMS 7	Athabasca Valley	61	100%	1.7E-4	2.3E-4	2.6E-4	4.6E-4	8.8E-4	1.4E-3	2.2E-3	2.9E-3	5.2E-3	1.1E-3	9.1E-4
AMS 14	Anzac	57	100%	6.9E-5	1E-4	1.4E-4	2E-4	3.3E-4	4.6E-4	6.9E-4	7.7E-4	1.8E-3	3.8E-4	2.9E-4



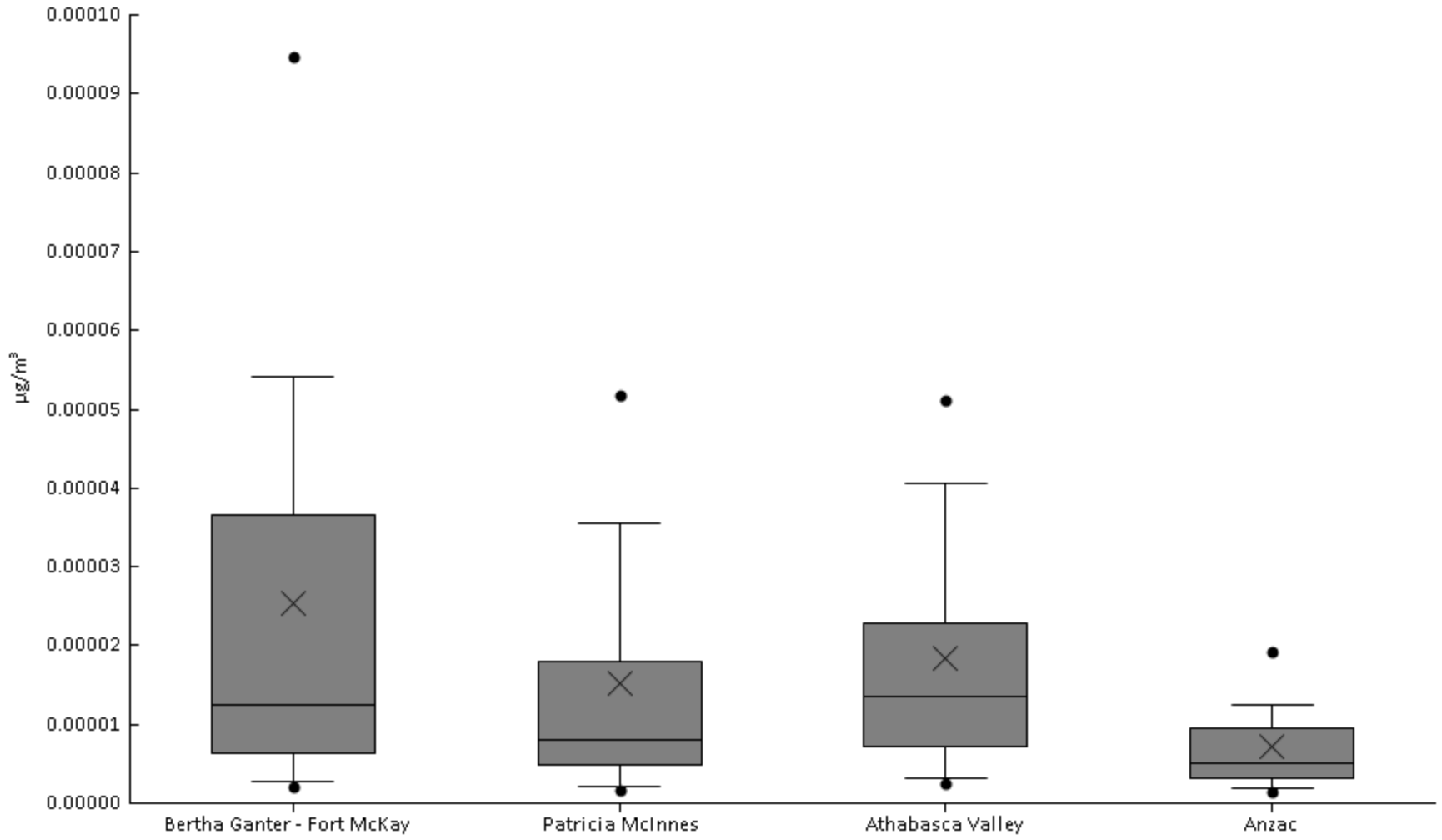
Particulate Matter (PM2.5 METALS) - Molybdenum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	59	90%	0	0	1.2E-5	4.4E-5	6.9E-5	1.3E-4	2.7E-4	4.7E-4	1.2E-3	1.3E-4	2E-4
AMS 6	Patricia McInnes	58	83%	0	0	0	3.6E-5	6.5E-5	1E-4	1.9E-4	4E-4	7.9E-4	9.8E-5	1.4E-4
AMS 7	Athabasca Valley	60	100%	3.2E-5	4E-5	4.2E-5	5.5E-5	8.6E-5	1.4E-4	2.5E-4	3.1E-4	5.2E-4	1.2E-4	9.9E-5
AMS 14	Anzac	54	81%	0	0	0	3.3E-5	4.8E-5	7.8E-5	1.6E-4	1.9E-4	2.8E-4	6.4E-5	6.3E-5



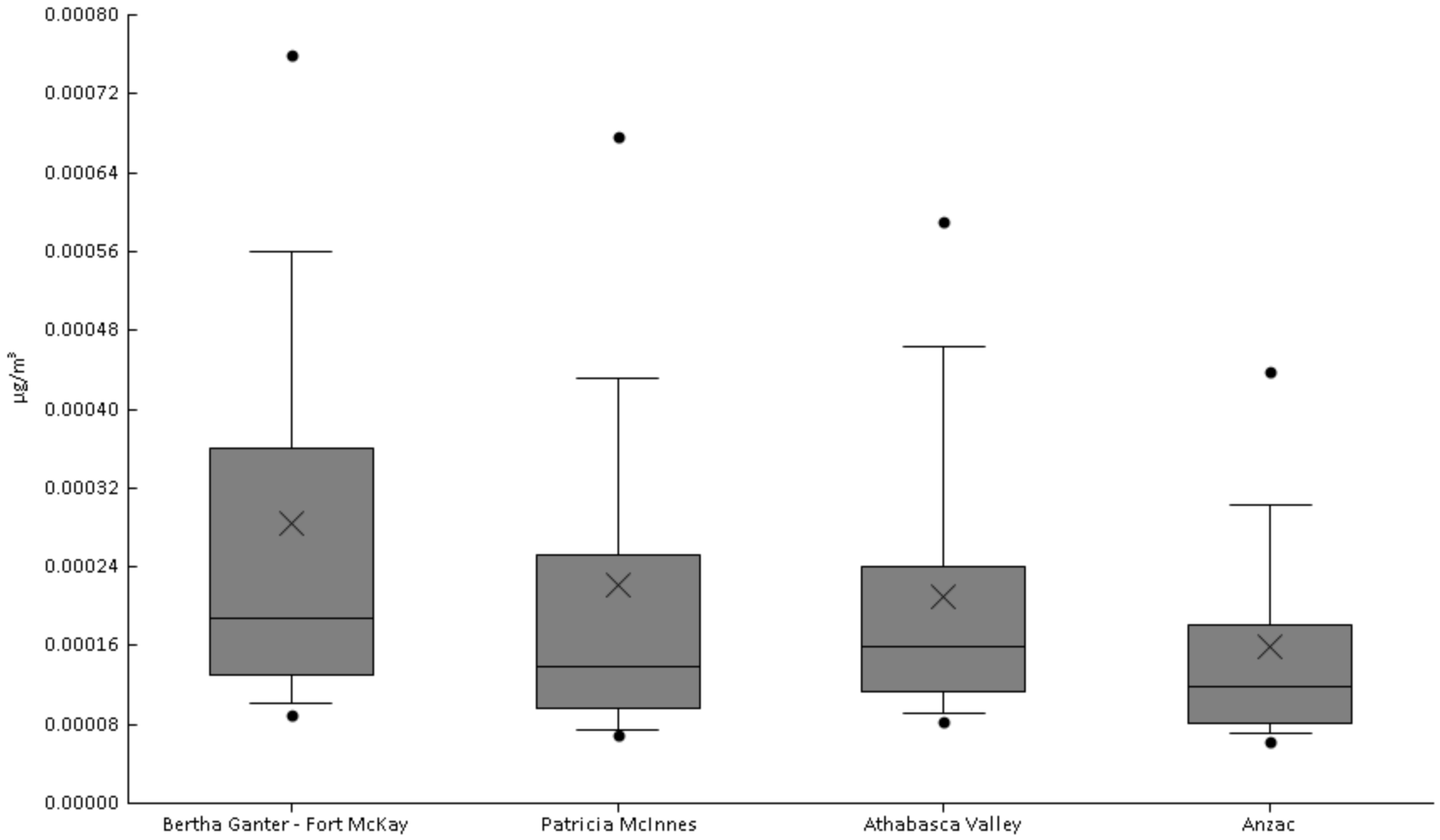
Particulate Matter (PM2.5 METALS) - Neodymium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1.3E-6	2E-6	2.8E-6	6.4E-6	1.2E-5	3.7E-5	5.4E-5	9.5E-5	1.8E-4	2.5E-5	3.1E-5
AMS 6	Patricia McInnes	60	100%	1.3E-6	1.7E-6	2.1E-6	4.8E-6	8E-6	1.8E-5	3.6E-5	5.2E-5	9.5E-5	1.5E-5	1.8E-5
AMS 7	Athabasca Valley	61	100%	1.8E-6	2.5E-6	3.2E-6	7.3E-6	1.4E-5	2.3E-5	4.1E-5	5.1E-5	7.4E-5	1.8E-5	1.6E-5
AMS 14	Anzac	57	100%	9.5E-7	1.4E-6	1.9E-6	3.1E-6	5E-6	9.5E-6	1.2E-5	1.9E-5	4E-5	7.3E-6	6.7E-6



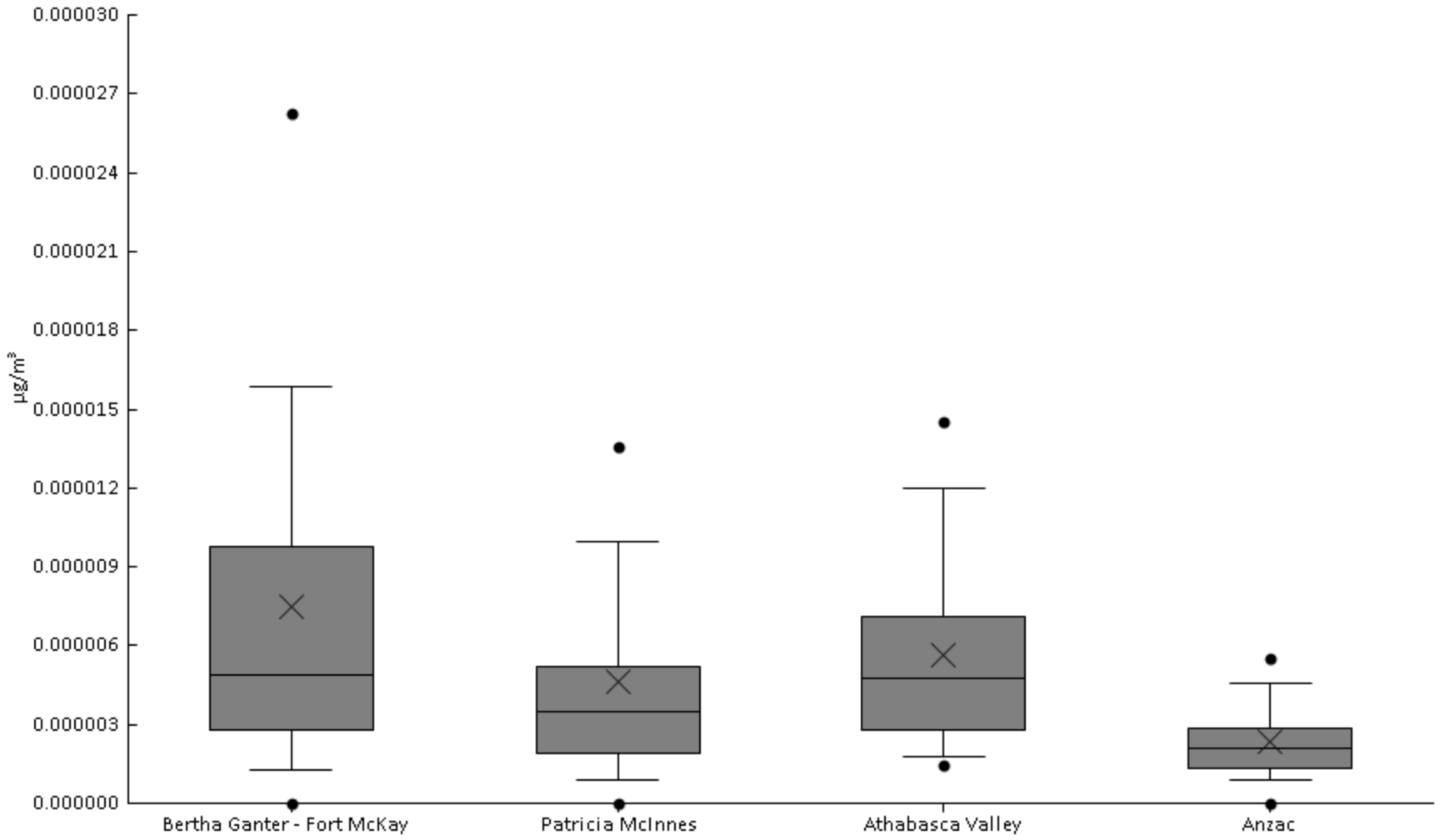
Particulate Matter (PM2.5 METALS) - Nickel (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	7.4E-5	9E-5	1E-4	1.3E-4	1.9E-4	3.6E-4	5.6E-4	7.6E-4	1.3E-3	2.8E-4	2.4E-4
AMS 6	Patricia McInnes	59	100%	5.2E-5	6.9E-5	7.4E-5	9.7E-5	1.4E-4	2.5E-4	4.3E-4	6.8E-4	1.3E-3	2.2E-4	2.3E-4
AMS 7	Athabasca Valley	60	100%	8E-5	8.2E-5	9.2E-5	1.1E-4	1.6E-4	2.4E-4	4.6E-4	5.9E-4	6.7E-4	2.1E-4	1.5E-4
AMS 14	Anzac	55	100%	5.6E-5	6.2E-5	7.1E-5	8.1E-5	1.2E-4	1.8E-4	3E-4	4.4E-4	5.6E-4	1.6E-4	1.2E-4



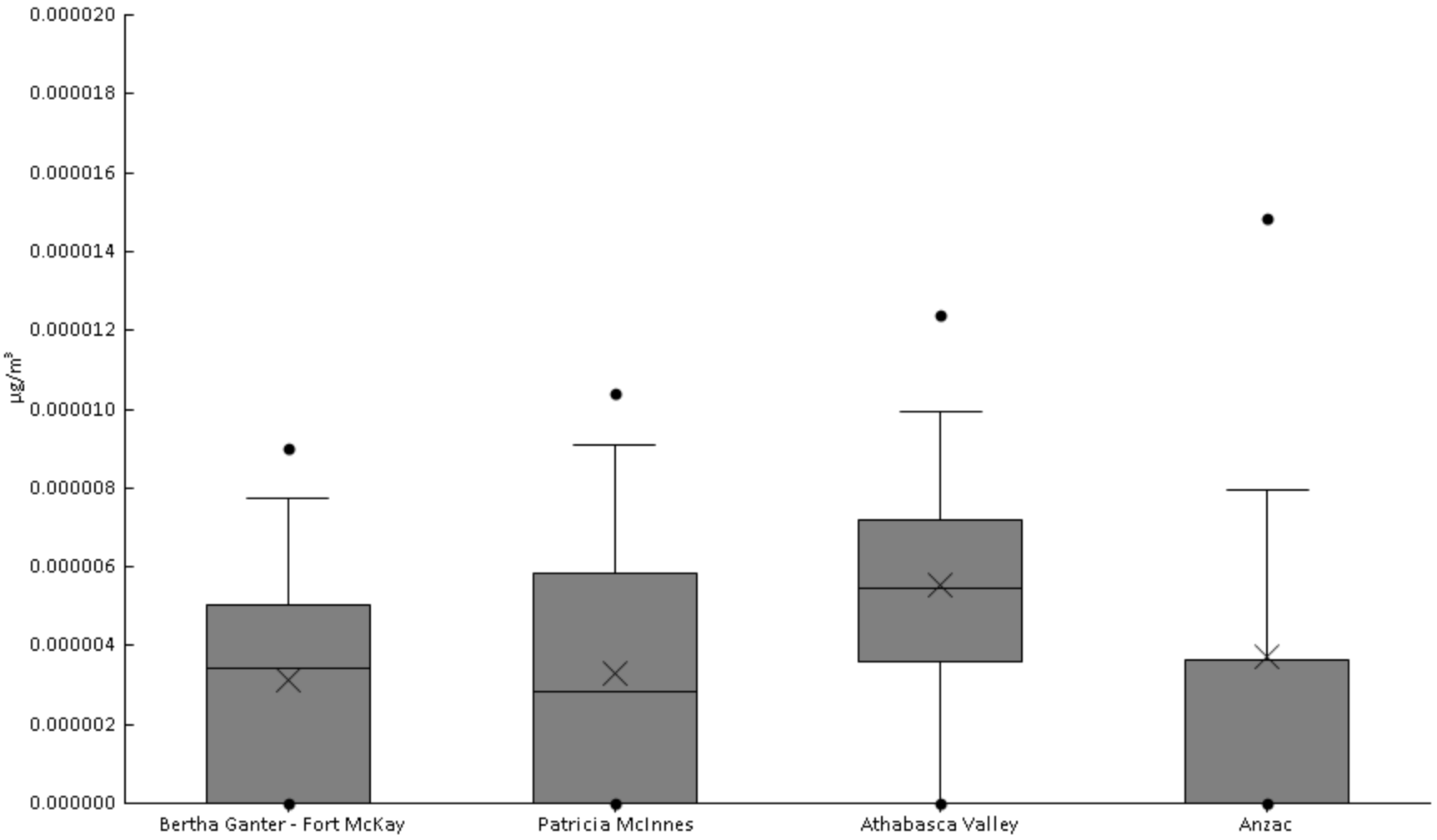
Particulate Matter (PM2.5 METALS) - Niobium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	93%	0	0	1.3E-6	2.8E-6	4.9E-6	9.8E-6	1.6E-5	2.6E-5	4.3E-5	7.5E-6	8E-6
AMS 6	Patricia McInnes	60	92%	0	0	9E-7	1.9E-6	3.5E-6	5.2E-6	1E-5	1.4E-5	2.6E-5	4.6E-6	4.7E-6
AMS 7	Athabasca Valley	61	100%	8.6E-7	1.4E-6	1.8E-6	2.8E-6	4.8E-6	7.1E-6	1.2E-5	1.4E-5	1.9E-5	5.7E-6	4.1E-6
AMS 14	Anzac	56	91%	0	0	9E-7	1.3E-6	2.1E-6	2.9E-6	4.6E-6	5.5E-6	9E-6	2.3E-6	1.7E-6



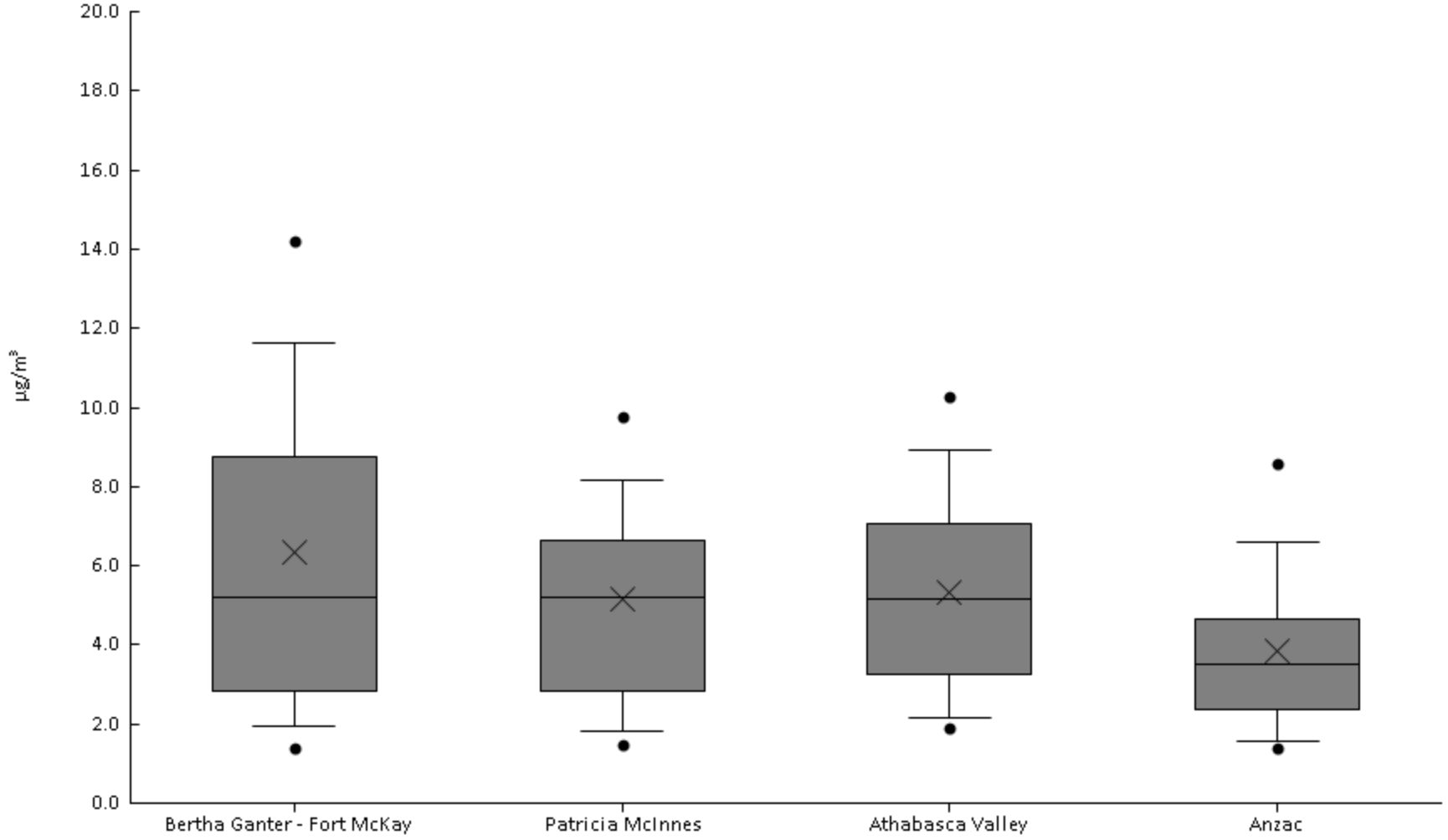
Particulate Matter (PM2.5 METALS) - Palladium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	58	57%	0	0	0	0	3.4E-6	5E-6	7.7E-6	9E-6	1E-5	3.1E-6	3.2E-6
AMS 6	Patricia McInnes	59	51%	0	0	0	0	2.8E-6	5.8E-6	9.1E-6	1E-5	1.9E-5	3.3E-6	4.1E-6
AMS 7	Athabasca Valley	60	85%	0	0	0	3.6E-6	5.5E-6	7.2E-6	9.9E-6	1.2E-5	1.5E-5	5.5E-6	3.5E-6
AMS 14	Anzac	51	33%	0	0	0	0	0	3.6E-6	8E-6	1.5E-5	8.3E-5	3.7E-6	1.2E-5



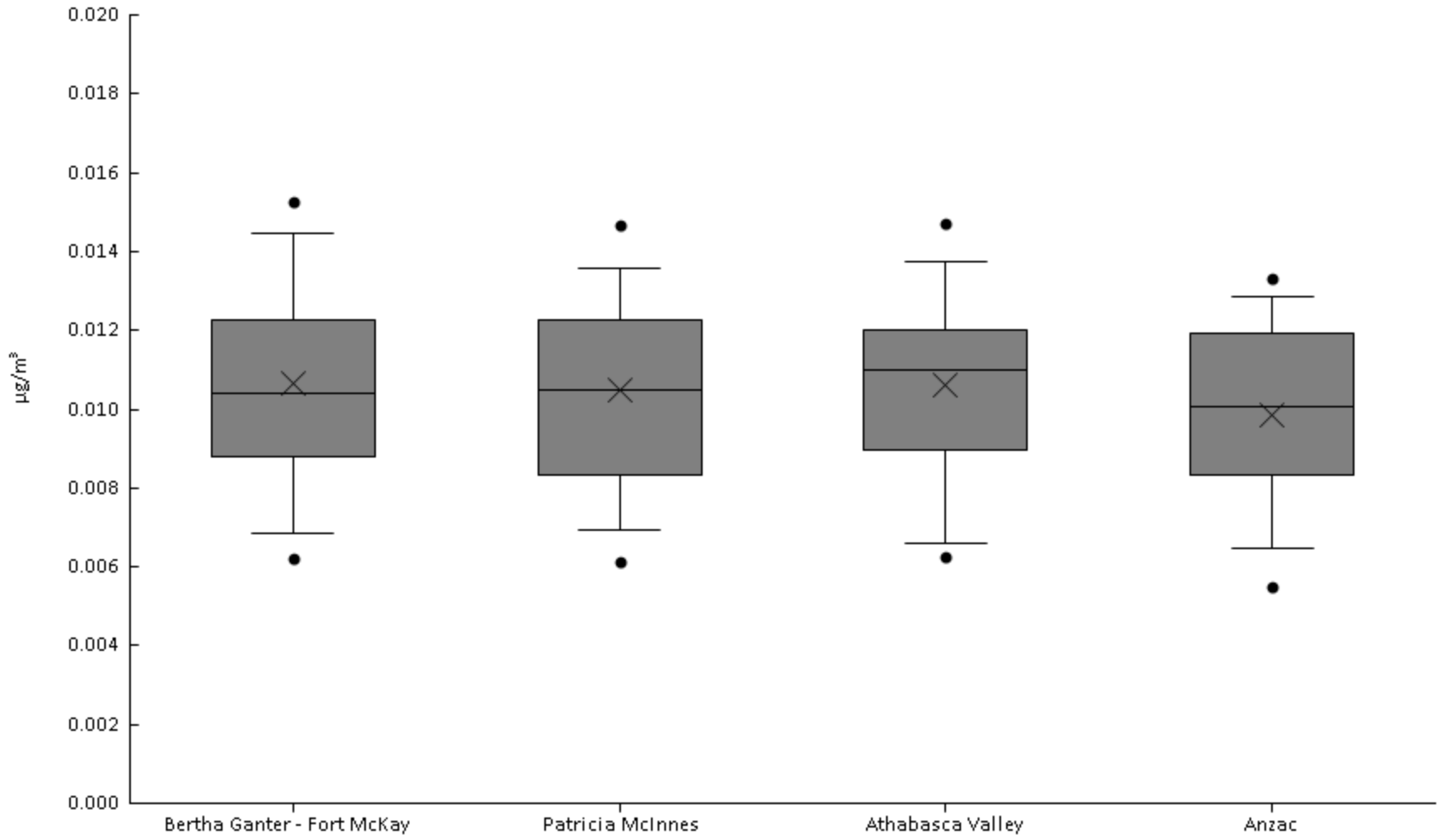
Particulate Matter (PM2.5 METALS) - Particulate Matter (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1	1.4	1.9	2.8	5.2	8.8	12	14	24	6.4	4.5
AMS 6	Patricia McInnes	60	100%	0.58	1.5	1.8	2.8	5.2	6.6	8.1	9.8	17	5.1	3.1
AMS 7	Athabasca Valley	61	100%	1.1	1.9	2.1	3.2	5.2	7	8.9	10	14	5.3	2.7
AMS 14	Anzac	57	100%	0.57	1.4	1.6	2.4	3.5	4.7	6.6	8.6	10	3.8	2.1



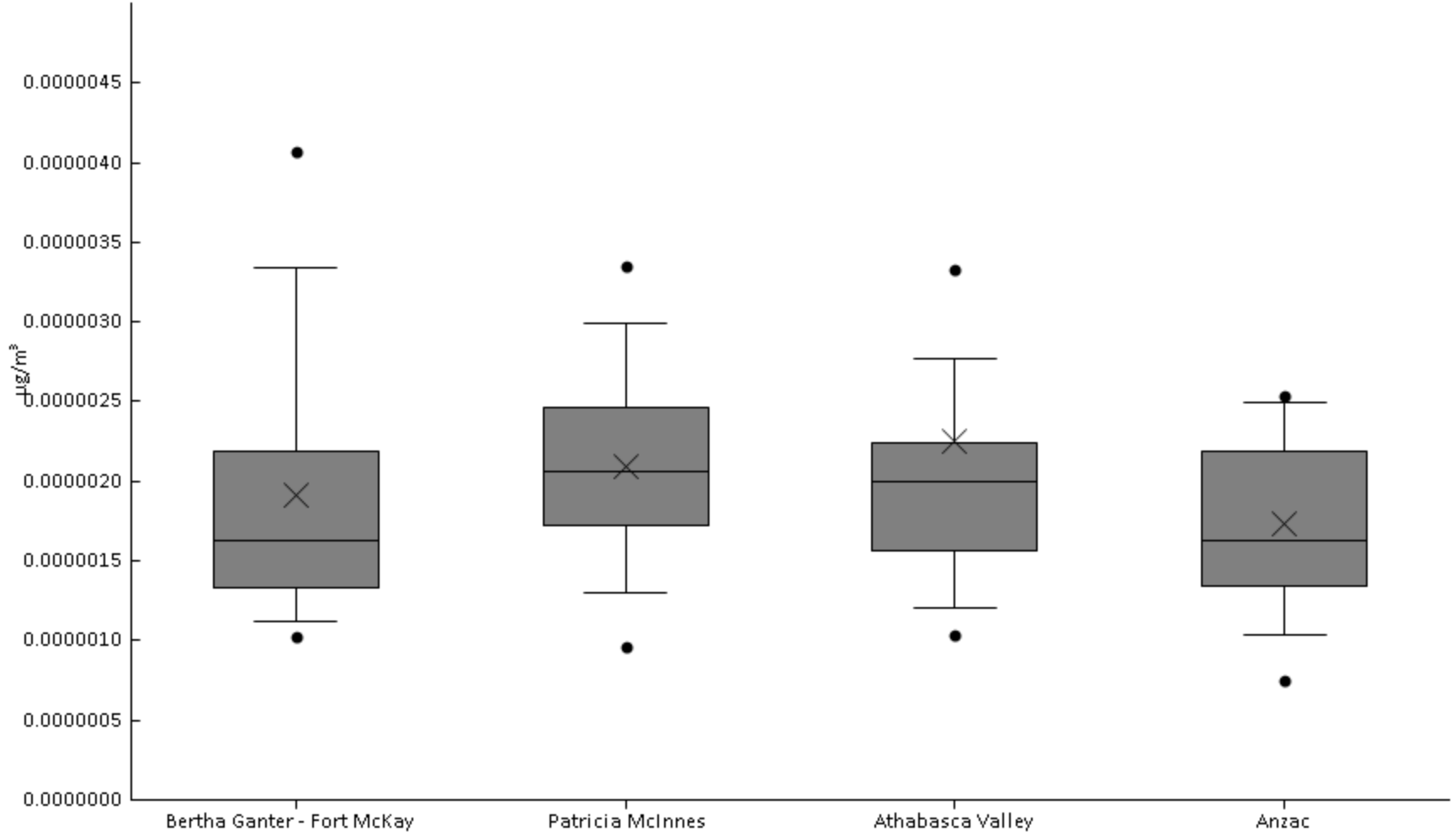
Particulate Matter (PM2.5 METALS) - Phosphorus (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	5.4E-3	6.2E-3	6.8E-3	8.8E-3	0.01	0.012	0.014	0.015	0.017	0.011	2.7E-3
AMS 6	Patricia McInnes	60	100%	5.2E-3	6.1E-3	6.9E-3	8.3E-3	0.01	0.012	0.014	0.015	0.019	0.01	2.9E-3
AMS 7	Athabasca Valley	61	100%	5.3E-3	6.3E-3	6.6E-3	9E-3	0.011	0.012	0.014	0.015	0.018	0.011	2.6E-3
AMS 14	Anzac	57	100%	4.3E-3	5.5E-3	6.5E-3	8.3E-3	0.01	0.012	0.013	0.013	0.015	9.9E-3	2.5E-3



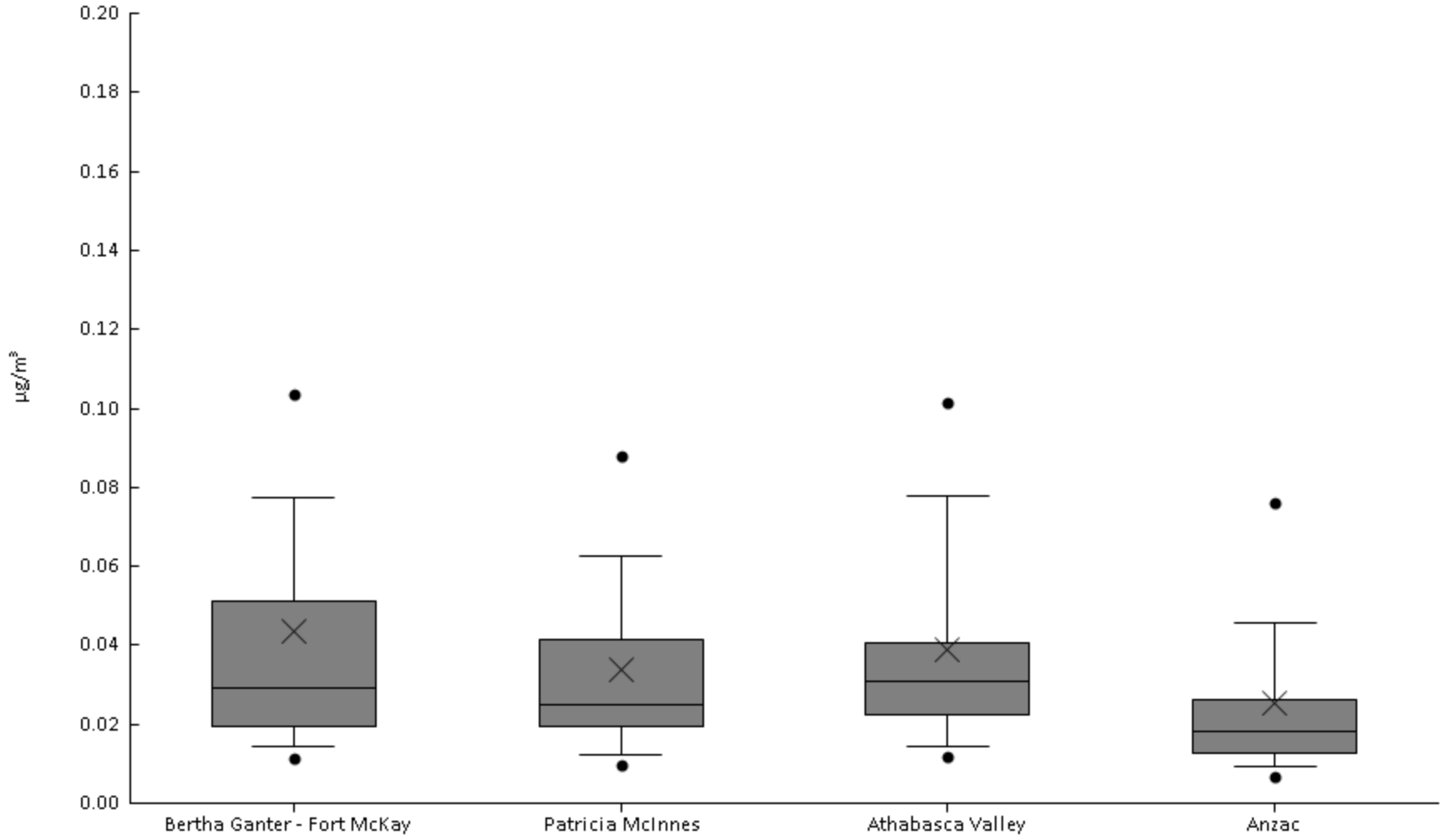
Particulate Matter (PM2.5 METALS) - Platinum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	56	100%	6.7E-7	1E-6	1.1E-6	1.3E-6	1.6E-6	2.2E-6	3.3E-6	4.1E-6	4.8E-6	1.9E-6	9.1E-7
AMS 6	Patricia McInnes	56	100%	5E-7	9.6E-7	1.3E-6	1.7E-6	2.1E-6	2.5E-6	3E-6	3.4E-6	4.4E-6	2.1E-6	7.1E-7
AMS 7	Athabasca Valley	59	100%	6.1E-7	1E-6	1.2E-6	1.6E-6	2E-6	2.2E-6	2.8E-6	3.3E-6	1.9E-5	2.3E-6	2.3E-6
AMS 14	Anzac	53	100%	5.2E-7	7.5E-7	1E-6	1.3E-6	1.6E-6	2.2E-6	2.5E-6	2.5E-6	3.9E-6	1.7E-6	6.3E-7



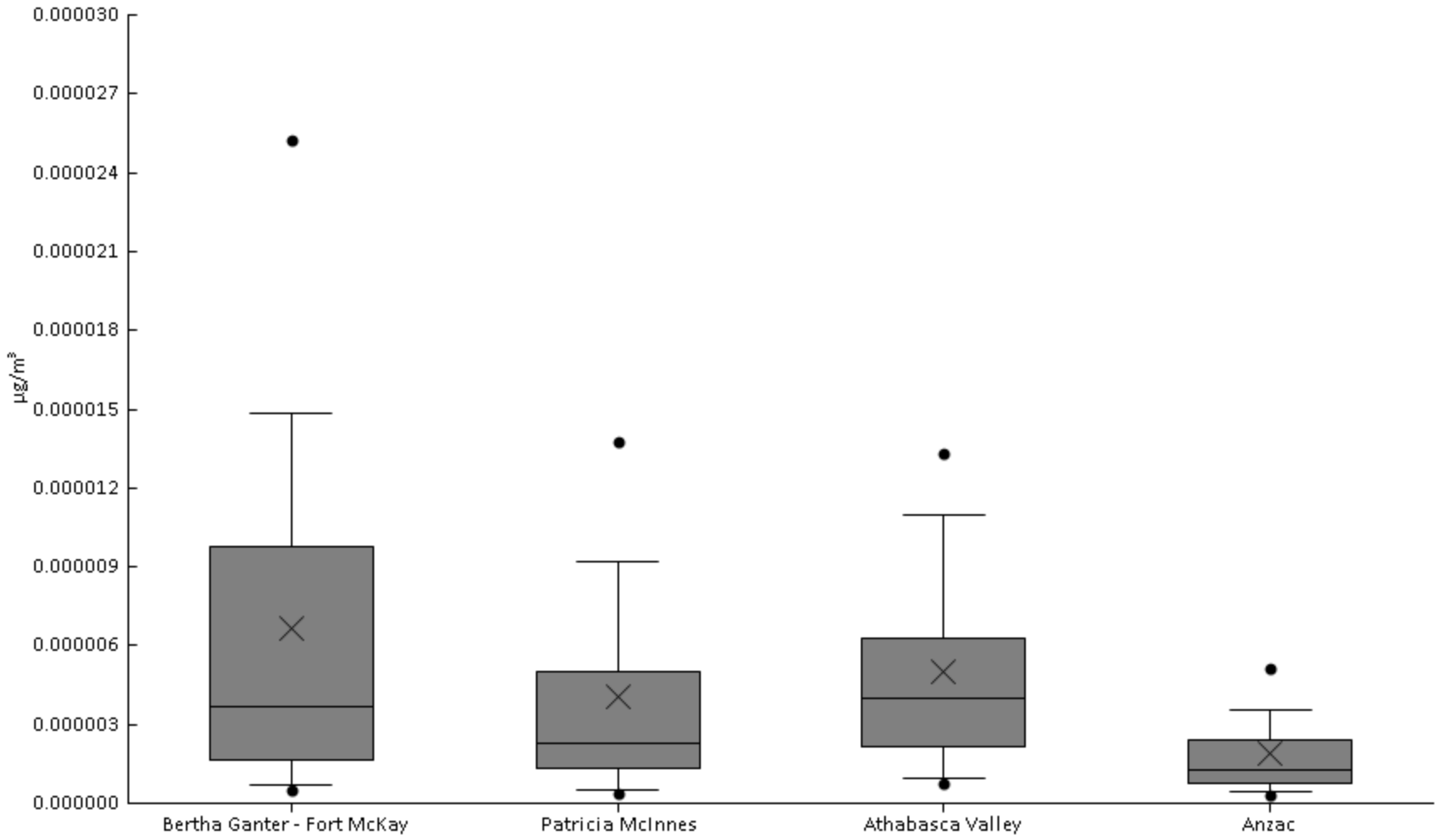
Particulate Matter (PM2.5 METALS) - Potassium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	4.8E-3	0.012	0.014	0.019	0.029	0.051	0.077	0.1	0.32	0.044	0.049
AMS 6	Patricia McInnes	60	100%	6.7E-3	9.9E-3	0.012	0.019	0.025	0.042	0.063	0.088	0.16	0.034	0.026
AMS 7	Athabasca Valley	61	100%	6.8E-3	0.012	0.015	0.022	0.031	0.041	0.078	0.1	0.19	0.039	0.032
AMS 14	Anzac	57	100%	4.7E-3	6.9E-3	9.1E-3	0.013	0.018	0.026	0.046	0.076	0.15	0.026	0.026



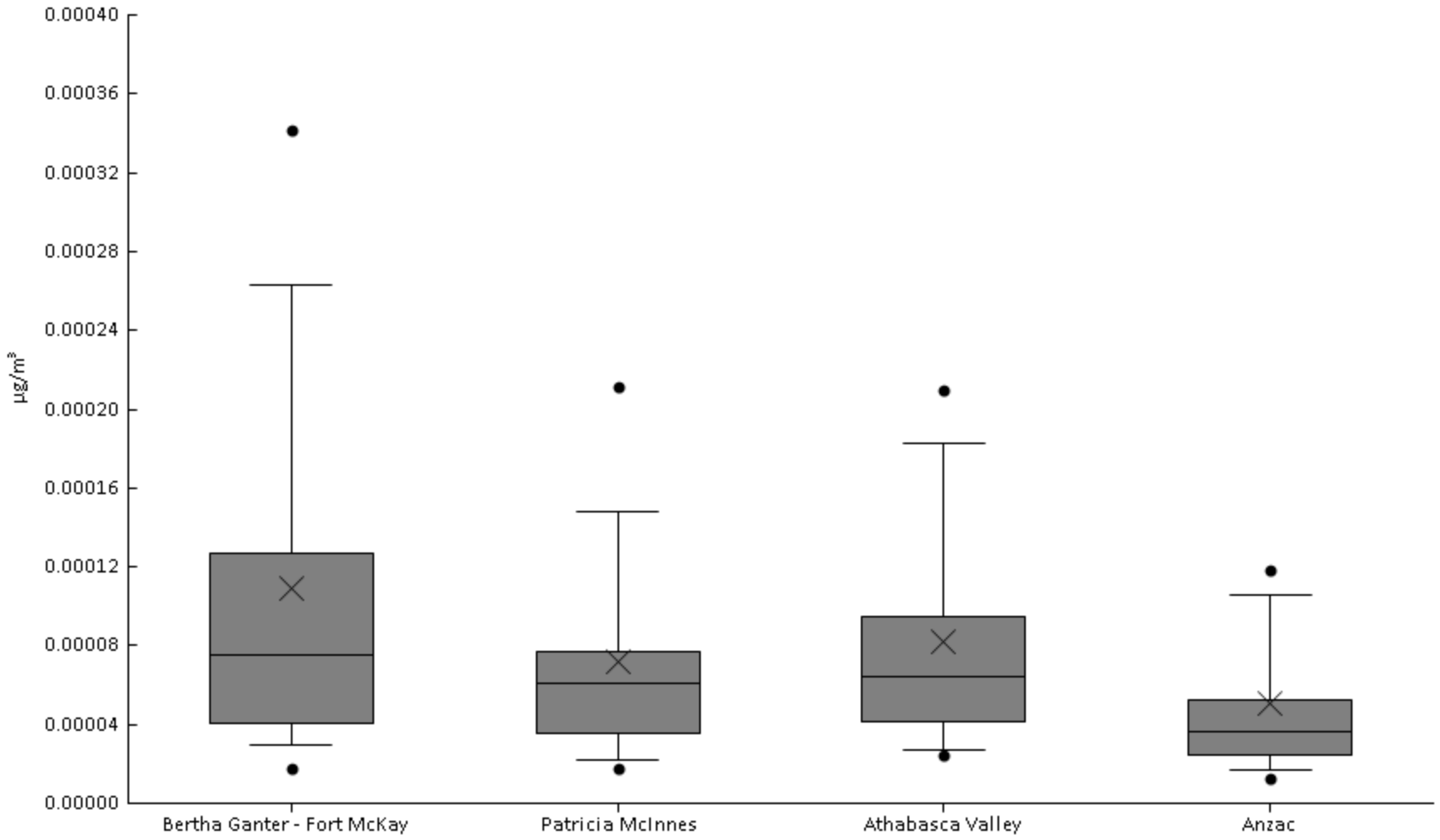
Particulate Matter (PM2.5 METALS) - Praseodymium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	3.5E-7	4.8E-7	6.7E-7	1.6E-6	3.7E-6	9.8E-6	1.5E-5	2.5E-5	4.6E-5	6.7E-6	8.1E-6
AMS 6	Patricia McInnes	60	100%	3.1E-7	3.8E-7	4.9E-7	1.4E-6	2.3E-6	5E-6	9.2E-6	1.4E-5	2.5E-5	4.1E-6	4.8E-6
AMS 7	Athabasca Valley	61	100%	5.3E-7	7.6E-7	9.7E-7	2.1E-6	4E-6	6.3E-6	1.1E-5	1.3E-5	1.9E-5	5E-6	4.2E-6
AMS 14	Anzac	57	96%	0	3.5E-7	4.6E-7	7.9E-7	1.3E-6	2.4E-6	3.6E-6	5.1E-6	1.1E-5	1.9E-6	1.8E-6



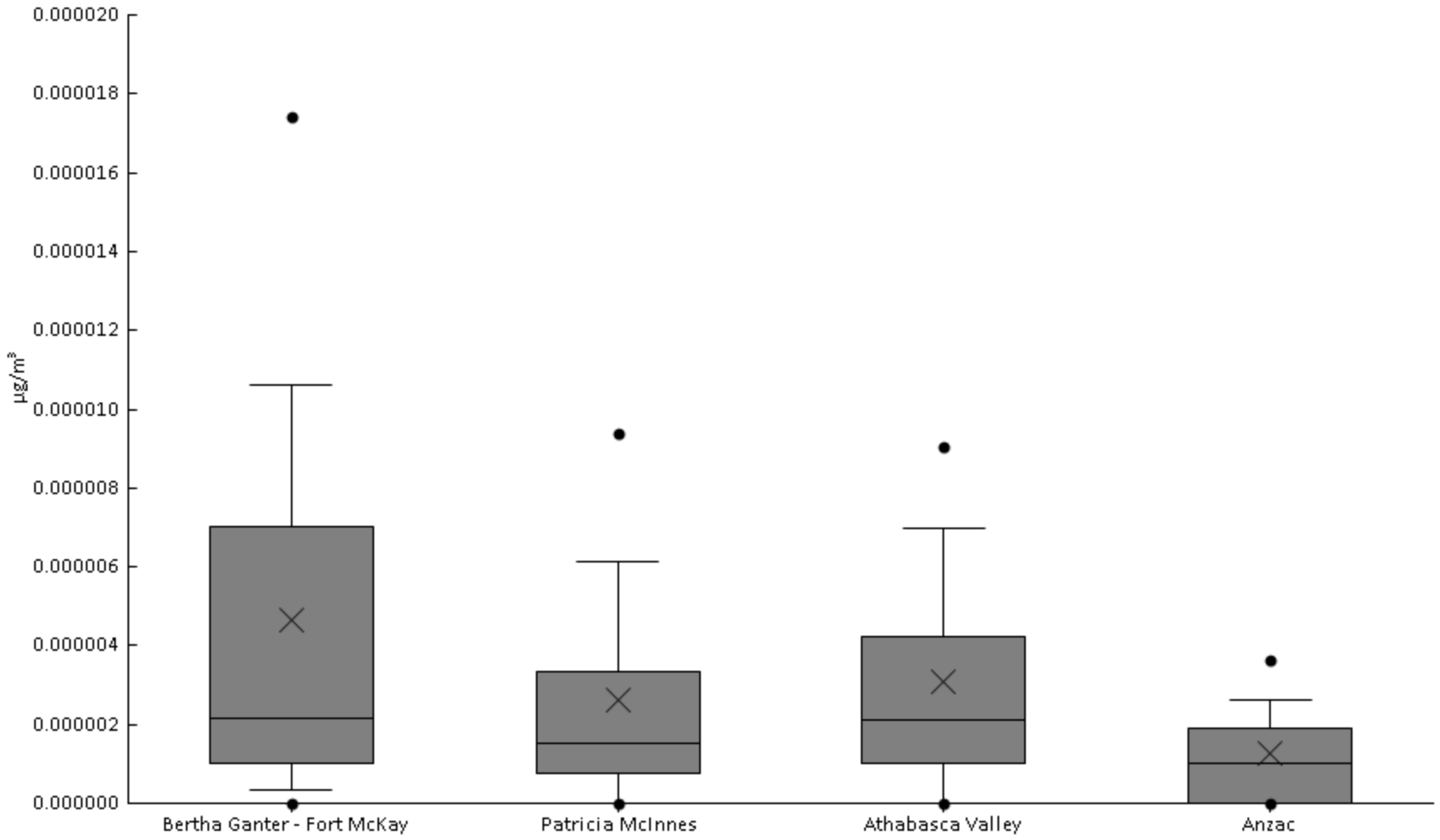
Particulate Matter (PM2.5 METALS) - Rubidium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1.2E-5	1.8E-5	2.9E-5	4.1E-5	7.6E-5	1.3E-4	2.6E-4	3.4E-4	5.3E-4	1.1E-4	1E-4
AMS 6	Patricia McInnes	60	100%	1.4E-5	1.7E-5	2.2E-5	3.5E-5	6E-5	7.7E-5	1.5E-4	2.1E-4	3E-4	7.2E-5	5.9E-5
AMS 7	Athabasca Valley	61	100%	1.9E-5	2.4E-5	2.7E-5	4.1E-5	6.4E-5	9.4E-5	1.8E-4	2.1E-4	2.7E-4	8.2E-5	5.9E-5
AMS 14	Anzac	57	100%	8.1E-6	1.3E-5	1.7E-5	2.5E-5	3.6E-5	5.2E-5	1.1E-4	1.2E-4	4.8E-4	5.1E-5	6.4E-5



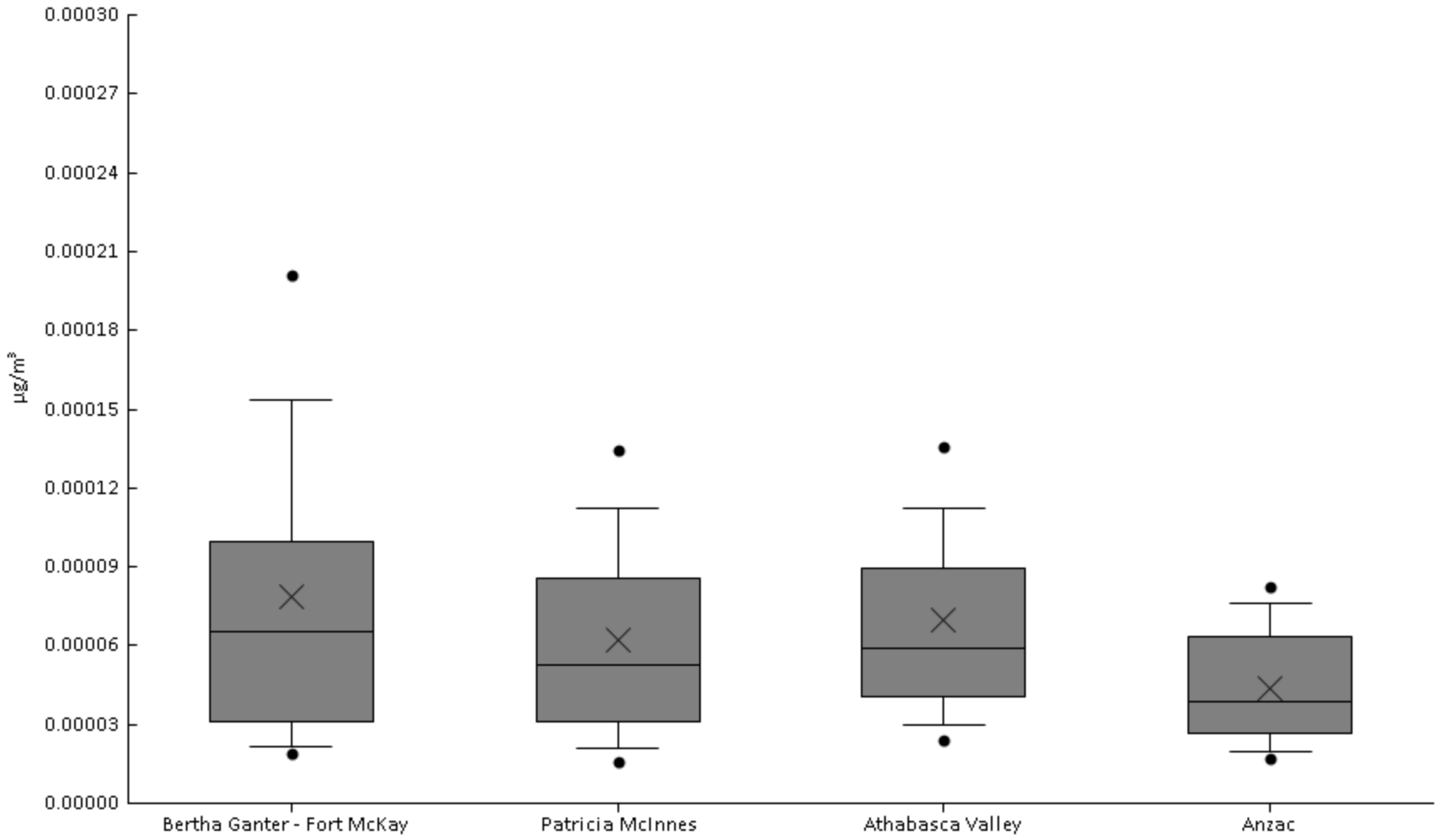
Particulate Matter (PM2.5 METALS) - Samarium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	90%	0	0	3.4E-7	1E-6	2.1E-6	7E-6	1.1E-5	1.7E-5	3.3E-5	4.6E-6	5.8E-6
AMS 6	Patricia McInnes	60	83%	0	0	0	7.5E-7	1.5E-6	3.3E-6	6.1E-6	9.4E-6	1.7E-5	2.6E-6	3.4E-6
AMS 7	Athabasca Valley	61	89%	0	0	0	1E-6	2.1E-6	4.2E-6	7E-6	9E-6	1.4E-5	3.1E-6	2.9E-6
AMS 14	Anzac	57	74%	0	0	0	0	1E-6	1.9E-6	2.6E-6	3.6E-6	7.1E-6	1.3E-6	1.4E-6



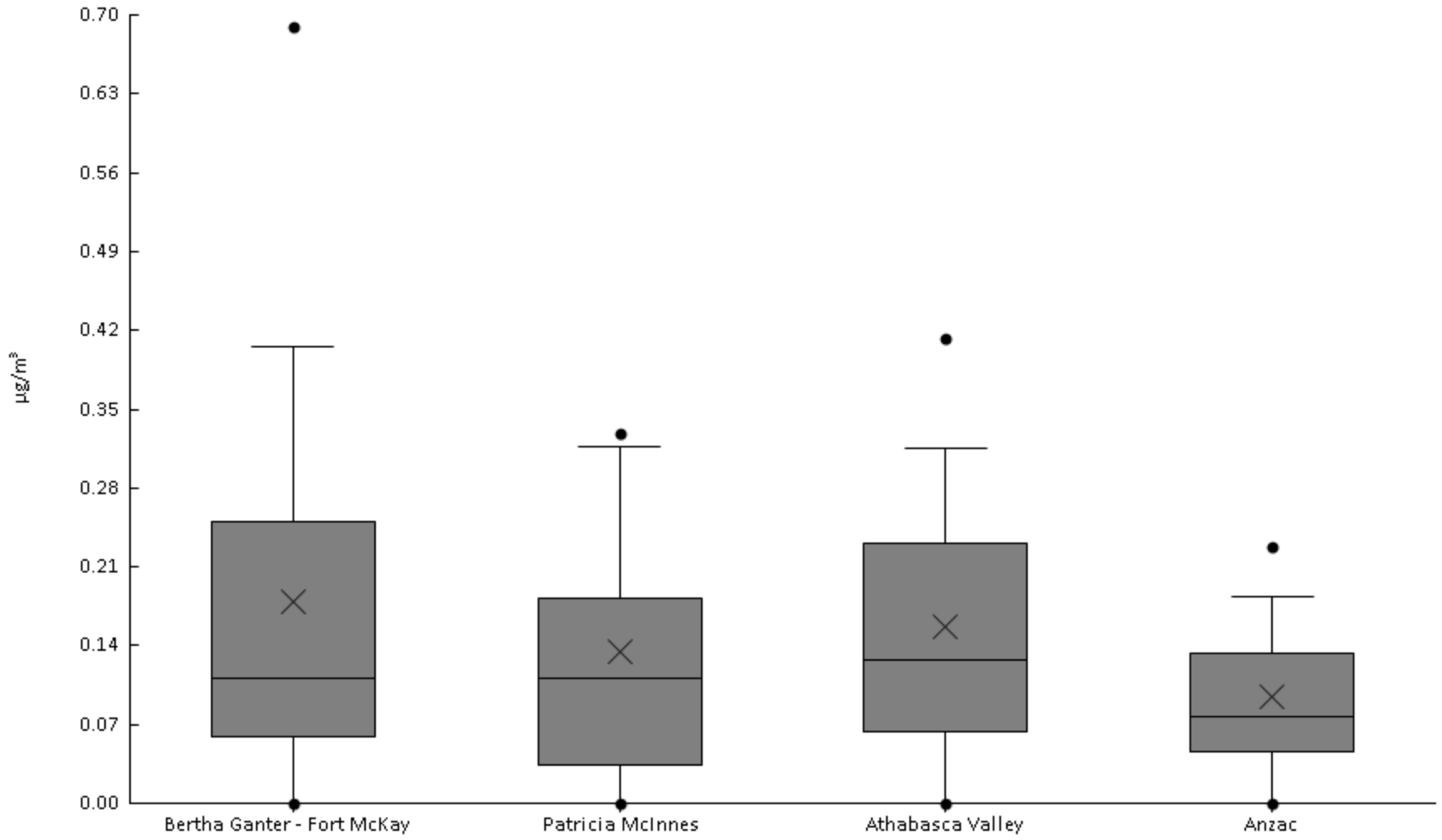
Particulate Matter (PM2.5 METALS) - Selenium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	98%	0	1.9E-5	2.2E-5	3.1E-5	6.5E-5	1E-4	1.5E-4	2E-4	3.4E-4	7.8E-5	6.5E-5
AMS 6	Patricia McInnes	60	97%	0	1.6E-5	2.1E-5	3.1E-5	5.3E-5	8.6E-5	1.1E-4	1.3E-4	3E-4	6.2E-5	4.6E-5
AMS 7	Athabasca Valley	61	98%	0	2.4E-5	3E-5	4E-5	5.9E-5	8.9E-5	1.1E-4	1.4E-4	3E-4	7E-5	4.6E-5
AMS 14	Anzac	56	98%	0	1.7E-5	2E-5	2.7E-5	3.8E-5	6.4E-5	7.6E-5	8.2E-5	1.1E-4	4.4E-5	2.2E-5



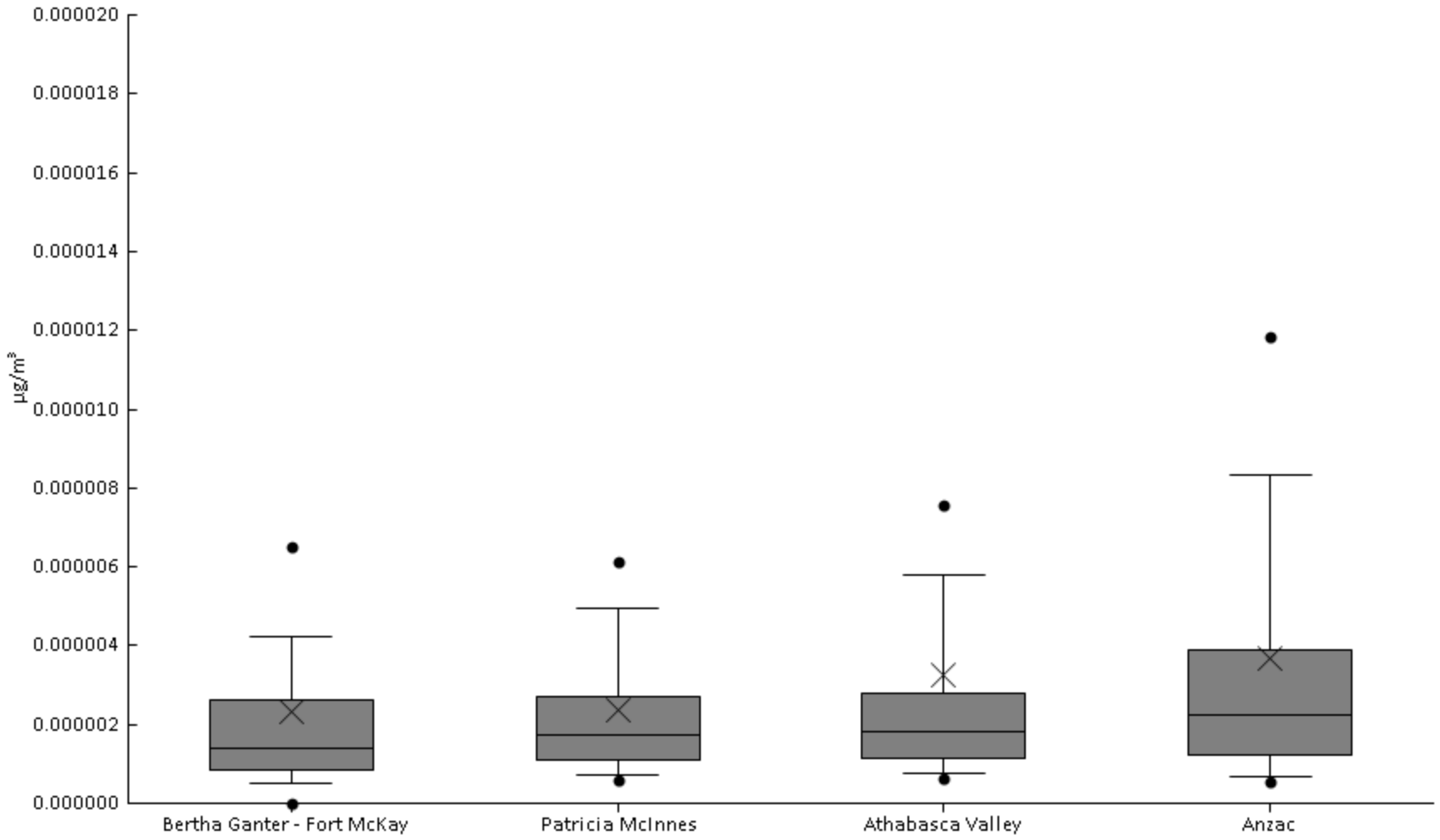
Particulate Matter (PM2.5 METALS) - Silicon (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	82%	0	0	0	0.059	0.11	0.25	0.41	0.69	0.96	0.18	0.2
AMS 6	Patricia McInnes	60	77%	0	0	0	0.034	0.11	0.18	0.32	0.33	0.78	0.13	0.15
AMS 7	Athabasca Valley	61	87%	0	0	0	0.063	0.13	0.23	0.31	0.41	0.61	0.16	0.13
AMS 14	Anzac	57	81%	0	0	0	0.046	0.077	0.13	0.18	0.23	0.45	0.095	0.085



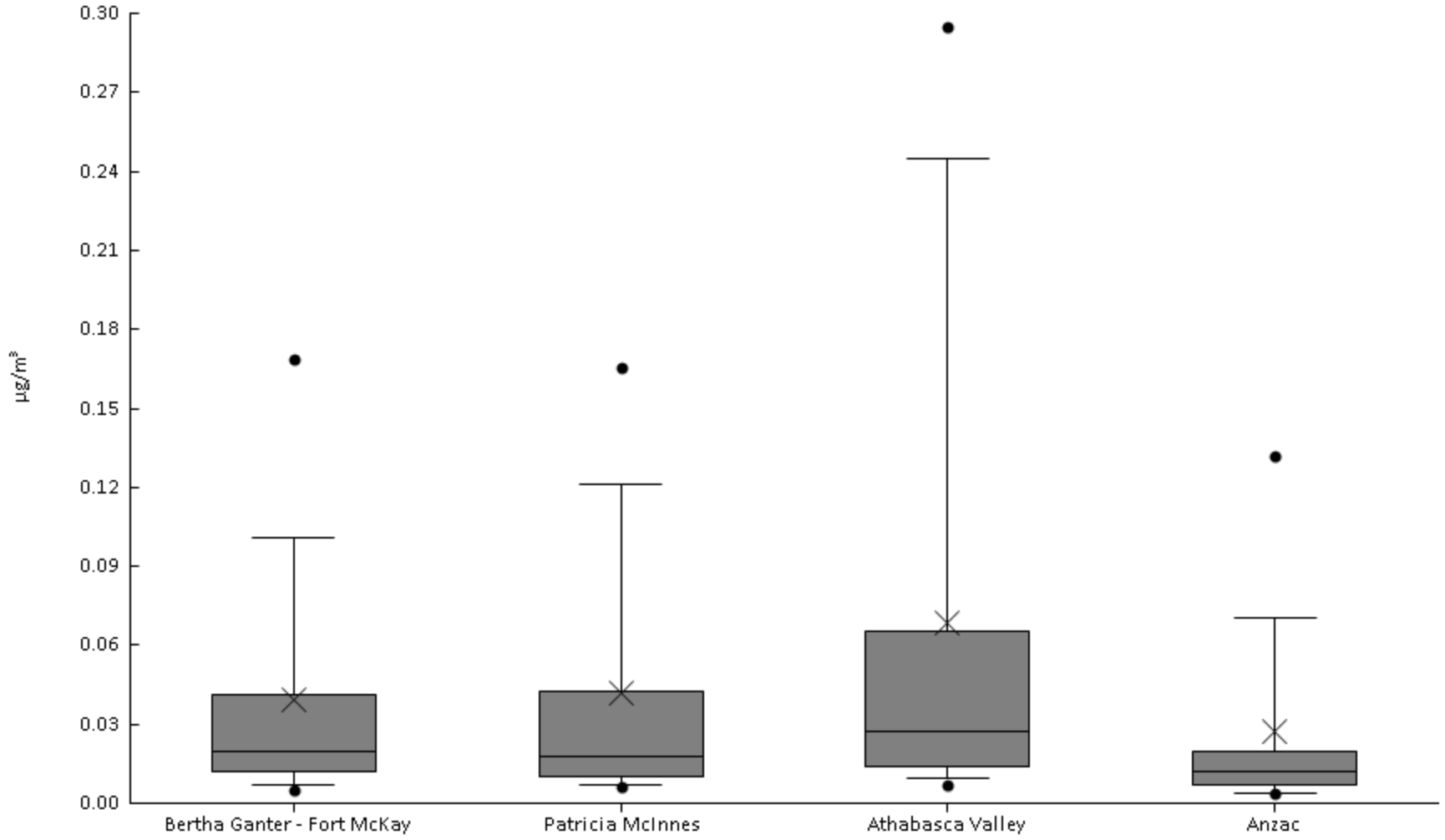
Particulate Matter (PM2.5 METALS) - Silver (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	58	93%	0	0	5.2E-7	8.6E-7	1.4E-6	2.6E-6	4.2E-6	6.5E-6	1.7E-5	2.3E-6	3.1E-6
AMS 6	Patricia McInnes	56	98%	0	5.8E-7	7.2E-7	1.1E-6	1.7E-6	2.7E-6	4.9E-6	6.1E-6	1.4E-5	2.4E-6	2.2E-6
AMS 7	Athabasca Valley	59	97%	0	6.2E-7	7.6E-7	1.1E-6	1.8E-6	2.8E-6	5.8E-6	7.6E-6	3.2E-5	3.2E-6	5.6E-6
AMS 14	Anzac	52	96%	0	5.7E-7	6.6E-7	1.2E-6	2.3E-6	3.9E-6	8.3E-6	1.2E-5	2.3E-5	3.7E-6	4.5E-6



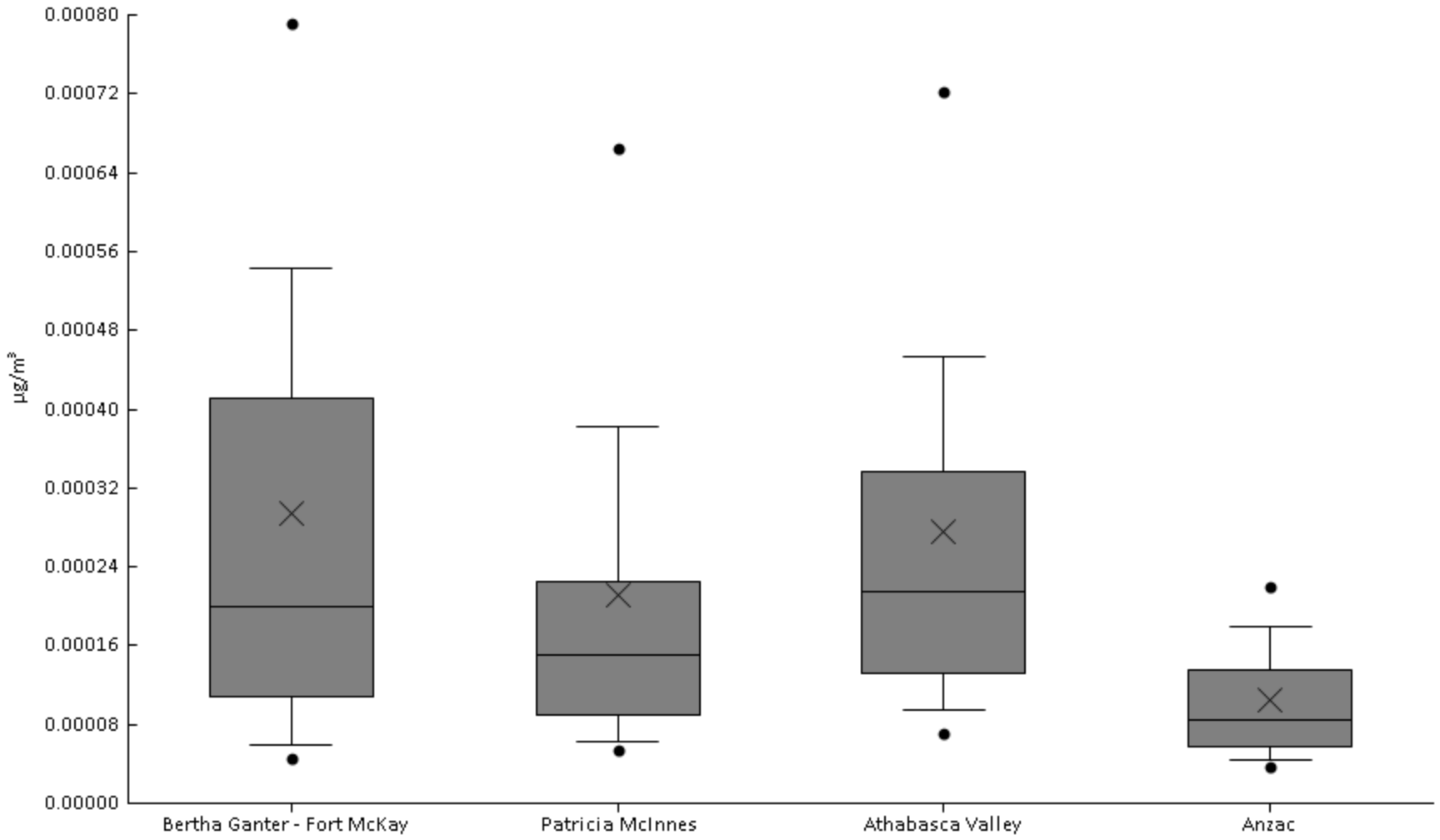
Particulate Matter (PM2.5 METALS) - Sodium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	3.1E-3	4.8E-3	7.1E-3	0.012	0.019	0.041	0.1	0.17	0.25	0.039	0.05
AMS 6	Patricia McInnes	60	100%	3.9E-3	6.1E-3	6.8E-3	1E-2	0.017	0.043	0.12	0.17	0.31	0.042	0.06
AMS 7	Athabasca Valley	60	100%	4.1E-3	7.3E-3	9.7E-3	0.014	0.028	0.065	0.24	0.29	0.43	0.068	0.097
AMS 14	Anzac	57	100%	3.3E-3	3.6E-3	4E-3	6.7E-3	0.012	0.02	0.07	0.13	0.23	0.027	0.044



Particulate Matter (PM2.5 METALS) - Strontium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	3.4E-5	4.6E-5	5.9E-5	1.1E-4	2E-4	4.1E-4	5.4E-4	7.9E-4	1.6E-3	2.9E-4	2.8E-4
AMS 6	Patricia McInnes	60	100%	3E-5	5.5E-5	6.2E-5	9E-5	1.5E-4	2.3E-4	3.8E-4	6.6E-4	1.4E-3	2.1E-4	2.3E-4
AMS 7	Athabasca Valley	61	100%	4.2E-5	7.1E-5	9.4E-5	1.3E-4	2.1E-4	3.4E-4	4.5E-4	7.2E-4	1.6E-3	2.8E-4	2.4E-4
AMS 14	Anzac	56	100%	1.9E-5	3.7E-5	4.4E-5	5.7E-5	8.4E-5	1.3E-4	1.8E-4	2.2E-4	5.2E-4	1.1E-4	8E-5

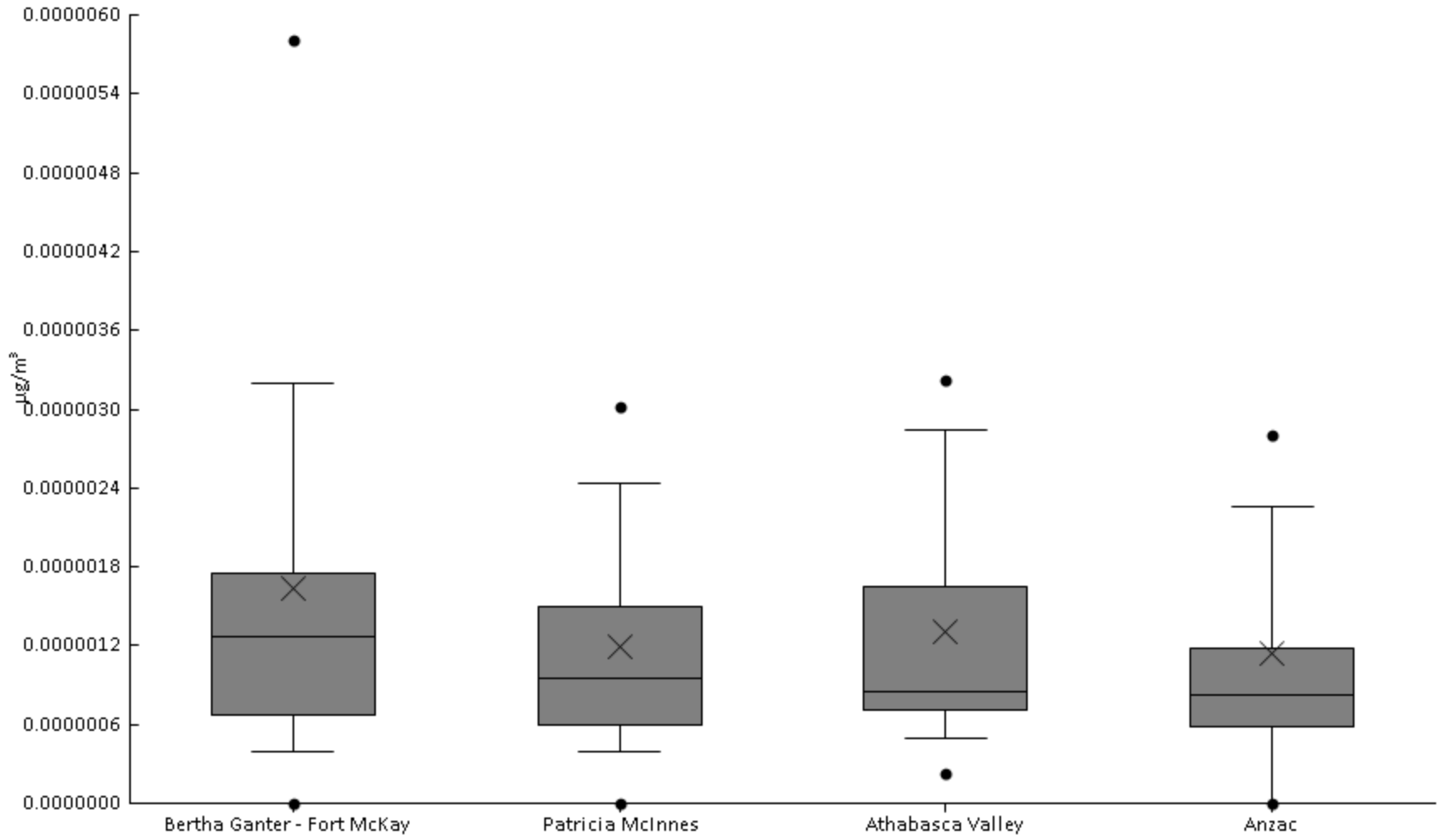


Particulate Matter (PM2.5 METALS) - Tantalum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	7%	0	0	0	0	0	0	0	1.7E-6	3.1E-6	1.4E-7	5.6E-7
AMS 6	Patricia McInnes	60	2%	0	0	0	0	0	0	0	0	2E-6	3.4E-8	2.6E-7
AMS 7	Athabasca Valley	61	2%	0	0	0	0	0	0	0	0	1.7E-6	2.8E-8	2.2E-7
AMS 14	Anzac	55	0%	0	0	0	0	0	0	0	0	0	0	0

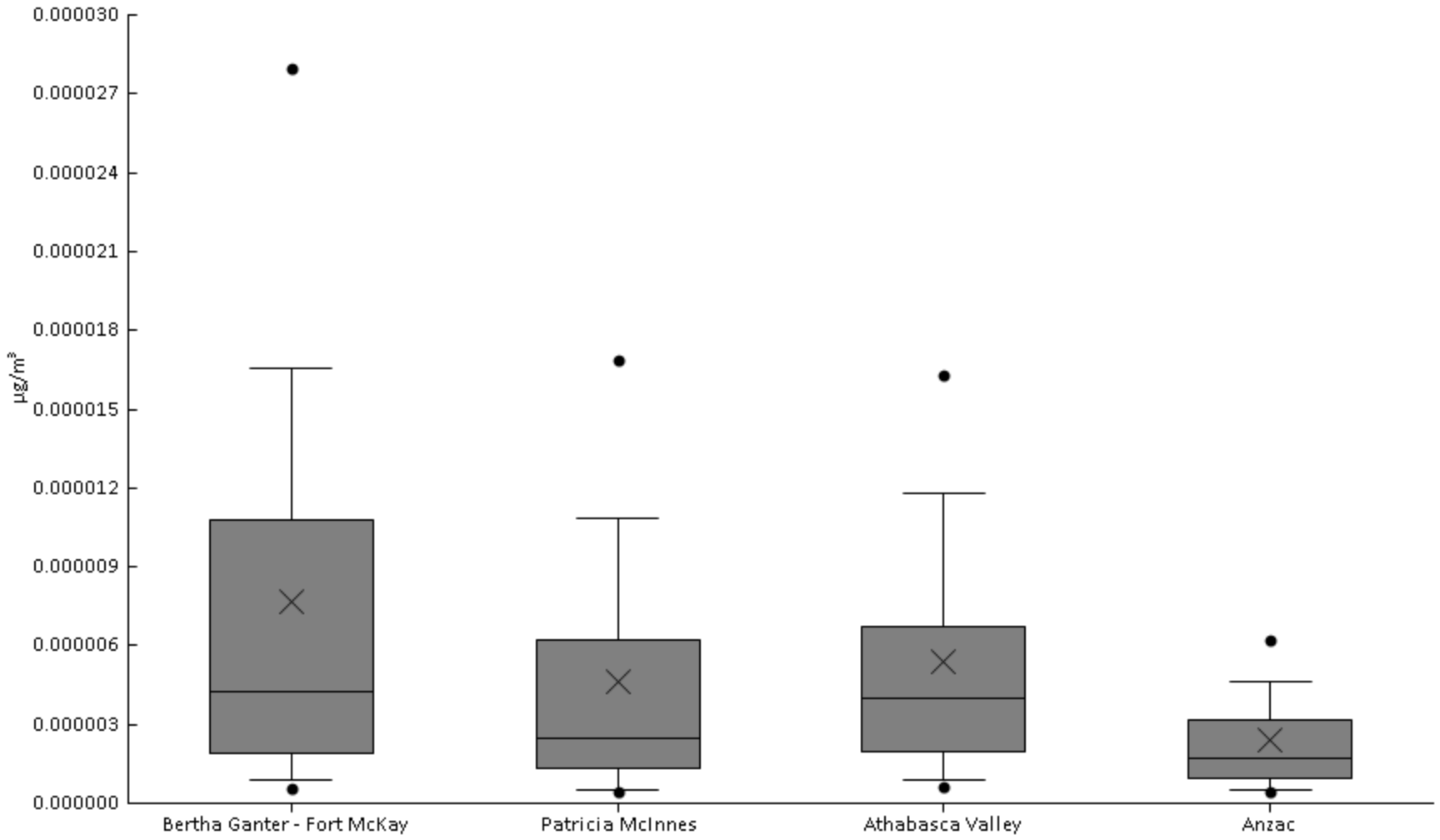
Particulate Matter (PM2.5 METALS) - Thallium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	92%	0	0	3.9E-7	6.7E-7	1.3E-6	1.8E-6	3.2E-6	5.8E-6	8.5E-6	1.6E-6	1.6E-6
AMS 6	Patricia McInnes	60	92%	0	0	3.9E-7	6E-7	9.6E-7	1.5E-6	2.4E-6	3E-6	4E-6	1.2E-6	8.8E-7
AMS 7	Athabasca Valley	61	95%	0	2.3E-7	4.9E-7	7.1E-7	8.5E-7	1.6E-6	2.8E-6	3.2E-6	4.5E-6	1.3E-6	9.7E-7
AMS 14	Anzac	57	86%	0	0	0	5.9E-7	8.3E-7	1.2E-6	2.3E-6	2.8E-6	1.1E-5	1.1E-6	1.5E-6



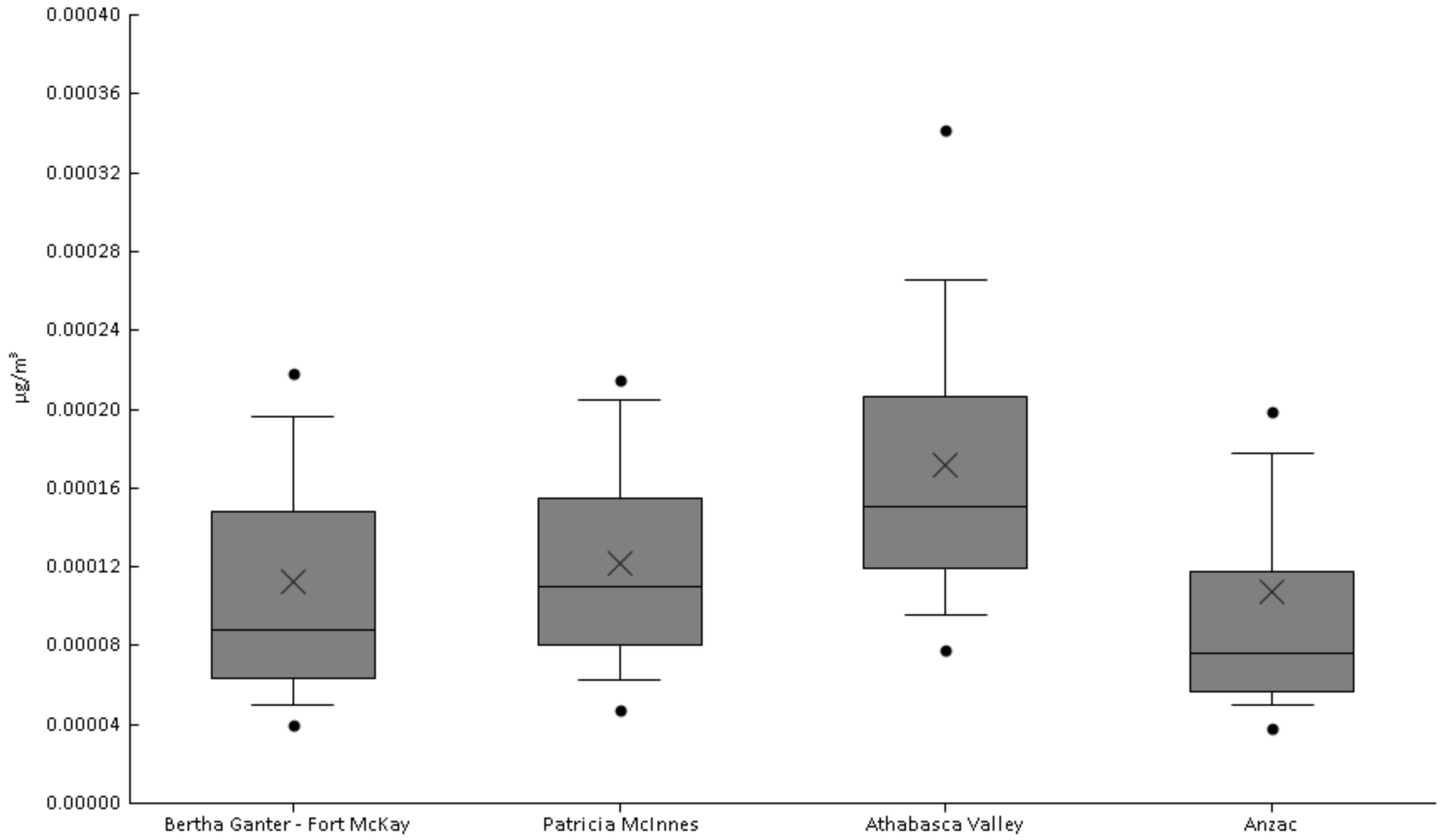
Particulate Matter (PM2.5 METALS) - Thorium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	3.8E-7	5.5E-7	8.9E-7	1.9E-6	4.2E-6	1.1E-5	1.7E-5	2.8E-5	5.6E-5	7.7E-6	9.5E-6
AMS 6	Patricia McInnes	60	100%	3E-7	4.1E-7	5.1E-7	1.3E-6	2.5E-6	6.2E-6	1.1E-5	1.7E-5	2.8E-5	4.6E-6	5.5E-6
AMS 7	Athabasca Valley	61	100%	5E-7	6.4E-7	8.6E-7	2E-6	4E-6	6.7E-6	1.2E-5	1.6E-5	2.2E-5	5.4E-6	4.9E-6
AMS 14	Anzac	56	100%	3E-7	4.3E-7	5.3E-7	9.3E-7	1.7E-6	3.2E-6	4.6E-6	6.2E-6	1.4E-5	2.4E-6	2.3E-6



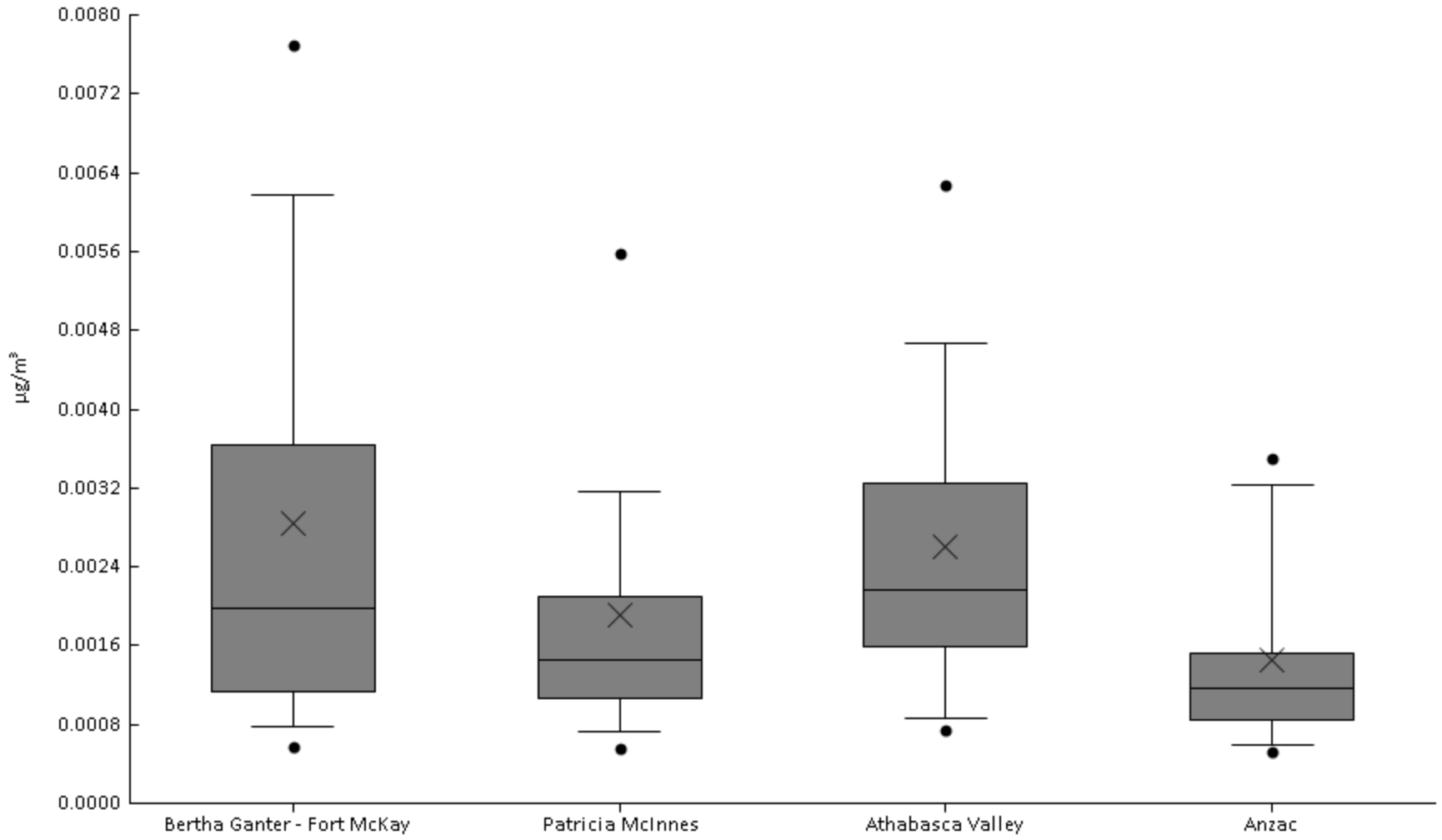
Particulate Matter (PM2.5 METALS) - Tin (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	54	100%	3.6E-5	4E-5	5E-5	6.4E-5	8.8E-5	1.5E-4	2E-4	2.2E-4	5.2E-4	1.1E-4	8E-5
AMS 6	Patricia McInnes	59	100%	4E-5	4.7E-5	6.3E-5	8E-5	1.1E-4	1.5E-4	2E-4	2.1E-4	3.1E-4	1.2E-4	5.5E-5
AMS 7	Athabasca Valley	61	100%	5.5E-5	7.8E-5	9.5E-5	1.2E-4	1.5E-4	2.1E-4	2.7E-4	3.4E-4	4.5E-4	1.7E-4	7.7E-5
AMS 14	Anzac	47	100%	3.7E-5	3.8E-5	5E-5	5.7E-5	7.6E-5	1.2E-4	1.8E-4	2E-4	8.4E-4	1.1E-4	1.2E-4



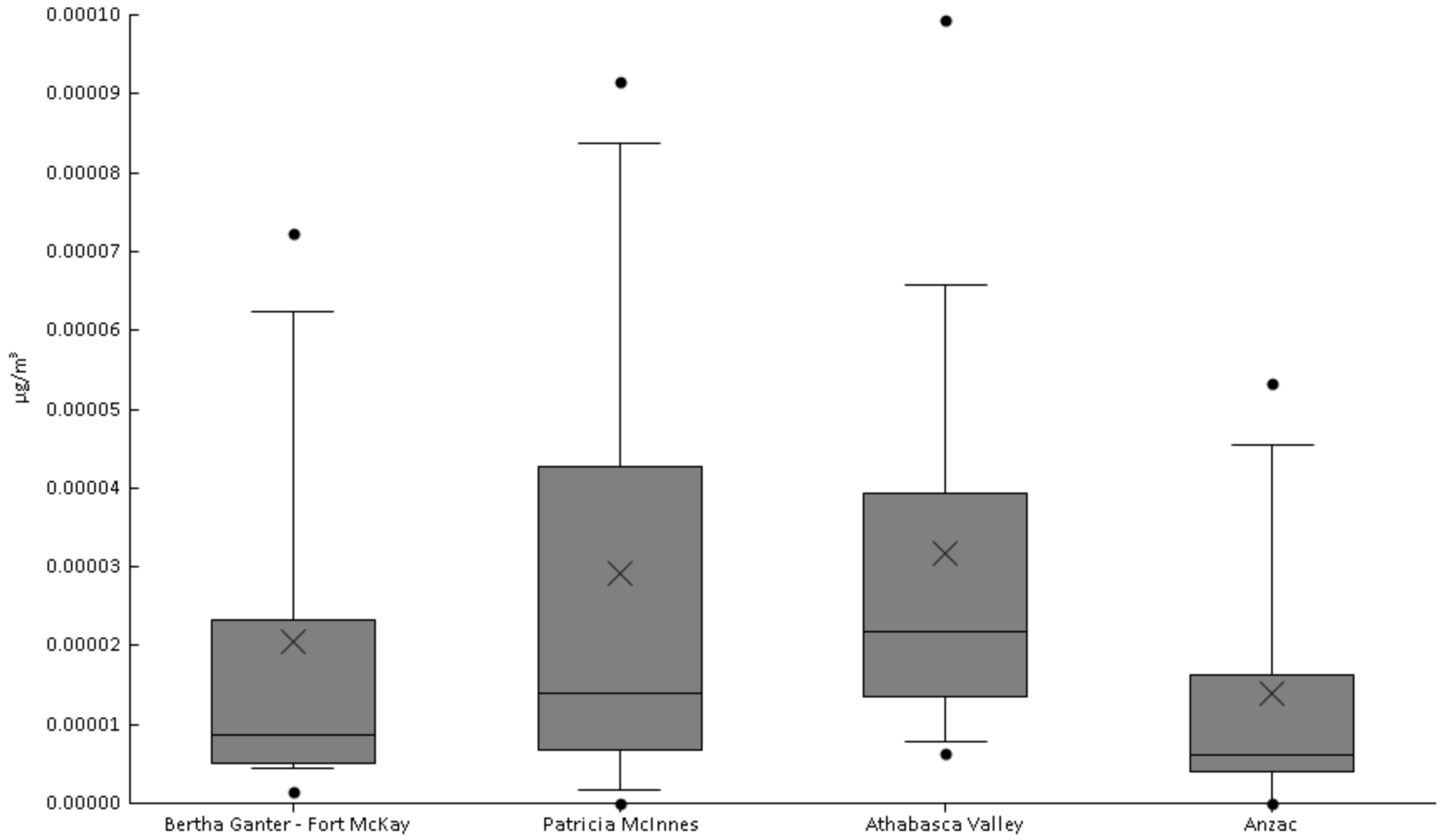
Particulate Matter (PM2.5 METALS) - Titanium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	5E-4	5.7E-4	7.7E-4	1.1E-3	2E-3	3.6E-3	6.2E-3	7.7E-3	0.014	2.8E-3	2.6E-3
AMS 6	Patricia McInnes	59	100%	4.2E-4	5.6E-4	7.3E-4	1.1E-3	1.5E-3	2.1E-3	3.2E-3	5.6E-3	0.01	1.9E-3	1.7E-3
AMS 7	Athabasca Valley	61	100%	6.4E-4	7.4E-4	8.7E-4	1.6E-3	2.2E-3	3.3E-3	4.7E-3	6.3E-3	8.6E-3	2.6E-3	1.7E-3
AMS 14	Anzac	56	100%	3.7E-4	5.3E-4	5.9E-4	8.4E-4	1.2E-3	1.5E-3	3.2E-3	3.5E-3	5.7E-3	1.4E-3	1E-3



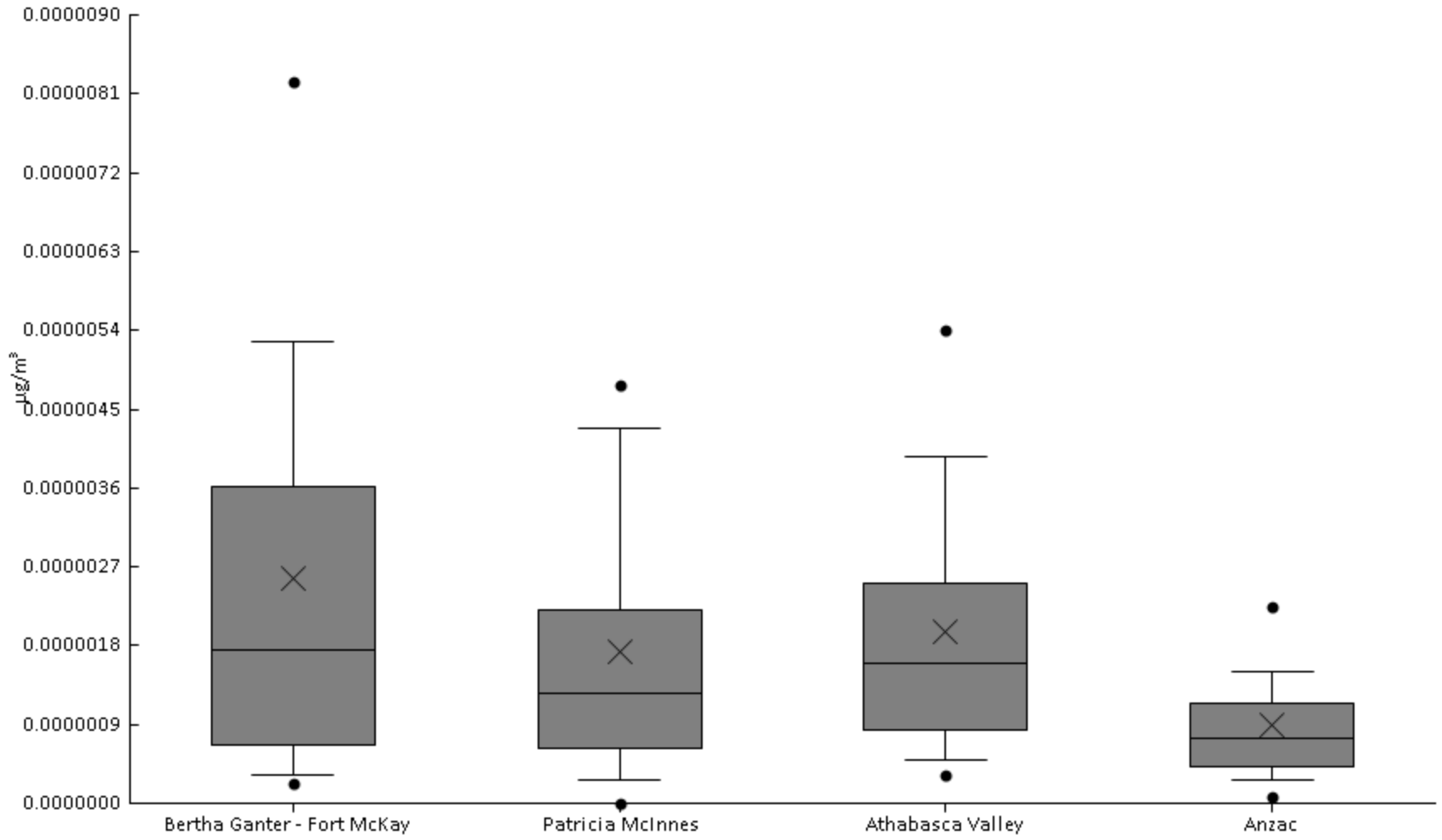
Particulate Matter (PM2.5 METALS) - Tungsten (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	57	95%	0	1.5E-6	4.4E-6	5.1E-6	8.7E-6	2.3E-5	6.2E-5	7.2E-5	1.2E-4	2.1E-5	2.6E-5
AMS 6	Patricia McInnes	59	90%	0	0	1.7E-6	6.7E-6	1.4E-5	4.3E-5	8.4E-5	9.2E-5	1.5E-4	2.9E-5	3.5E-5
AMS 7	Athabasca Valley	61	100%	5.4E-6	6.3E-6	7.8E-6	1.4E-5	2.2E-5	3.9E-5	6.6E-5	9.9E-5	1.7E-4	3.2E-5	3E-5
AMS 14	Anzac	57	82%	0	0	0	4.1E-6	6E-6	1.6E-5	4.6E-5	5.3E-5	7.9E-5	1.4E-5	1.8E-5



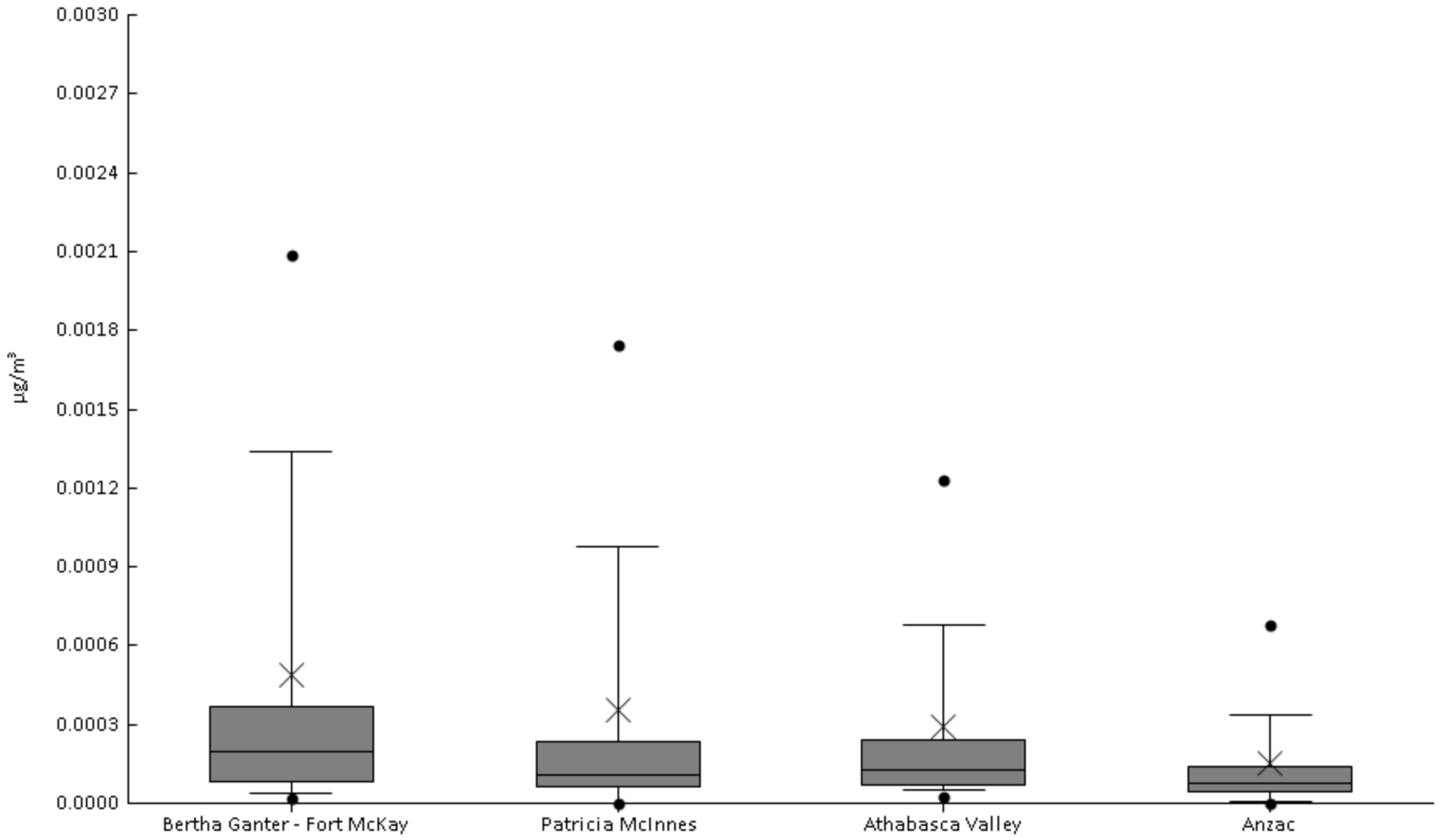
Particulate Matter (PM2.5 METALS) - Uranium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	98%	0	2.3E-7	3.3E-7	6.6E-7	1.7E-6	3.6E-6	5.3E-6	8.2E-6	1.5E-5	2.6E-6	2.9E-6
AMS 6	Patricia McInnes	60	92%	0	0	2.6E-7	6.2E-7	1.3E-6	2.2E-6	4.3E-6	4.8E-6	8.6E-6	1.7E-6	1.7E-6
AMS 7	Athabasca Valley	61	98%	0	3.2E-7	5E-7	8.4E-7	1.6E-6	2.5E-6	4E-6	5.4E-6	7E-6	2E-6	1.5E-6
AMS 14	Anzac	57	95%	0	7.3E-8	2.7E-7	4.1E-7	7.5E-7	1.1E-6	1.5E-6	2.2E-6	3.9E-6	8.9E-7	7.4E-7



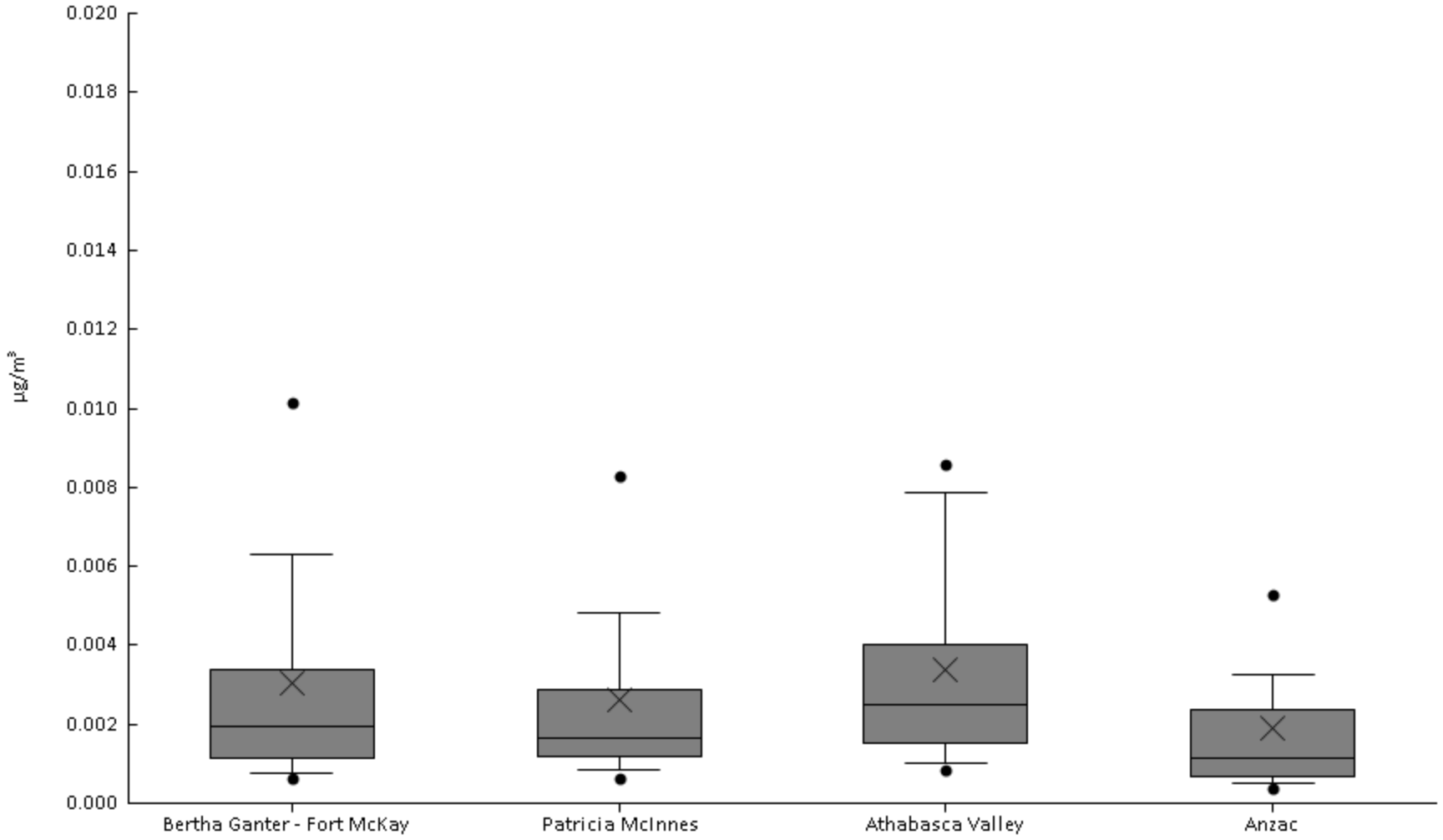
Particulate Matter (PM2.5 METALS) - Vanadium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	95%	0	1.9E-5	3.9E-5	8.4E-5	1.9E-4	3.7E-4	1.3E-3	2.1E-3	6.4E-3	4.9E-4	1E-3
AMS 6	Patricia McInnes	60	87%	0	0	0	6.3E-5	1.1E-4	2.4E-4	9.7E-4	1.7E-3	4.6E-3	3.6E-4	7.3E-4
AMS 7	Athabasca Valley	61	95%	0	2.5E-5	5.2E-5	7.1E-5	1.2E-4	2.4E-4	6.8E-4	1.2E-3	2.5E-3	2.9E-4	4.6E-4
AMS 14	Anzac	56	89%	0	0	3.2E-6	4.4E-5	7.5E-5	1.4E-4	3.4E-4	6.8E-4	1.5E-3	1.5E-4	2.4E-4



Particulate Matter (PM2.5 METALS) - Zinc (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.2E-4	6.2E-4	7.6E-4	1.2E-3	1.9E-3	3.4E-3	6.3E-3	0.01	0.022	3.1E-3	3.7E-3
AMS 6	Patricia McInnes	60	100%	5.3E-4	6.4E-4	8.6E-4	1.2E-3	1.7E-3	2.9E-3	4.8E-3	8.3E-3	0.016	2.6E-3	2.8E-3
AMS 7	Athabasca Valley	61	100%	7.2E-4	8.4E-4	1E-3	1.5E-3	2.5E-3	4E-3	7.8E-3	8.6E-3	0.015	3.4E-3	2.8E-3
AMS 14	Anzac	55	100%	2.8E-4	3.8E-4	4.9E-4	6.6E-4	1.1E-3	2.4E-3	3.2E-3	5.3E-3	0.018	1.9E-3	2.7E-3



REVISIONS

Station Name		Patricia McInnes		Travel Blank	
Station #		AMS 6			
Sample Date		06-Jul		06-Jul	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/sample)	Results (µg/m³)	QC Flag	Results (µg/m³)	QC Flag
Particulate Matter	1.00	2.83	V0	0.23	V0
Aluminum	0.1380326	0.0461726	V0	0.0000000	V1
Antimony	0.0001784	0.0000328	V0	0.0000000	V1
Arsenic	0.0001060	0.0000267	V0	0.0000000	V1
Barium	0.0092847	0.0004910	V0	0.0000000	V1
Beryllium	0.0000946	0.0000000	V1	0.0000000	V1
Bismuth	0.0000093	0.0000015	V0	0.0000006	V0
Cadmium	0.0000174	0.0000157	V0	0.0000000	V1
Calcium	0.4112124	0.0589957	V0	0.0000000	V1
Cerium	0.0000174	0.0000542	V0	0.0000000	V1
Cesium	0.0000100	0.0000030	V0	0.0000000	V1
Chromium	0.0022262	0.0001755	V0	0.0000000	V1
Cobalt	0.0000273	0.0000137	V0	0.0000027	V0
Copper	0.0017171	0.0004928	V0	0.0001105	V0
Iron	0.0393063	0.0484334	V0	0.0000000	V1
Lanthanum	0.0000130	0.0000260	V0	0.0000000	V1
Lead	0.0008577	0.0001127	V0	0.0000000	V1
Lithium	0.0000374	0.0000337	V0	0.0000000	V1
Magnesium	0.0091409	0.0128967	V0	0.0003809	V0
Manganese	0.0006949	0.0007492	V0	0.0000000	V1
Molybdenum	0.0007116	0.0000364	V0	0.0000000	V1
Neodymium	0.0000140	0.0000179	V0	0.0000000	V1
Nickel	0.0005429	0.0002564	V0	0.0000781	V0
Niobium	0.0000202	0.0000044	V0	0.0000000	V1
Palladium	0.0000632	0.0000032	V0	0.0000035	V0
Phosphorus	0.0459574	0.0069945	V0	0.0064277	V0
Platinum	0.0000088	0.0000022	V0	0.0000015	V0
Potassium	0.0061261	0.0191917	V0	0.0010955	V0
Praseodymium	0.0000070	0.0000051	V0	0.0000000	V1
Rubidium	0.0000184	0.0000564	V0	0.0000000	V1
Samarium	0.0000133	0.0000037	V0	0.0000000	V1
Selenium	0.0003366	0.0000511	V0	0.0000000	V1
Silicon	0.7676322	0.0596821	V0	0.0608658	V0
Silver	0.0000100	0.0000031	V0	0.0000007	V0
Sodium	0.0169447	0.0494751	V0	0.0024375	V0
Strontium	0.0003375	0.0002147	V0	0.0000000	V1
Tantalum	0.0000394	0.0000000	V1	0.0000000	V1
Thallium	0.0000090	0.0000006	V0	0.0000000	V1
Thorium	0.0000059	0.0000069	V0	0.0000000	V1
Tin	0.0004414	0.0000765	V0	0.0000258	V0
Titanium	0.0015201	0.0024670	V0	0.0004199	V0
Tungsten	0.0000938	0.0000117	V0	0.0000047	V0
Uranium	0.0000048	0.0000019	V0	0.0000000	V1
Vanadium	0.0007697	0.0001067	V0	0.0000000	V1
Zinc	0.0055897	0.0018873	V0	0.0003704	V0

Station Name		Anzac		Travel Blank	
Station #		AMS 14			
Sample Date		5-Aug		5-Aug	
Particulate Size		PM2.5			
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/sample)	Results (µg/m³)	QC Flag	Results (µg/m³)	QC Flag
Particulate Matter	1.00	4.49	V0	0.07	V0
Aluminum	0.1380326	0.0067360	V0	0.0000000	V1
Antimony	0.0001784	0.0000174	V0	0.0000000	V1
Arsenic	0.0001060	0.0000406	V0	0.0000000	V1
Barium	0.0092847	0.0000000	V1	0.0000000	V1
Beryllium	0.0000946	0.0000000	V1	0.0000000	V1
Bismuth	0.0000093	0.0000006	V0	0.0000010	V0
Cadmium	0.0000174	0.0000046	V0	0.0000000	V1
Calcium	0.4112124	0.0000000	V1	0.0000000	V1
Cerium	0.0000174	0.0000090	V0	0.0000000	V1
Cesium	0.0000100	0.0000008	V0	0.0000000	V1
Chromium	0.0022262	0.0000000	V1	0.0000000	V1
Cobalt	0.0000273	0.0000084	V0	0.0000015	V0
Copper	0.0017171	0.0003763	V0	0.0007157	V0
Iron	0.0393063	0.0209161	V0	0.0000000	V1
Lanthanum	0.0000130	0.0000051	V0	0.0000000	V1
Lead	0.0008577	0.0000000	V1	0.0000000	V1
Lithium	0.0000374	0.0000073	V0	0.0000000	V1
Magnesium	0.0091409	0.0025437	V0	0.0004116	V0
Manganese	0.0006949	0.0002698	V0	0.0000000	V1
Molybdenum	0.0007116	0.0000000	V1	0.0000603	V0
Neodymium	0.0000140	0.0000035	V0	0.0000000	V1
Nickel	0.0005429	0.0000798	V0	0.0000511	V0
Niobium	0.0000202	0.0000009	V0	0.0000000	V1
Palladium	0.0000632	0.0000040	V0	0.0000035	V0
Phosphorus	0.0459574	0.0125101	V0	0.0065527	V0
Platinum	0.0000088	0.0000018	V0	0.0000016	V0
Potassium	0.0061261	0.0147181	V0	0.0010941	V0
Praseodymium	0.0000070	0.0000008	V0	0.0000000	V1
Rubidium	0.0000184	0.0000333	V0	0.0000010	V0
Samarium	0.0000133	0.0000011	V0	0.0000000	V1
Selenium	0.0003366	0.0000760	V0	0.0000168	V0
Silicon	0.7676322	0.1269332	V0	0.0669031	V0
Silver	0.0000100	-9999	M2	0.0000000	V1
Sodium	0.0169447	0.0033858	V0	0.0016907	V0
Strontium	0.0003375	0.0000351	V0	0.0000000	V1
Tantalum	0.0000394	0.0000000	V1	0.0000000	V1
Thallium	0.0000090	0.0000000	V1	0.0000000	V1
Thorium	0.0000059	0.0000010	V0	0.0000000	V1
Tin	0.0004414	0.0000824	V0	0.0000316	V0
Titanium	0.0015201	0.0006569	V0	0.0014332	V0
Tungsten	0.0000938	0.0000040	V0	0.0000000	V1
Uranium	0.0000048	0.0000003	V0	0.0000000	V1
Vanadium	0.0007697	0.0000000	V1	0.0000000	V1
Zinc	0.0055897	0.0006235	V0	0.0005234	V0

Station Name		Travel Blank	
Station #			
Sample Date		22-Oct	
Particulate Size			
Total Air Volume (m^3)		24	
Compound Name	MDL (µg/sample)	Results (µg/m^3)	QC Flag
Particulate Matter	1.00	-9999	M1
Aluminum	0.1380326	-9999	M1
Antimony	0.0001784	-9999	M1
Arsenic	0.0001060	-9999	M1
Barium	0.0092847	-9999	M1
Beryllium	0.0000946	-9999	M1
Bismuth	0.0000093	-9999	M1
Cadmium	0.0000174	-9999	M1
Calcium	0.4112124	-9999	M1
Cerium	0.0000174	-9999	M1
Cesium	0.0000100	-9999	M1
Chromium	0.0022262	-9999	M1
Cobalt	0.0000273	-9999	M1
Copper	0.0017171	-9999	M1
Iron	0.0393063	-9999	M1
Lanthanum	0.0000130	-9999	M1
Lead	0.0008577	-9999	M1
Lithium	0.0000374	-9999	M1
Magnesium	0.0091409	-9999	M1
Manganese	0.0006949	-9999	M1
Molybdenum	0.0007116	-9999	M1
Neodymium	0.0000140	-9999	M1
Nickel	0.0005429	-9999	M1
Niobium	0.0000202	-9999	M1
Palladium	0.0000632	-9999	M1
Phosphorus	0.0459574	-9999	M1
Platinum	0.0000088	-9999	M1
Potassium	0.0061261	-9999	M1
Praseodymium	0.0000070	-9999	M1
Rubidium	0.0000184	-9999	M1
Samarium	0.0000133	-9999	M1
Selenium	0.0003366	-9999	M1
Silicon	0.7676322	-9999	M1
Silver	0.0000100	-9999	M1
Sodium	0.0169447	-9999	M1
Strontium	0.0003375	-9999	M1
Tantalum	0.0000394	-9999	M1
Thallium	0.0000090	-9999	M1
Thorium	0.0000059	-9999	M1
Tin	0.0004414	-9999	M1
Titanium	0.0015201	-9999	M1
Tungsten	0.0000938	-9999	M1
Uranium	0.0000048	-9999	M1
Vanadium	0.0007697	-9999	M1
Zinc	0.0055897	-9999	M1

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER (PM_{10}) - METALS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

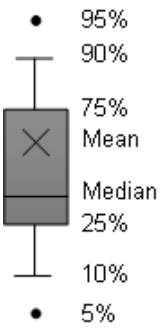
LABORATORY ANALYSIS BY:

PM metals: Atmospheric Research & Analysis, Inc.
Morrisville, NC

FILE CONTENTS DESCRIPTION	Partisol Sampler Measurements of Mass, Ions by IC and Metals by ICP-MS
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection values (MDL.) are provided with each observation
UNITS	µg/m^3 (microgram per cubic meter)
OBSERVATION TYPE	Particles
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Filtration with PM_{10} Inlet for PM_{10} and with PM_{10} Inlet/Very Sharp Cut Cyclone for $PM_{2.5}$
PARTICLE DIAMETER	< 2.5 µm or < 10 µm
MEDIUM	47 mm Teflon Filter
ANALYTICALMETHODS	MASS by Microbalance
	ELEMENTS by Inductively Coupled Plasma Mass Spectrometry (ICP/MS)
	IONS by Ion Chromatography (IC)
SAMPLE PREPARATION	DI Water extraction for IC analysis and Acid Digestion for ICP/MS Analysis
ANALYTICAL LABORATORY	Atmospheric Research & Analysis Inc
USER NOTE 1	Data are not blank corrected
USER NOTE 2	Volume is given at actual conditions of temperature and pressure during sampling as measured by the sampler
USER NOTE 3	Blank sample concentration (µg/m^3) is calculated using expected actual volume of sampler
VOLUME STANDARDIZATION	Actual Volume at Ambient Conditions (since 01-Jan-2011)
SAMPLING INSTRUMENT TYPE	For PM_{10} FRM Partisol PM_{10} sampler
	For $PM_{2.5}$ FRM Partisol $PM_{2.5}$ sampler

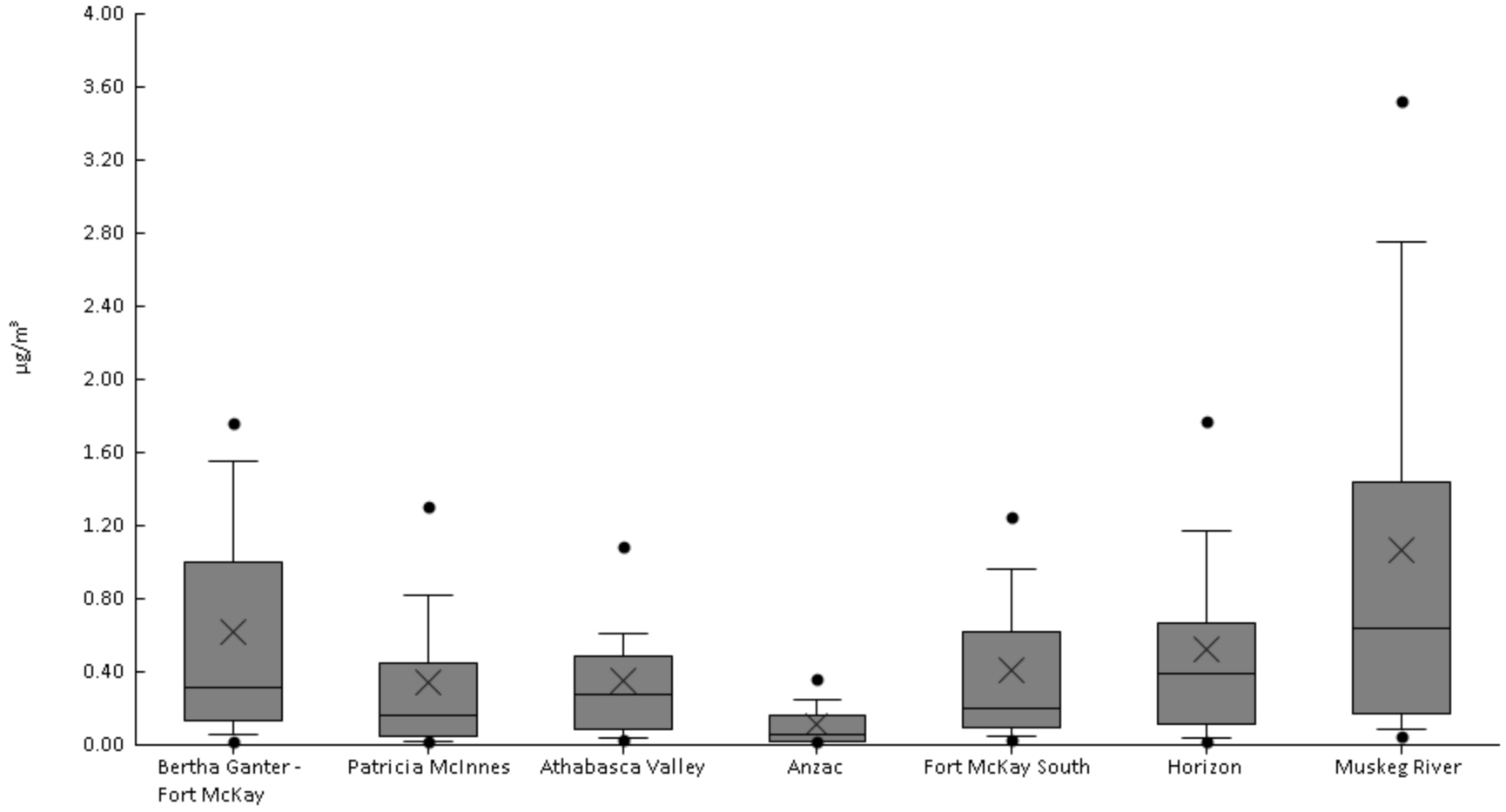
FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



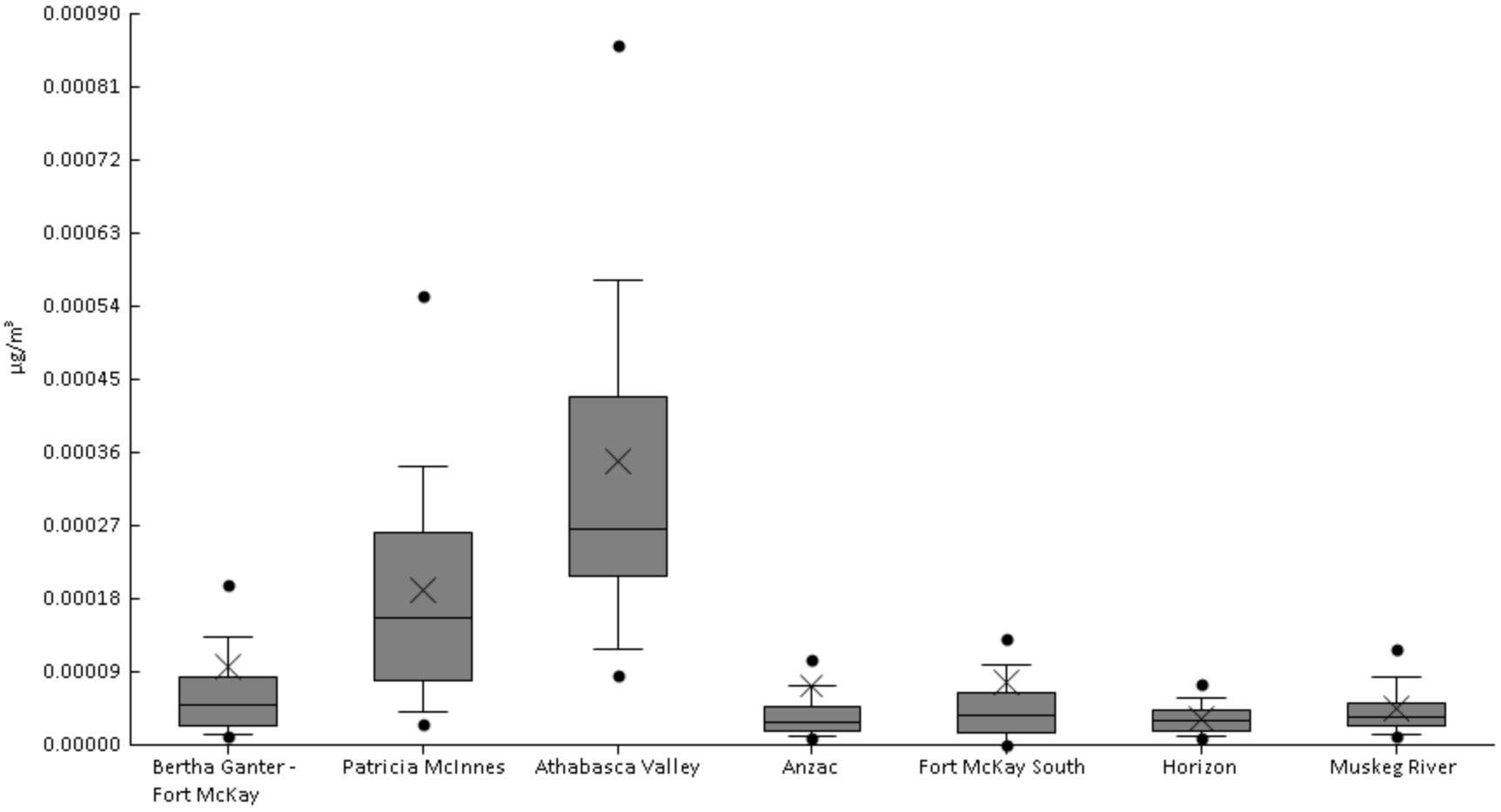
Particulate Matter (PM10 METALS) - Aluminum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	0.012	0.023	0.054	0.13	0.31	1	1.6	1.8	3.4	0.62	0.7
AMS 6	Patricia McInnes	61	98%	0	0.015	0.023	0.047	0.16	0.45	0.81	1.3	2	0.34	0.44
AMS 7	Athabasca Valley	59	100%	0.021	0.03	0.034	0.082	0.28	0.48	0.61	1.1	2.1	0.35	0.36
AMS 14	Anzac	60	100%	8.1E-3	0.015	0.019	0.024	0.061	0.16	0.24	0.36	0.78	0.12	0.15
AMS 13	Fort McKay South	60	100%	0.015	0.032	0.044	0.096	0.2	0.62	0.96	1.3	2.2	0.41	0.45
AMS 15	Horizon	59	100%	0.013	0.021	0.035	0.12	0.39	0.67	1.2	1.8	3	0.52	0.58
AMS 16	Muskeg River	61	100%	0.019	0.046	0.089	0.17	0.64	1.4	2.7	3.5	5.2	1.1	1.2



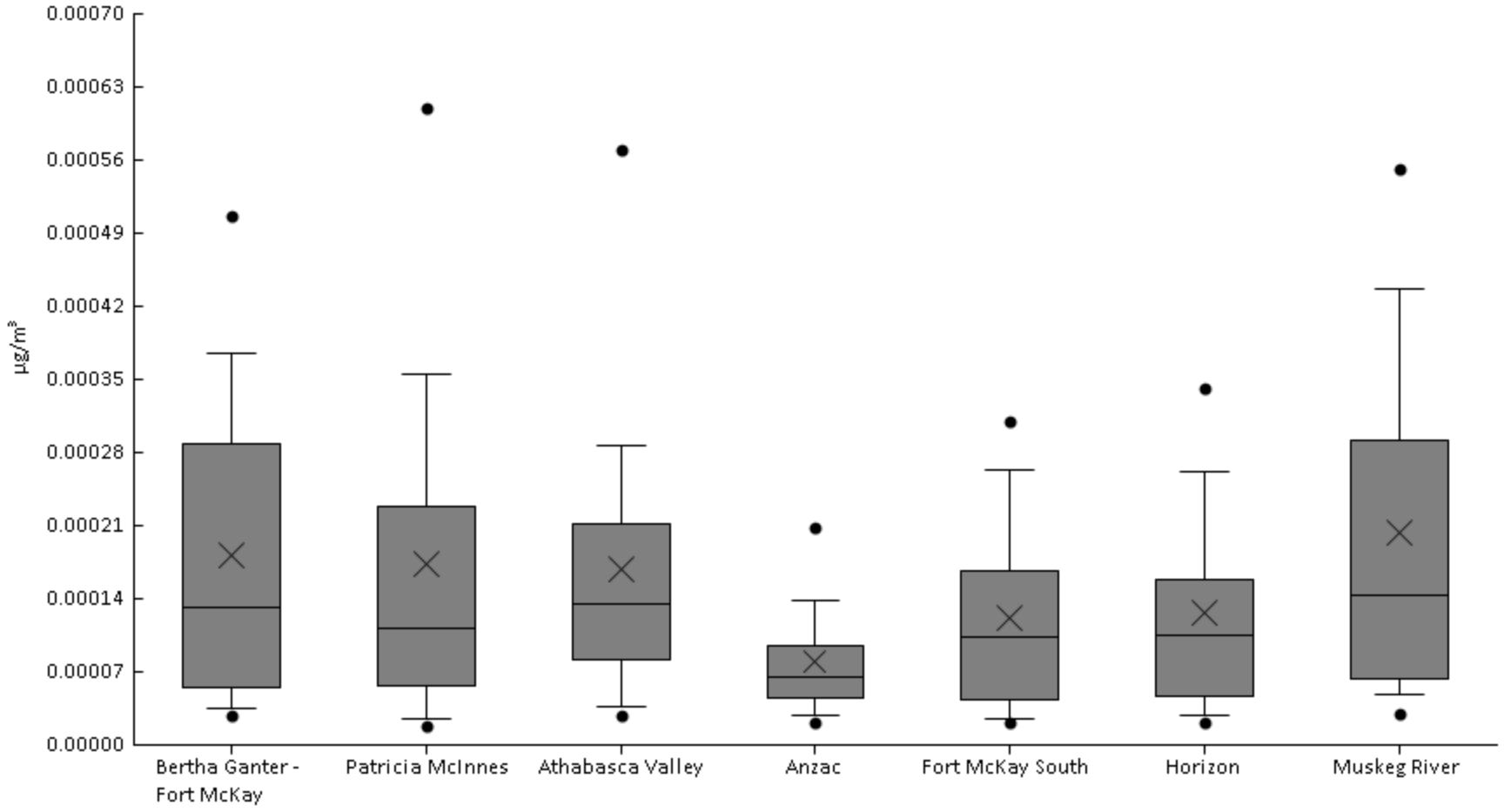
Particulate Matter (PM10 METALS) - Antimony (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	97%	0	1E-5	1.4E-5	2.4E-5	4.9E-5	8.4E-5	1.3E-4	2E-4	2.2E-3	9.7E-5	2.9E-4
AMS 6	Patricia McInnes	61	100%	1.2E-5	2.5E-5	4.1E-5	7.9E-5	1.6E-4	2.6E-4	3.4E-4	5.5E-4	7.5E-4	1.9E-4	1.6E-4
AMS 7	Athabasca Valley	59	100%	4.8E-5	8.6E-5	1.2E-4	2.1E-4	2.7E-4	4.3E-4	5.7E-4	8.6E-4	1.4E-3	3.5E-4	2.5E-4
AMS 14	Anzac	60	100%	7.7E-6	7.9E-6	9.9E-6	1.6E-5	2.9E-5	4.7E-5	7.3E-5	1.1E-4	2.3E-3	7.3E-5	3E-4
AMS 13	Fort McKay South	60	88%	0	0	0	1.5E-5	3.6E-5	6.4E-5	9.8E-5	1.3E-4	2E-3	7.7E-5	2.6E-4
AMS 15	Horizon	59	97%	0	8.5E-6	1E-5	1.8E-5	2.9E-5	4.3E-5	5.8E-5	7.6E-5	1E-4	3.2E-5	2.1E-5
AMS 16	Muskeg River	61	100%	8.6E-6	1.1E-5	1.3E-5	2.4E-5	3.5E-5	5.1E-5	8.3E-5	1.2E-4	2.1E-4	4.4E-5	3.5E-5



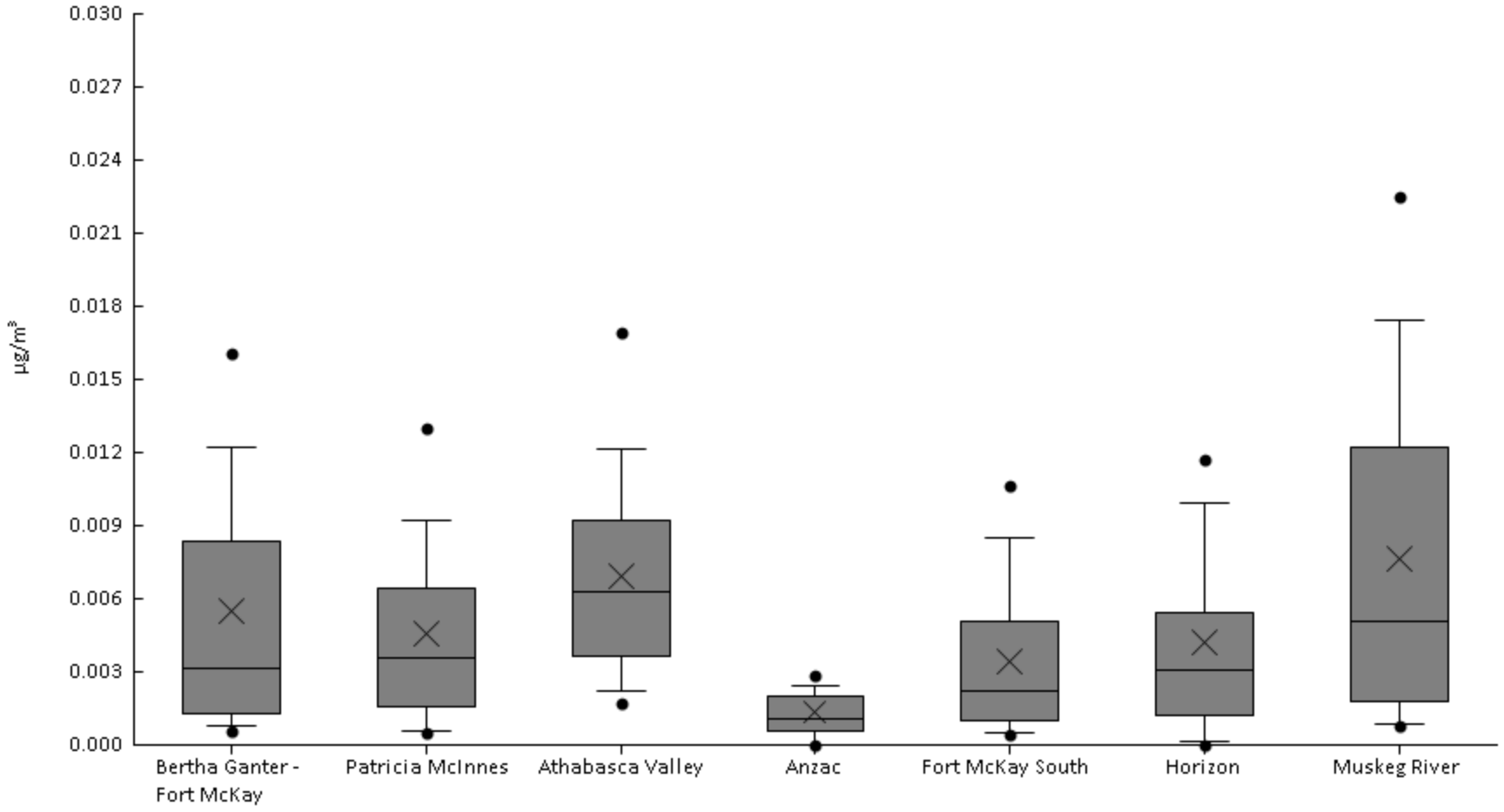
Particulate Matter (PM10 METALS) - Arsenic (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	2.6E-5	2.9E-5	3.5E-5	5.5E-5	1.3E-4	2.9E-4	3.8E-4	5.1E-4	8.2E-4	1.8E-4	1.6E-4
AMS 6	Patricia McInnes	61	100%	1.7E-5	1.8E-5	2.5E-5	5.7E-5	1.1E-4	2.3E-4	3.5E-4	6.1E-4	1.1E-3	1.7E-4	2E-4
AMS 7	Athabasca Valley	59	100%	2.4E-5	2.8E-5	3.6E-5	8.2E-5	1.4E-4	2.1E-4	2.9E-4	5.7E-4	8.2E-4	1.7E-4	1.5E-4
AMS 14	Anzac	60	100%	1.8E-5	2.1E-5	2.9E-5	4.5E-5	6.5E-5	9.5E-5	1.4E-4	2.1E-4	3.4E-4	8E-5	6.2E-5
AMS 13	Fort McKay South	60	100%	1.6E-5	2.2E-5	2.5E-5	4.3E-5	1E-4	1.7E-4	2.6E-4	3.1E-4	6.5E-4	1.2E-4	1.1E-4
AMS 15	Horizon	59	100%	1.3E-5	2.1E-5	2.9E-5	4.7E-5	1.1E-4	1.6E-4	2.6E-4	3.4E-4	6.8E-4	1.3E-4	1.2E-4
AMS 16	Muskeg River	61	100%	2.2E-5	3.1E-5	4.9E-5	6.4E-5	1.4E-4	2.9E-4	4.4E-4	5.5E-4	9.2E-4	2E-4	1.8E-4



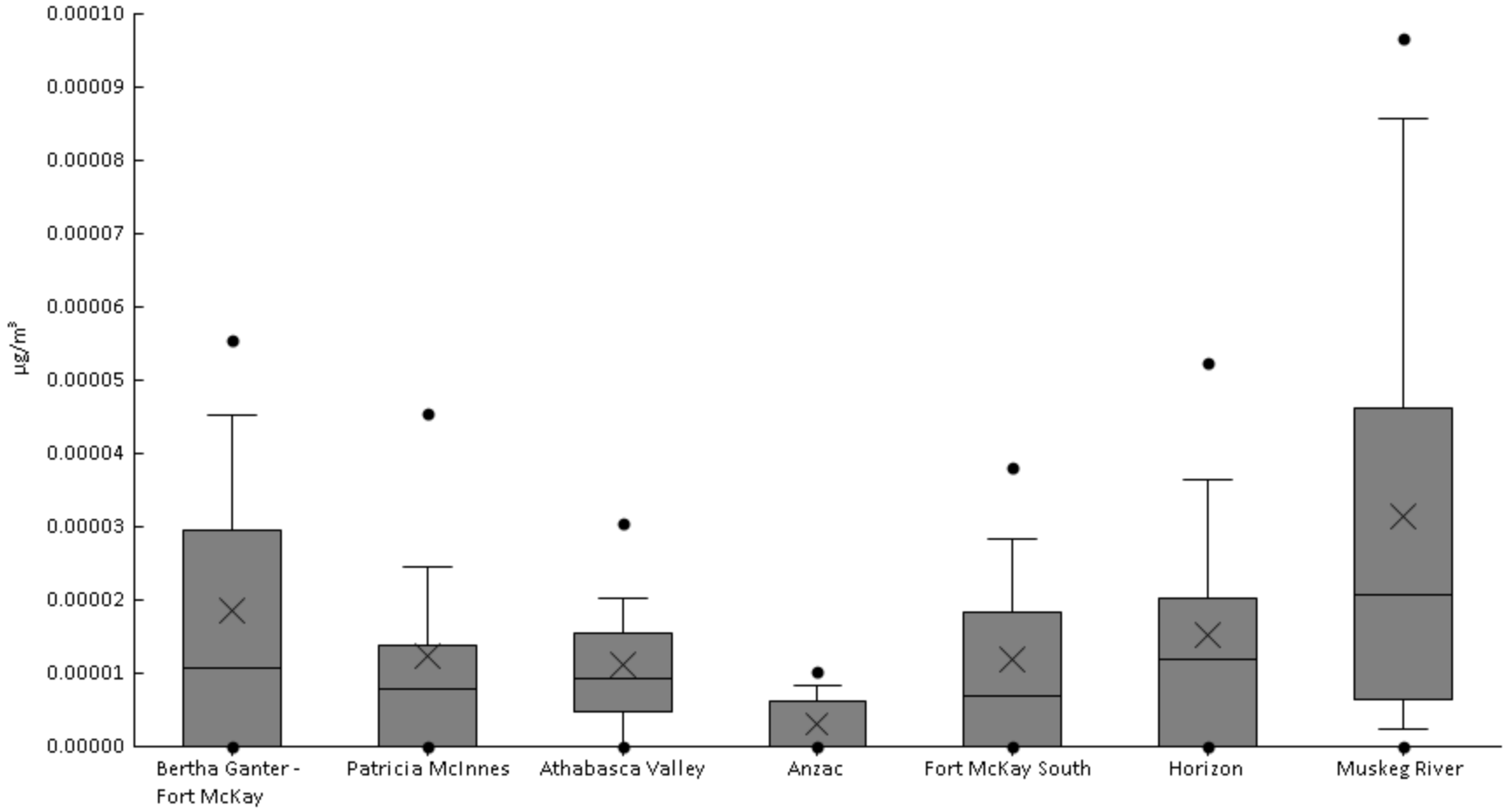
Particulate Matter (PM10 METALS) - Barium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	98%	0	5.9E-4	8E-4	1.3E-3	3.2E-3	8.4E-3	0.012	0.016	0.027	5.5E-3	5.7E-3
AMS 6	Patricia McInnes	61	98%	0	4.8E-4	5.8E-4	1.6E-3	3.6E-3	6.4E-3	9.2E-3	0.013	0.02	4.5E-3	4.2E-3
AMS 7	Athabasca Valley	59	100%	8.4E-4	1.7E-3	2.2E-3	3.7E-3	6.3E-3	9.2E-3	0.012	0.017	0.021	6.9E-3	4.4E-3
AMS 14	Anzac	60	87%	0	0	0	5.5E-4	1.1E-3	2E-3	2.4E-3	2.8E-3	8.8E-3	1.4E-3	1.4E-3
AMS 13	Fort McKay South	60	98%	0	4.6E-4	5.1E-4	1E-3	2.2E-3	5.1E-3	8.5E-3	0.011	0.018	3.5E-3	3.5E-3
AMS 15	Horizon	59	90%	0	0	1.5E-4	1.2E-3	3.1E-3	5.4E-3	9.9E-3	0.012	0.024	4.2E-3	4.5E-3
AMS 16	Muskeg River	61	100%	4.6E-4	7.7E-4	8.6E-4	1.8E-3	5E-3	0.012	0.017	0.023	0.033	7.7E-3	7.6E-3



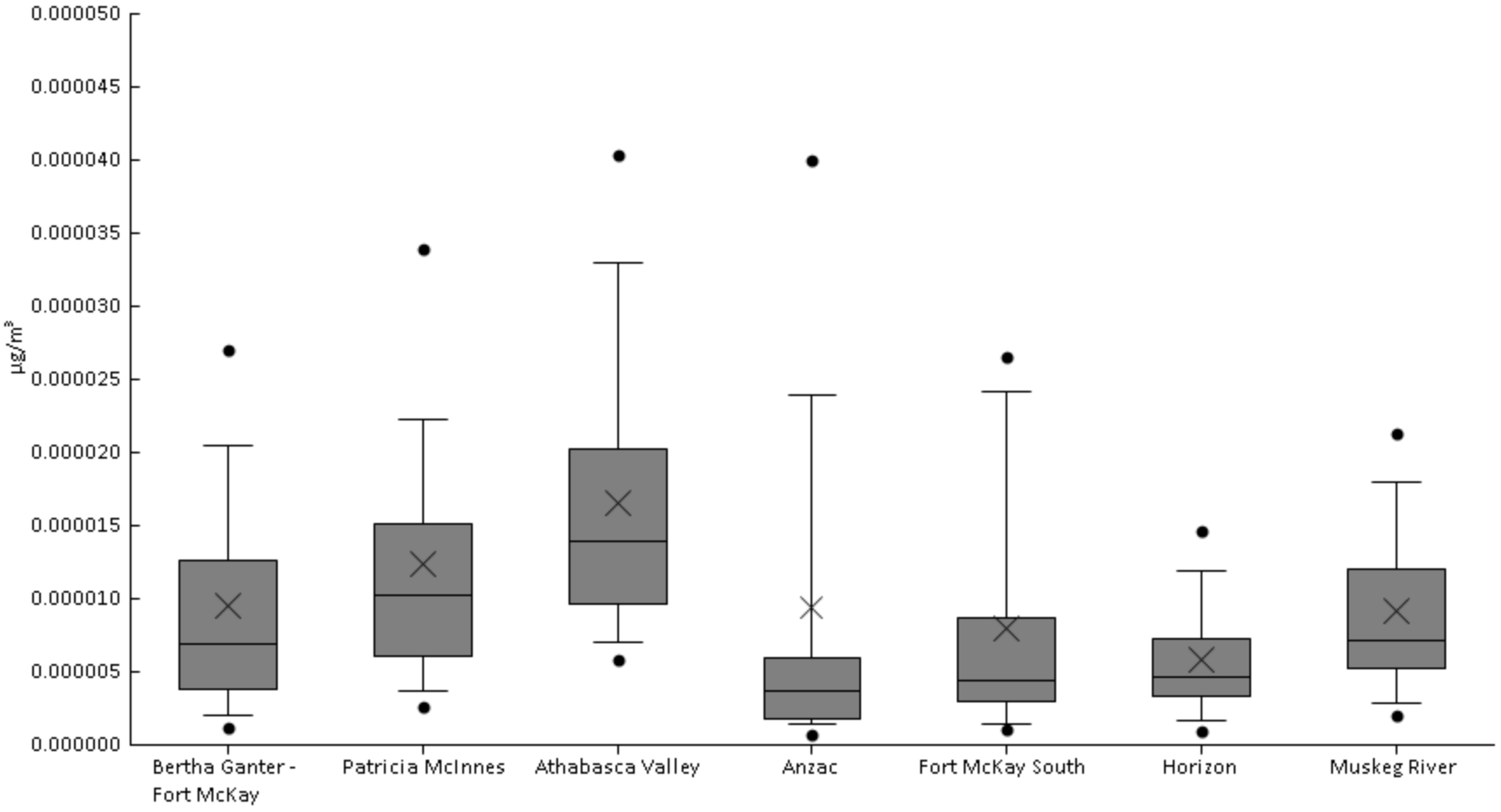
Particulate Matter (PM10 METALS) - Beryllium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	70%	0	0	0	0	1.1E-5	3E-5	4.5E-5	5.6E-5	1E-4	1.9E-5	2.2E-5
AMS 6	Patricia McInnes	59	63%	0	0	0	0	7.8E-6	1.4E-5	2.5E-5	4.5E-5	1.7E-4	1.2E-5	2.4E-5
AMS 7	Athabasca Valley	59	78%	0	0	0	4.8E-6	9.2E-6	1.6E-5	2E-5	3E-5	6.6E-5	1.1E-5	1.1E-5
AMS 14	Anzac	60	40%	0	0	0	0	0	6.2E-6	8.2E-6	1E-5	2.5E-5	3.2E-6	5E-6
AMS 13	Fort McKay South	60	72%	0	0	0	0	6.9E-6	1.8E-5	2.8E-5	3.8E-5	6.5E-5	1.2E-5	1.3E-5
AMS 15	Horizon	59	71%	0	0	0	0	1.2E-5	2E-5	3.6E-5	5.2E-5	8E-5	1.5E-5	1.7E-5
AMS 16	Muskeg River	61	90%	0	0	2.5E-6	6.4E-6	2.1E-5	4.6E-5	8.6E-5	9.7E-5	1.5E-4	3.2E-5	3.3E-5



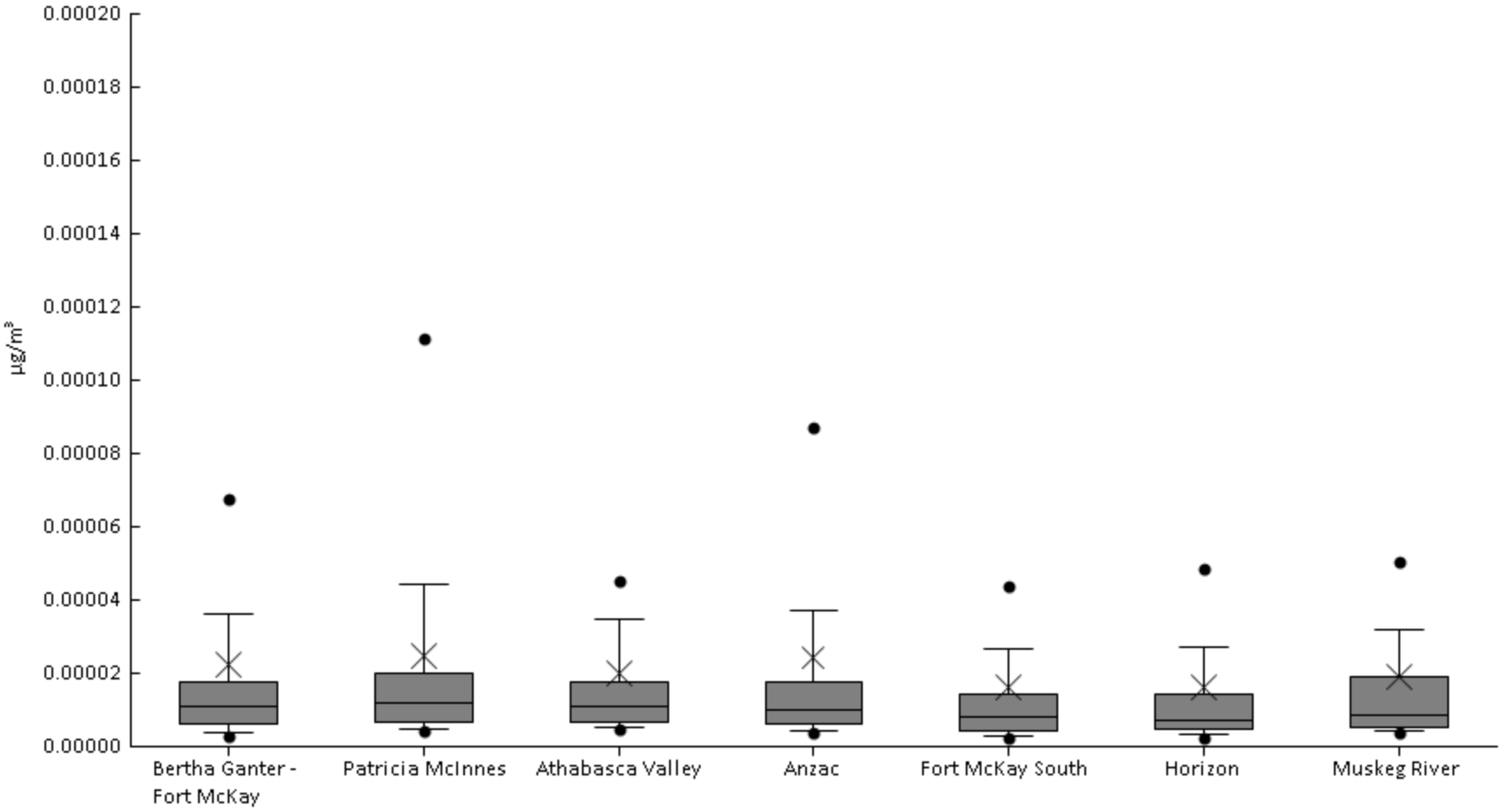
Particulate Matter (PM10 METALS) - Bismuth (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	7.7E-7	1.2E-6	2E-6	3.8E-6	6.9E-6	1.3E-5	2E-5	2.7E-5	3.8E-5	9.5E-6	8.1E-6
AMS 6	Patricia McInnes	61	100%	2E-6	2.6E-6	3.7E-6	6.1E-6	1E-5	1.5E-5	2.2E-5	3.4E-5	4.8E-5	1.2E-5	9.3E-6
AMS 7	Athabasca Valley	59	100%	2.9E-6	5.9E-6	7E-6	9.6E-6	1.4E-5	2E-5	3.3E-5	4E-5	5.7E-5	1.7E-5	1.1E-5
AMS 14	Anzac	60	98%	0	7.6E-7	1.4E-6	1.8E-6	3.7E-6	5.9E-6	2.4E-5	4E-5	1.5E-4	9.4E-6	2.2E-5
AMS 13	Fort McKay South	60	98%	0	1.1E-6	1.4E-6	2.9E-6	4.4E-6	8.7E-6	2.4E-5	2.7E-5	3.6E-5	8E-6	8.7E-6
AMS 15	Horizon	59	98%	0	9.2E-7	1.7E-6	3.4E-6	4.6E-6	7.2E-6	1.2E-5	1.5E-5	2.6E-5	5.9E-6	4.7E-6
AMS 16	Muskeg River	61	100%	1.2E-6	2E-6	2.9E-6	5.2E-6	7.2E-6	1.2E-5	1.8E-5	2.1E-5	3E-5	9.1E-6	6.3E-6



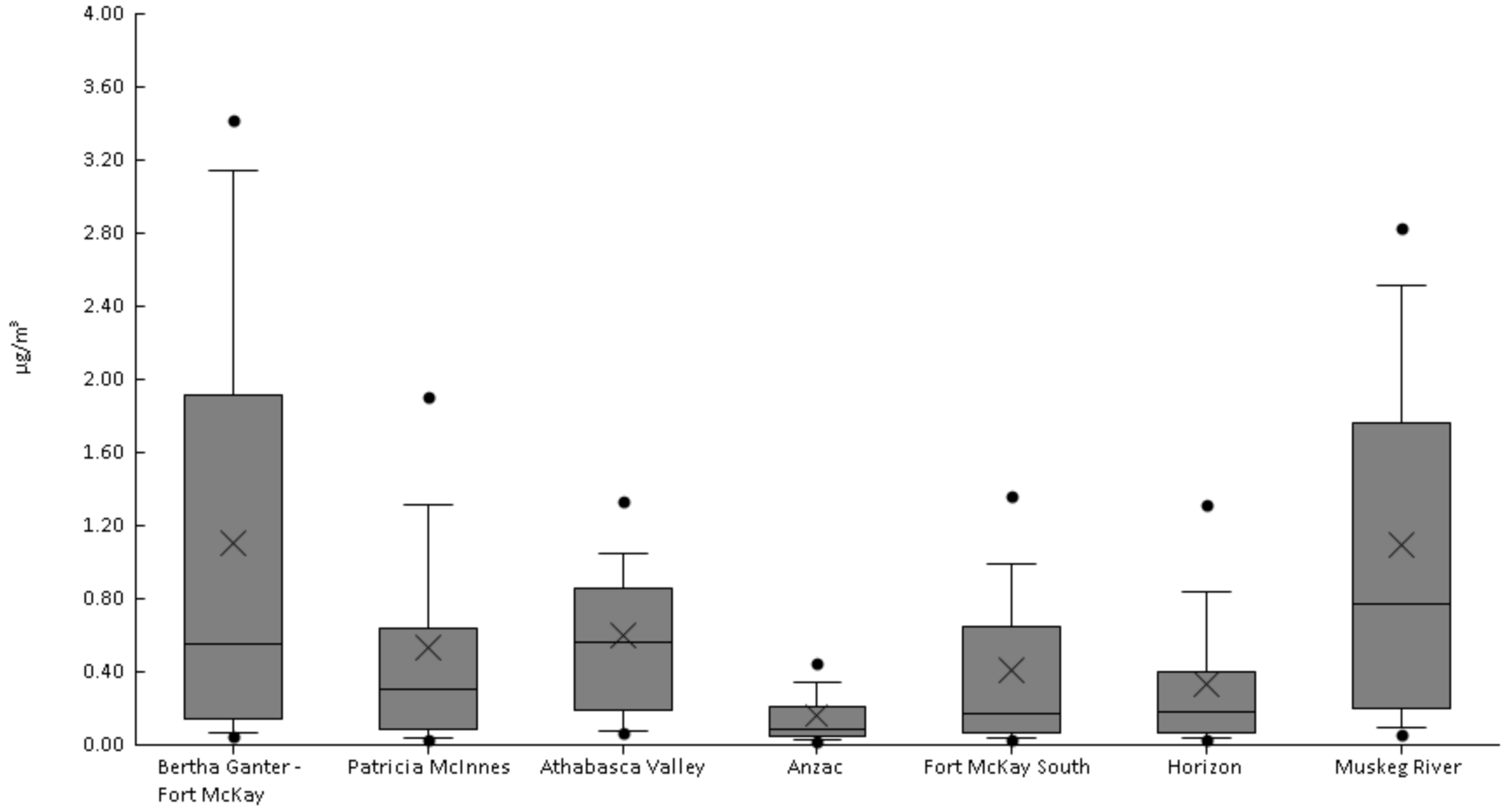
Particulate Matter (PM10 METALS) - Cadmium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	2.1E-6	3E-6	3.9E-6	6.1E-6	1.1E-5	1.7E-5	3.6E-5	6.7E-5	3.1E-4	2.2E-5	4.5E-5
AMS 6	Patricia McInnes	60	100%	3.5E-6	4.1E-6	4.9E-6	6.8E-6	1.2E-5	2E-5	4.4E-5	1.1E-4	2.8E-4	2.5E-5	4.3E-5
AMS 7	Athabasca Valley	58	100%	3.5E-6	4.7E-6	5.4E-6	6.7E-6	1.1E-5	1.8E-5	3.5E-5	4.5E-5	3E-4	2E-5	4E-5
AMS 14	Anzac	60	100%	3.1E-6	3.8E-6	4.3E-6	6.2E-6	9.8E-6	1.8E-5	3.7E-5	8.7E-5	3.9E-4	2.4E-5	5.5E-5
AMS 13	Fort McKay South	60	100%	1.1E-6	2.6E-6	3E-6	4.4E-6	7.9E-6	1.4E-5	2.7E-5	4.4E-5	2.2E-4	1.6E-5	3.3E-5
AMS 15	Horizon	59	100%	1.6E-6	2.3E-6	3.3E-6	4.9E-6	6.9E-6	1.4E-5	2.7E-5	4.8E-5	2.2E-4	1.6E-5	3.3E-5
AMS 16	Muskeg River	61	100%	2.4E-6	4E-6	4.3E-6	5.1E-6	8.4E-6	1.9E-5	3.2E-5	5.1E-5	2.7E-4	1.9E-5	3.9E-5



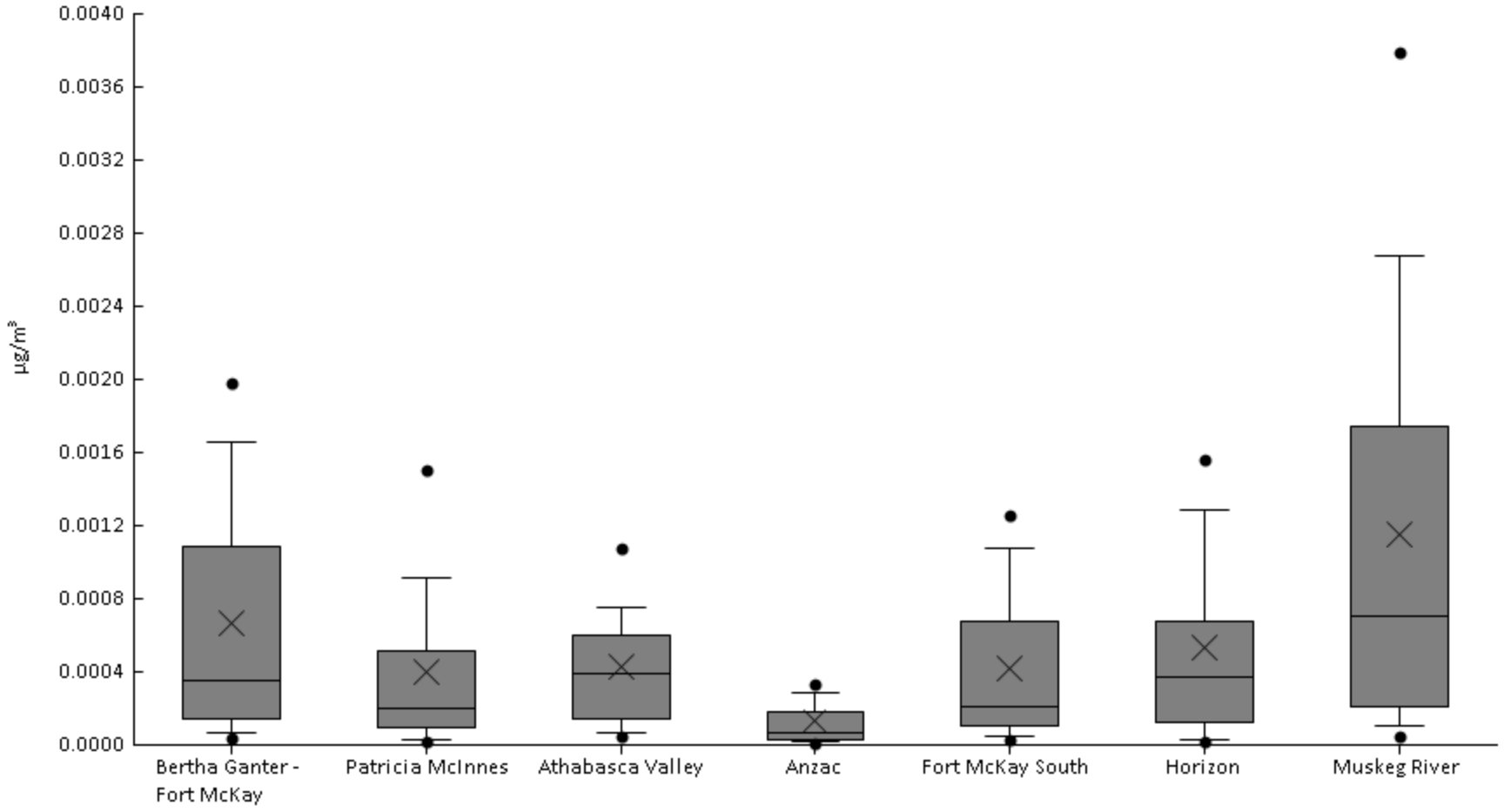
Particulate Matter (PM10 METALS) - Calcium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	0.026	0.043	0.063	0.15	0.55	1.9	3.1	3.4	4.1	1.1	1.2
AMS 6	Patricia McInnes	61	98%	0	0.029	0.034	0.084	0.3	0.64	1.3	1.9	3.7	0.53	0.7
AMS 7	Athabasca Valley	59	100%	0.057	0.062	0.077	0.19	0.56	0.85	1	1.3	3.9	0.6	0.58
AMS 14	Anzac	60	100%	0.018	0.021	0.025	0.048	0.09	0.21	0.34	0.45	1.4	0.16	0.22
AMS 13	Fort McKay South	60	100%	0.017	0.03	0.041	0.065	0.17	0.65	0.99	1.4	2.7	0.41	0.5
AMS 15	Horizon	59	98%	0	0.025	0.037	0.066	0.18	0.4	0.83	1.3	2.6	0.33	0.47
AMS 16	Muskeg River	61	100%	0.035	0.058	0.091	0.2	0.77	1.8	2.5	2.8	6	1.1	1.1



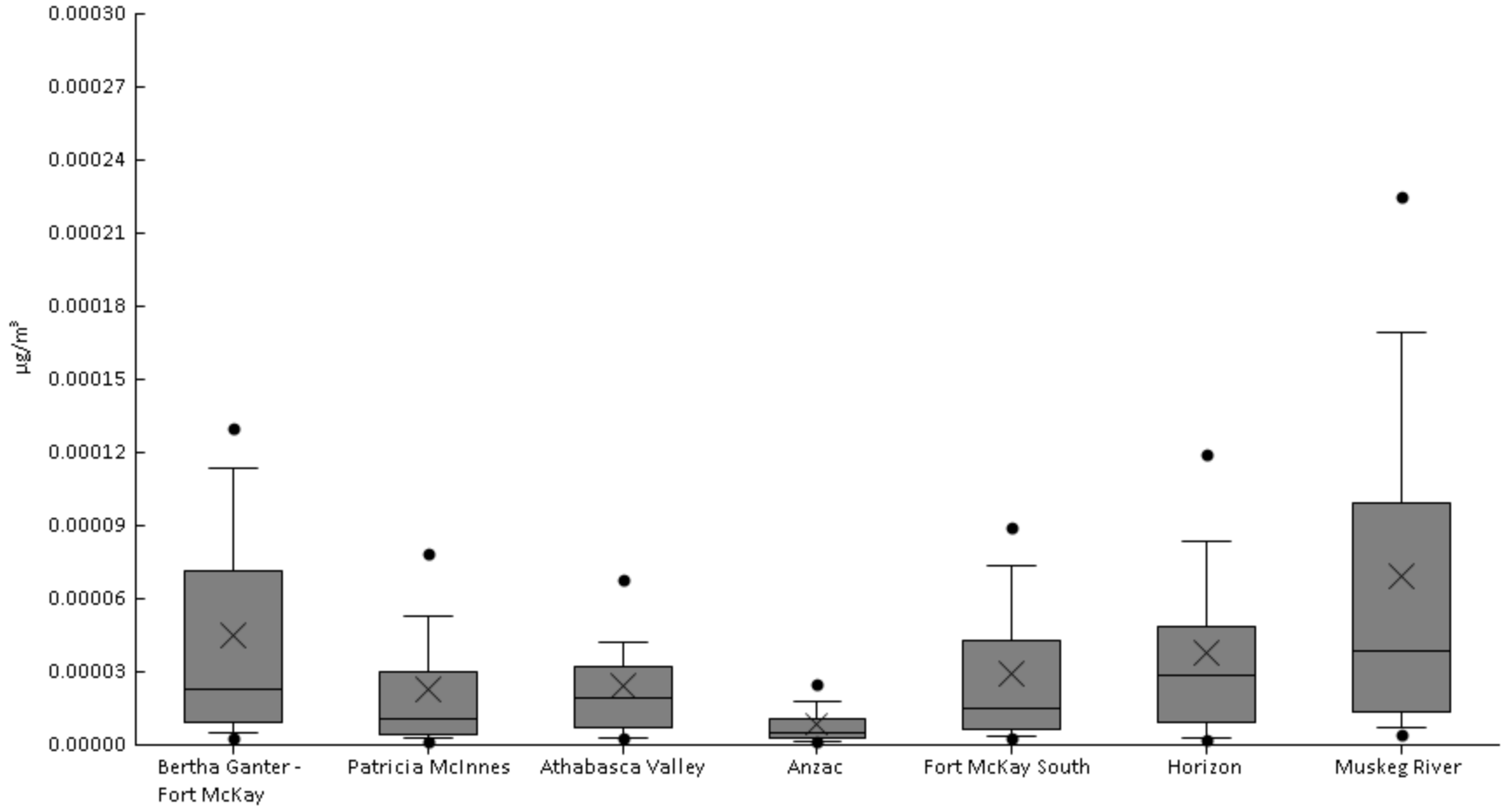
Particulate Matter (PM10 METALS) - Cerium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.5E-5	3.3E-5	6.7E-5	1.4E-4	3.5E-4	1.1E-3	1.7E-3	2E-3	4E-3	6.7E-4	7.7E-4
AMS 6	Patricia McInnes	61	100%	1.1E-5	2E-5	3.2E-5	9.4E-5	2E-4	5.1E-4	9.1E-4	1.5E-3	2.3E-3	4E-4	5E-4
AMS 7	Athabasca Valley	59	100%	4E-5	5.1E-5	6.9E-5	1.4E-4	3.9E-4	6E-4	7.6E-4	1.1E-3	2.5E-3	4.3E-4	4E-4
AMS 14	Anzac	60	100%	1.1E-5	1.3E-5	1.8E-5	2.7E-5	6.8E-5	1.8E-4	2.9E-4	3.3E-4	8.7E-4	1.3E-4	1.6E-4
AMS 13	Fort McKay South	60	100%	1.6E-5	2.7E-5	4.8E-5	1E-4	2.1E-4	6.8E-4	1.1E-3	1.3E-3	2.3E-3	4.2E-4	4.6E-4
AMS 15	Horizon	59	100%	1.1E-5	2.1E-5	3.2E-5	1.2E-4	3.7E-4	6.8E-4	1.3E-3	1.6E-3	3.6E-3	5.3E-4	6.1E-4
AMS 16	Muskeg River	61	100%	2.1E-5	4.5E-5	1.1E-4	2.1E-4	7E-4	1.7E-3	2.7E-3	3.8E-3	5.4E-3	1.2E-3	1.2E-3



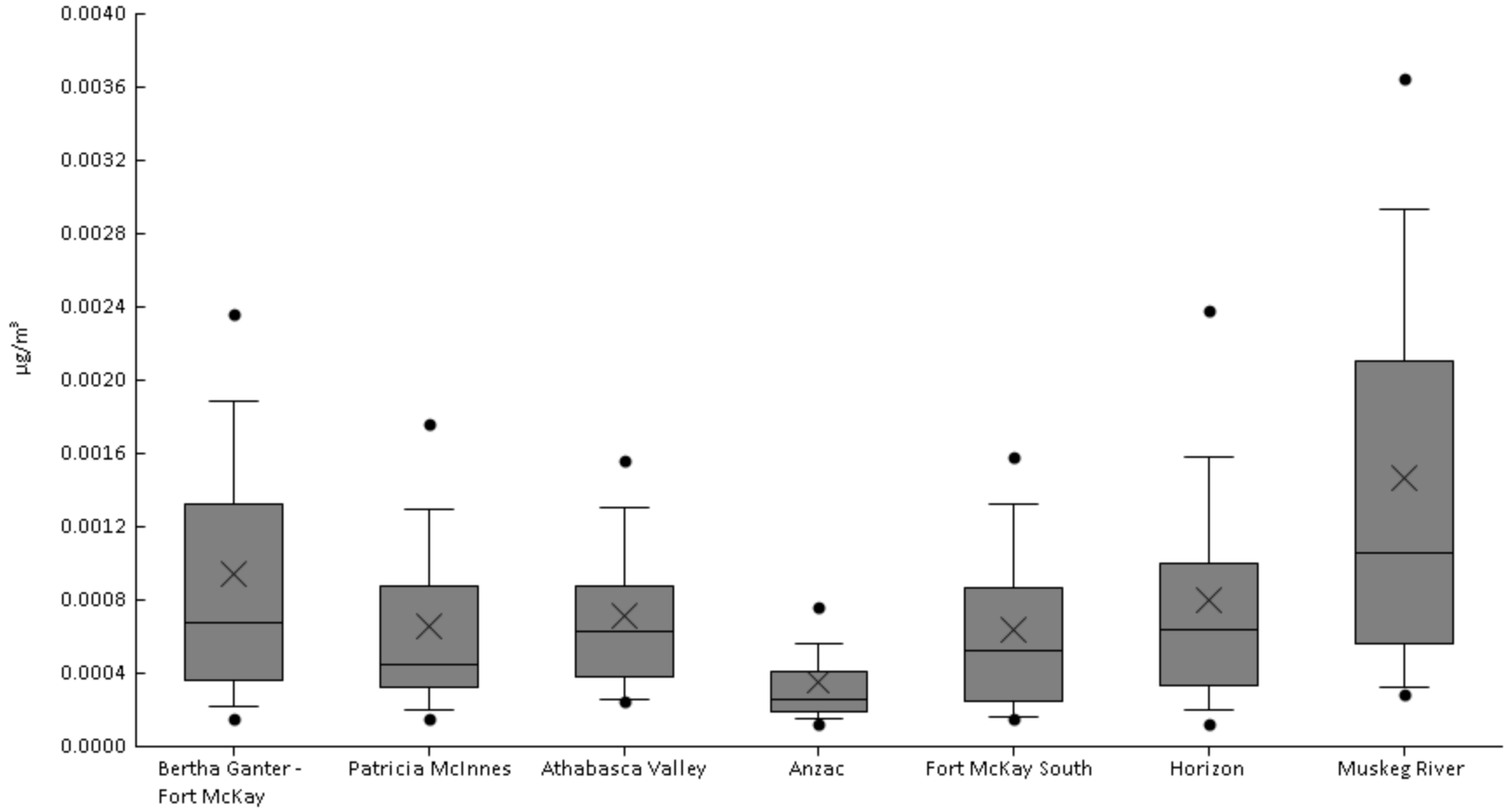
Particulate Matter (PM10 METALS) - Cesium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.4E-6	3E-6	4.8E-6	8.9E-6	2.3E-5	7.1E-5	1.1E-4	1.3E-4	2.6E-4	4.5E-5	5.1E-5
AMS 6	Patricia McInnes	61	100%	9.6E-7	1.5E-6	2.6E-6	4.2E-6	1.1E-5	3E-5	5.3E-5	7.8E-5	1.4E-4	2.3E-5	2.9E-5
AMS 7	Athabasca Valley	59	100%	1.8E-6	3E-6	3.1E-6	6.8E-6	1.9E-5	3.2E-5	4.2E-5	6.8E-5	1.4E-4	2.4E-5	2.4E-5
AMS 14	Anzac	60	100%	1.1E-6	1.3E-6	1.7E-6	2.6E-6	4.9E-6	1.1E-5	1.8E-5	2.5E-5	5.6E-5	8.5E-6	9.9E-6
AMS 13	Fort McKay South	60	100%	1.8E-6	2.7E-6	3.8E-6	6.6E-6	1.5E-5	4.3E-5	7.4E-5	8.9E-5	1.6E-4	2.9E-5	3.2E-5
AMS 15	Horizon	59	100%	1.1E-6	1.9E-6	2.8E-6	8.9E-6	2.8E-5	4.9E-5	8.4E-5	1.2E-4	2.2E-4	3.8E-5	4.1E-5
AMS 16	Muskeg River	61	100%	2.3E-6	4.3E-6	6.9E-6	1.3E-5	3.9E-5	9.9E-5	1.7E-4	2.2E-4	3.3E-4	6.9E-5	7.5E-5



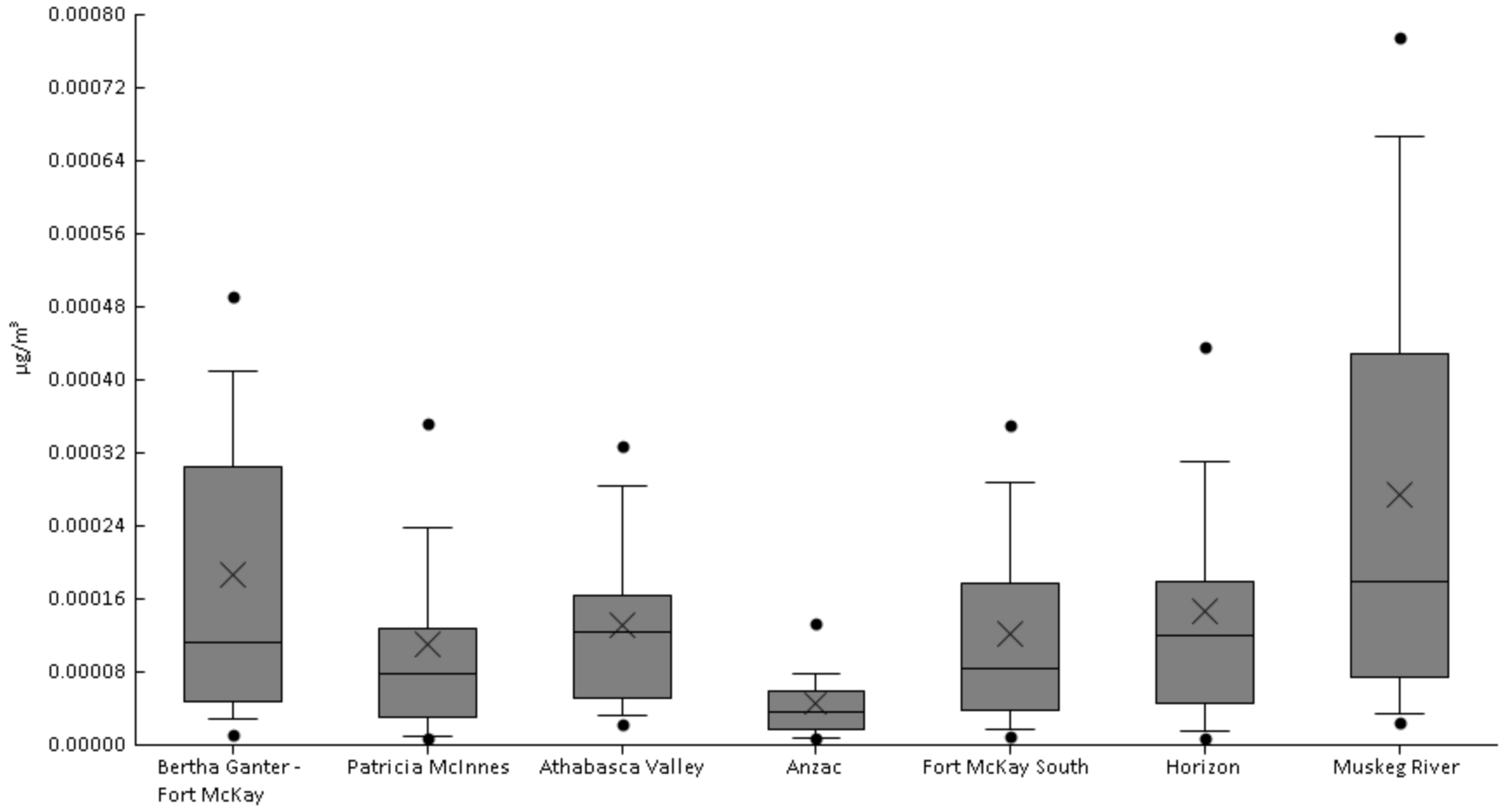
Particulate Matter (PM10 METALS) - Chromium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	98%	0	1.5E-4	2.2E-4	3.6E-4	6.7E-4	1.3E-3	1.9E-3	2.4E-3	4.5E-3	9.5E-4	8.1E-4
AMS 6	Patricia McInnes	61	100%	1.2E-4	1.5E-4	2E-4	3.2E-4	4.5E-4	8.7E-4	1.3E-3	1.8E-3	2.9E-3	6.6E-4	5.6E-4
AMS 7	Athabasca Valley	59	100%	1.9E-4	2.5E-4	2.6E-4	3.8E-4	6.2E-4	8.8E-4	1.3E-3	1.6E-3	2.9E-3	7.1E-4	4.6E-4
AMS 14	Anzac	60	98%	0	1.3E-4	1.5E-4	1.9E-4	2.6E-4	4E-4	5.7E-4	7.7E-4	2.6E-3	3.5E-4	3.6E-4
AMS 13	Fort McKay South	60	100%	1.1E-4	1.5E-4	1.7E-4	2.5E-4	5.2E-4	8.7E-4	1.3E-3	1.6E-3	2.9E-3	6.3E-4	5.1E-4
AMS 15	Horizon	59	100%	1E-4	1.2E-4	2E-4	3.3E-4	6.3E-4	1E-3	1.6E-3	2.4E-3	3.3E-3	8E-4	6.6E-4
AMS 16	Muskeg River	61	100%	2.1E-4	2.9E-4	3.3E-4	5.6E-4	1.1E-3	2.1E-3	2.9E-3	3.7E-3	5.7E-3	1.5E-3	1.2E-3



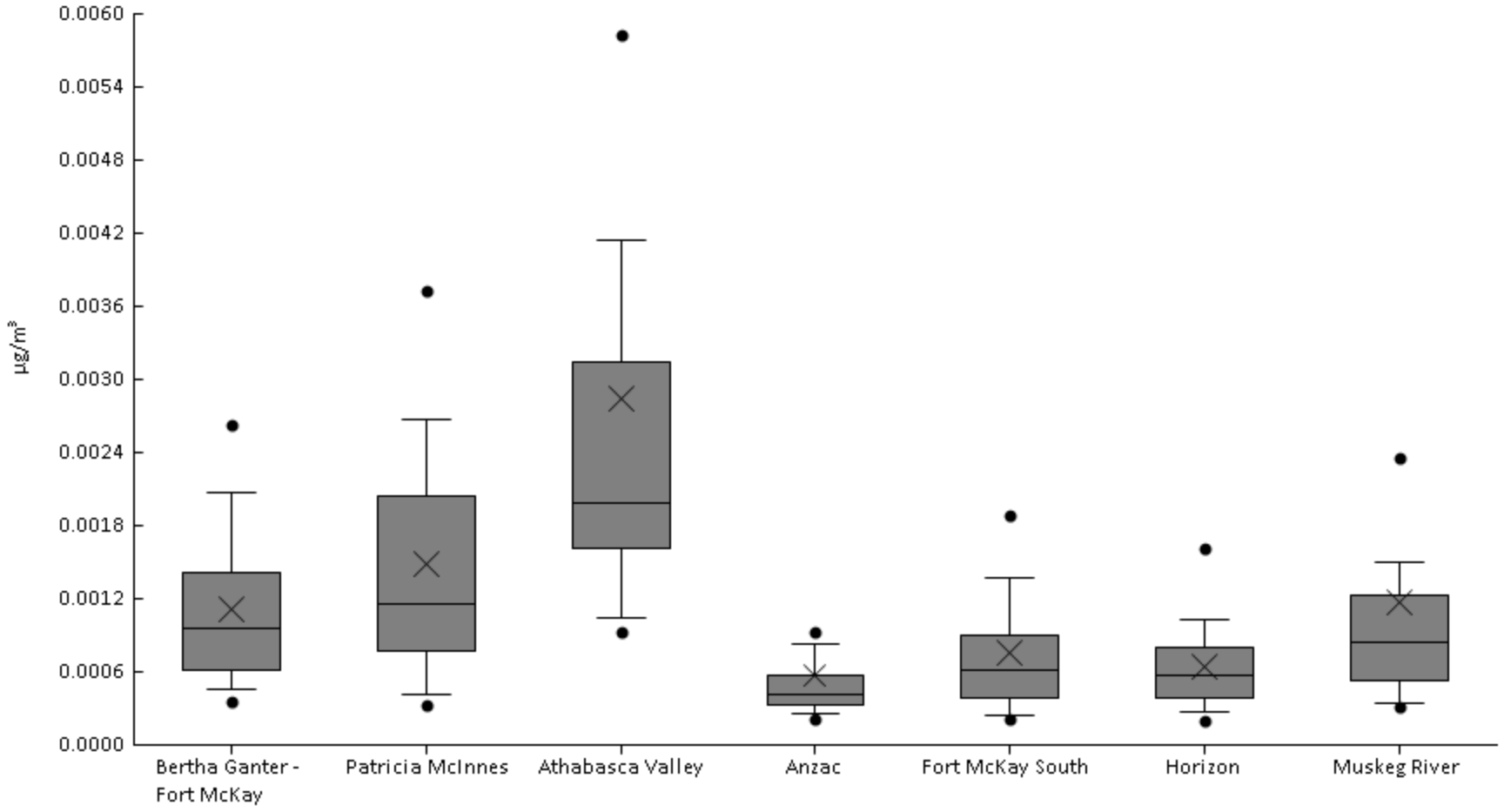
Particulate Matter (PM10 METALS) - Cobalt (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	7.2E-6	1.1E-5	2.8E-5	4.7E-5	1.1E-4	3E-4	4.1E-4	4.9E-4	9.3E-4	1.9E-4	1.9E-4
AMS 6	Patricia McInnes	61	100%	4.4E-6	7.2E-6	1E-5	3.1E-5	7.8E-5	1.3E-4	2.4E-4	3.5E-4	5.3E-4	1.1E-4	1.2E-4
AMS 7	Athabasca Valley	59	100%	1.8E-5	2.2E-5	3.3E-5	5.2E-5	1.2E-4	1.6E-4	2.8E-4	3.3E-4	7.4E-4	1.3E-4	1.2E-4
AMS 14	Anzac	60	100%	5.5E-6	7.2E-6	8.2E-6	1.8E-5	3.6E-5	5.9E-5	7.8E-5	1.3E-4	2.7E-4	4.6E-5	4.7E-5
AMS 13	Fort McKay South	60	100%	6.3E-6	9.1E-6	1.7E-5	3.8E-5	8.4E-5	1.8E-4	2.9E-4	3.5E-4	7.1E-4	1.2E-4	1.2E-4
AMS 15	Horizon	59	100%	4.4E-6	8.4E-6	1.4E-5	4.5E-5	1.2E-4	1.8E-4	3.1E-4	4.4E-4	7.4E-4	1.5E-4	1.4E-4
AMS 16	Muskeg River	61	100%	1.5E-5	2.5E-5	3.4E-5	7.4E-5	1.8E-4	4.3E-4	6.7E-4	7.7E-4	1.1E-3	2.7E-4	2.6E-4



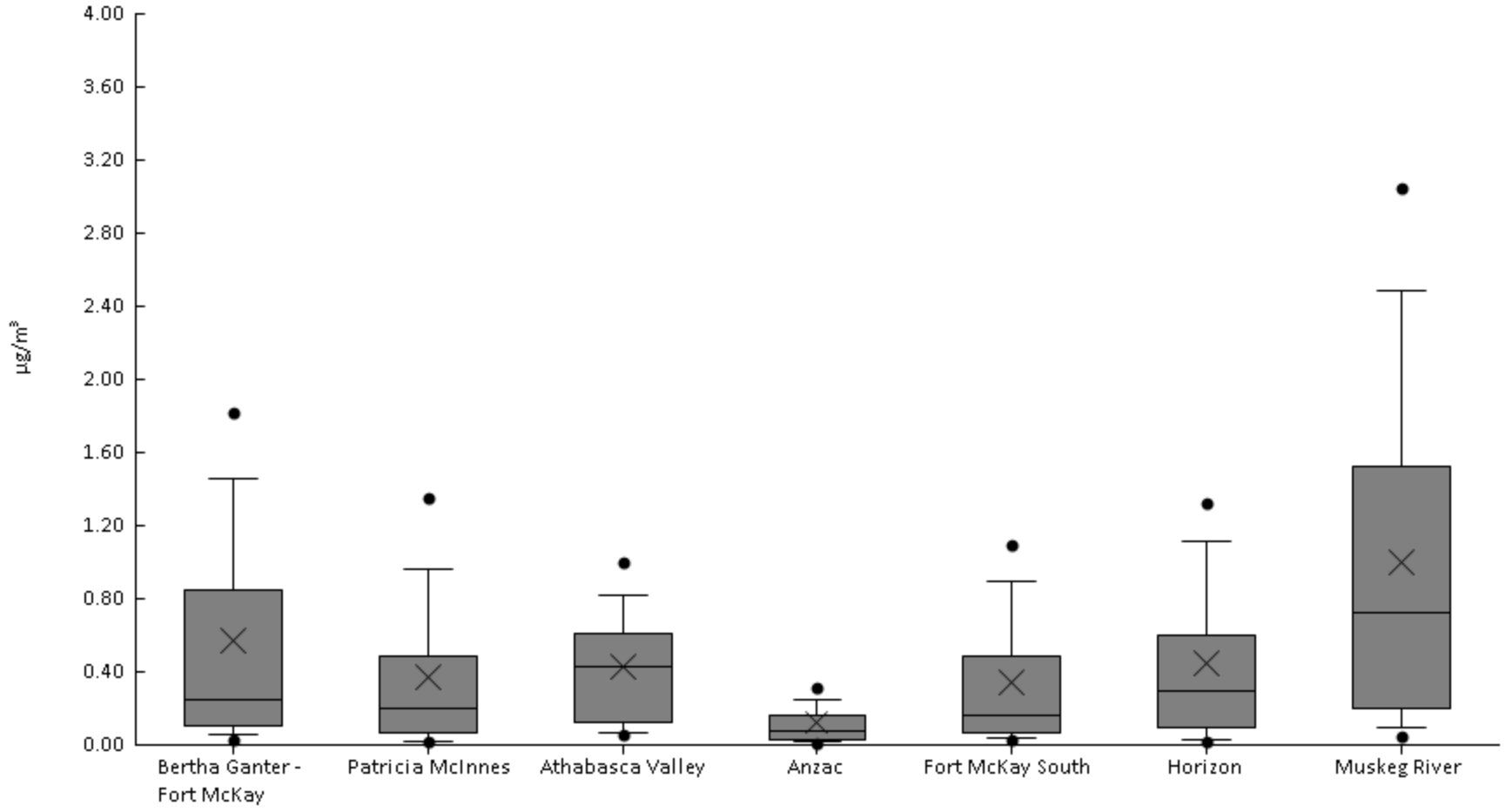
Particulate Matter (PM10 METALS) - Copper (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.9E-4	3.6E-4	4.6E-4	6.2E-4	9.6E-4	1.4E-3	2.1E-3	2.6E-3	2.8E-3	1.1E-3	6.6E-4
AMS 6	Patricia McInnes	61	100%	2.9E-4	3.3E-4	4.1E-4	7.7E-4	1.2E-3	2E-3	2.7E-3	3.7E-3	5.4E-3	1.5E-3	1.1E-3
AMS 7	Athabasca Valley	59	100%	5.7E-4	9.3E-4	1E-3	1.6E-3	2E-3	3.1E-3	4.1E-3	5.8E-3	0.027	2.8E-3	3.5E-3
AMS 14	Anzac	60	100%	1.8E-4	2.1E-4	2.5E-4	3.2E-4	4.1E-4	5.8E-4	8.3E-4	9.3E-4	5.9E-3	5.8E-4	7.8E-4
AMS 13	Fort McKay South	60	100%	1.5E-4	2.1E-4	2.4E-4	3.8E-4	6.2E-4	8.9E-4	1.4E-3	1.9E-3	3.9E-3	7.6E-4	5.9E-4
AMS 15	Horizon	59	100%	1.7E-4	2E-4	2.7E-4	3.8E-4	5.8E-4	8E-4	1E-3	1.6E-3	1.9E-3	6.4E-4	3.8E-4
AMS 16	Muskeg River	61	100%	2.5E-4	3.2E-4	3.5E-4	5.2E-4	8.5E-4	1.2E-3	1.5E-3	2.4E-3	0.017	1.2E-3	2.1E-3



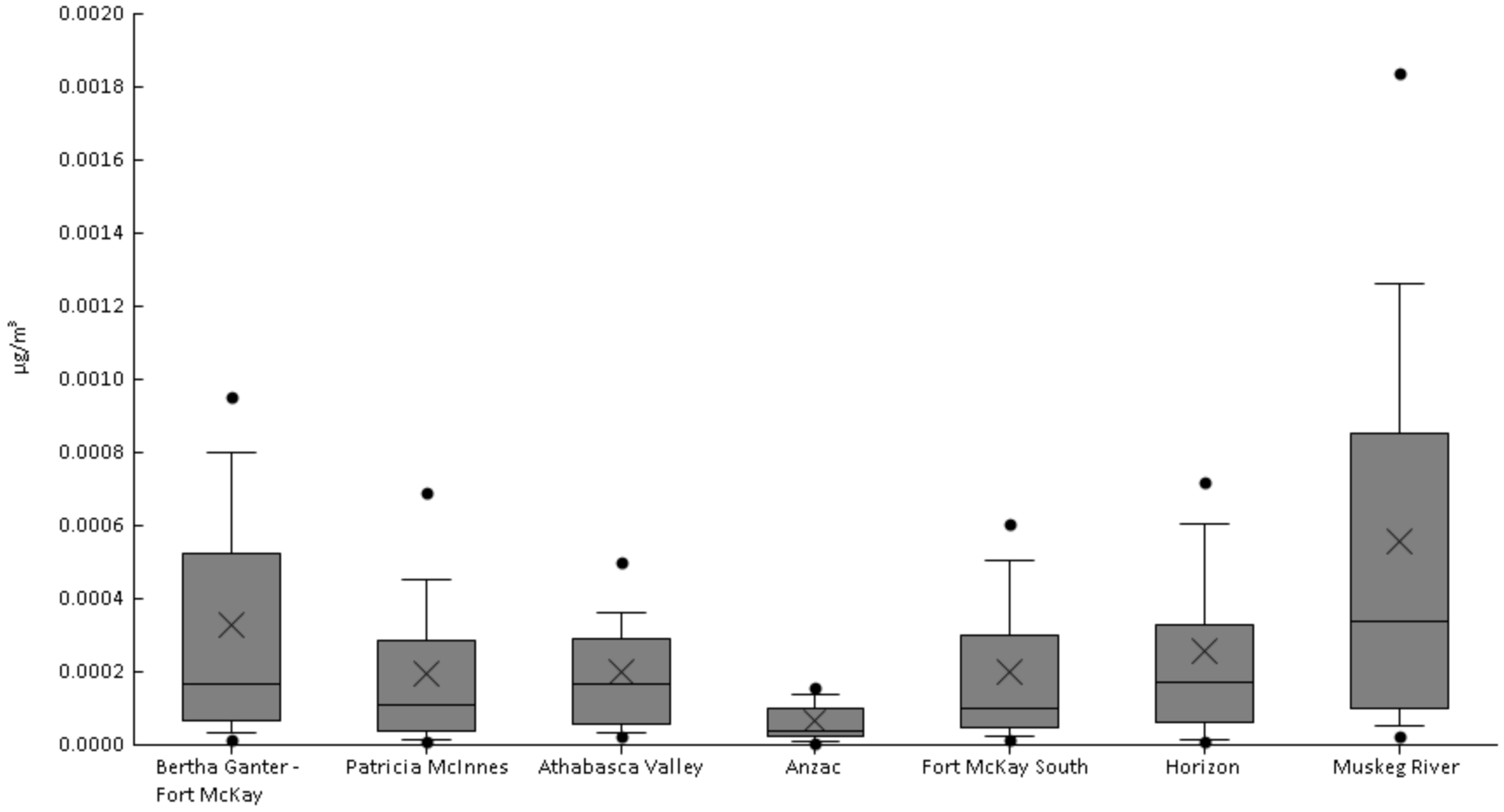
Particulate Matter (PM10 METALS) - Iron (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	0.02	0.024	0.054	0.1	0.25	0.85	1.5	1.8	2.7	0.57	0.62
AMS 6	Patricia McInnes	61	100%	9.9E-3	0.019	0.023	0.07	0.2	0.49	0.96	1.3	2.5	0.38	0.48
AMS 7	Athabasca Valley	59	100%	0.038	0.053	0.067	0.12	0.43	0.61	0.82	1	2.1	0.43	0.36
AMS 14	Anzac	60	100%	8.3E-3	0.013	0.017	0.025	0.074	0.17	0.25	0.31	0.75	0.12	0.14
AMS 13	Fort McKay South	60	100%	0.015	0.026	0.036	0.069	0.16	0.48	0.89	1.1	2	0.34	0.39
AMS 15	Horizon	59	100%	0.012	0.017	0.032	0.094	0.29	0.6	1.1	1.3	3	0.44	0.53
AMS 16	Muskeg River	61	100%	0.033	0.044	0.091	0.2	0.72	1.5	2.5	3	4.5	1	1



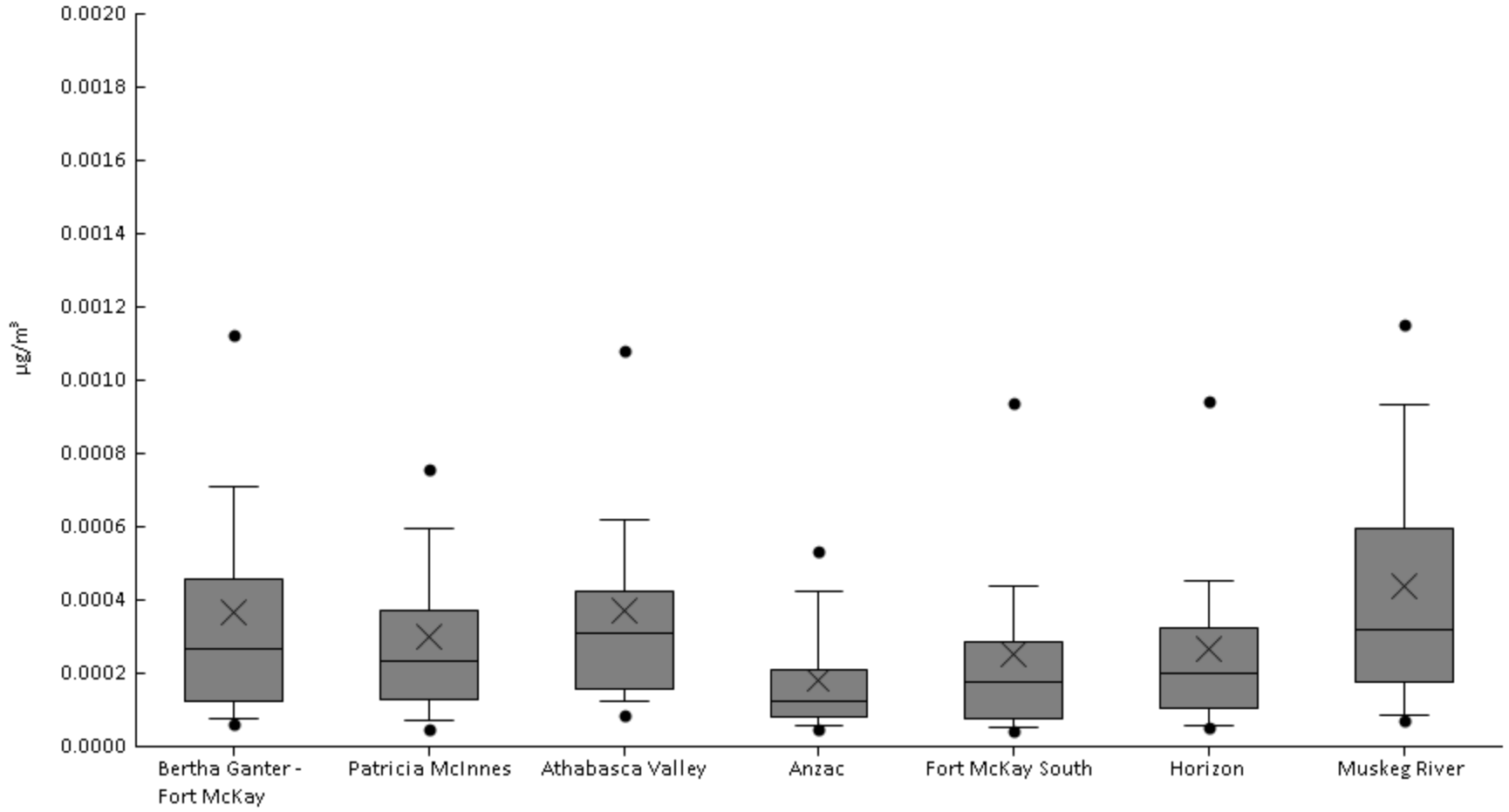
Particulate Matter (PM10 METALS) - Lanthanum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1E-5	1.4E-5	3.3E-5	6.8E-5	1.7E-4	5.3E-4	8E-4	9.5E-4	2.1E-3	3.3E-4	3.8E-4
AMS 6	Patricia McInnes	61	100%	4.6E-6	9E-6	1.6E-5	4E-5	1.1E-4	2.9E-4	4.5E-4	6.9E-4	1.1E-3	2E-4	2.4E-4
AMS 7	Athabasca Valley	59	100%	2E-5	2.2E-5	3.1E-5	5.9E-5	1.6E-4	2.9E-4	3.6E-4	5E-4	1.2E-3	2E-4	1.9E-4
AMS 14	Anzac	60	100%	5.2E-6	6.3E-6	9.5E-6	2.2E-5	3.8E-5	9.8E-5	1.4E-4	1.6E-4	4.2E-4	6.8E-5	7.9E-5
AMS 13	Fort McKay South	60	100%	8.5E-6	1.3E-5	2.2E-5	4.9E-5	9.8E-5	3E-4	5.1E-4	6.1E-4	1.1E-3	2E-4	2.2E-4
AMS 15	Horizon	59	100%	7.5E-6	1E-5	1.5E-5	6.1E-5	1.7E-4	3.3E-4	6.1E-4	7.2E-4	1.8E-3	2.6E-4	2.9E-4
AMS 16	Muskeg River	61	100%	8.3E-6	2.4E-5	5E-5	1E-4	3.4E-4	8.5E-4	1.3E-3	1.8E-3	2.6E-3	5.6E-4	5.9E-4



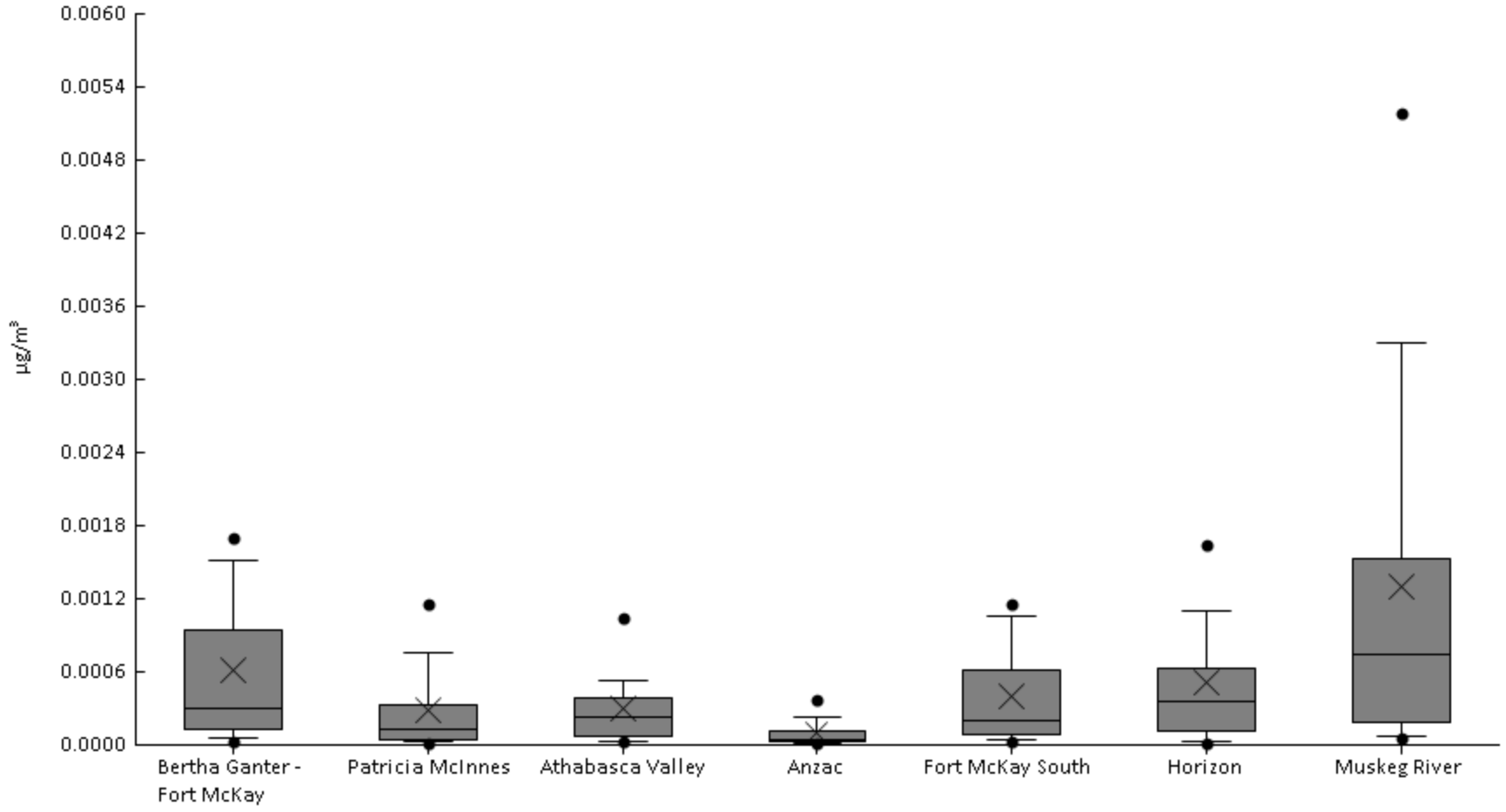
Particulate Matter (PM10 METALS) - Lead (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	3.9E-5	6E-5	7.6E-5	1.2E-4	2.7E-4	4.6E-4	7.1E-4	1.1E-3	2E-3	3.7E-4	3.8E-4
AMS 6	Patricia McInnes	61	100%	4.4E-5	4.7E-5	7.2E-5	1.3E-4	2.3E-4	3.7E-4	5.9E-4	7.6E-4	1.8E-3	3E-4	2.8E-4
AMS 7	Athabasca Valley	59	100%	6E-5	8.7E-5	1.2E-4	1.6E-4	3.1E-4	4.2E-4	6.2E-4	1.1E-3	1.8E-3	3.7E-4	3E-4
AMS 14	Anzac	60	98%	0	4.9E-5	5.8E-5	8.1E-5	1.3E-4	2.1E-4	4.2E-4	5.3E-4	1.1E-3	1.8E-4	1.8E-4
AMS 13	Fort McKay South	60	97%	0	4.4E-5	5.2E-5	7.6E-5	1.8E-4	2.9E-4	4.4E-4	9.4E-4	1.4E-3	2.5E-4	2.9E-4
AMS 15	Horizon	59	98%	0	5E-5	5.8E-5	1.1E-4	2E-4	3.2E-4	4.5E-4	9.4E-4	1.4E-3	2.7E-4	2.6E-4
AMS 16	Muskeg River	61	100%	5.7E-5	7.1E-5	8.5E-5	1.7E-4	3.2E-4	5.9E-4	9.3E-4	1.2E-3	2.4E-3	4.4E-4	4.1E-4



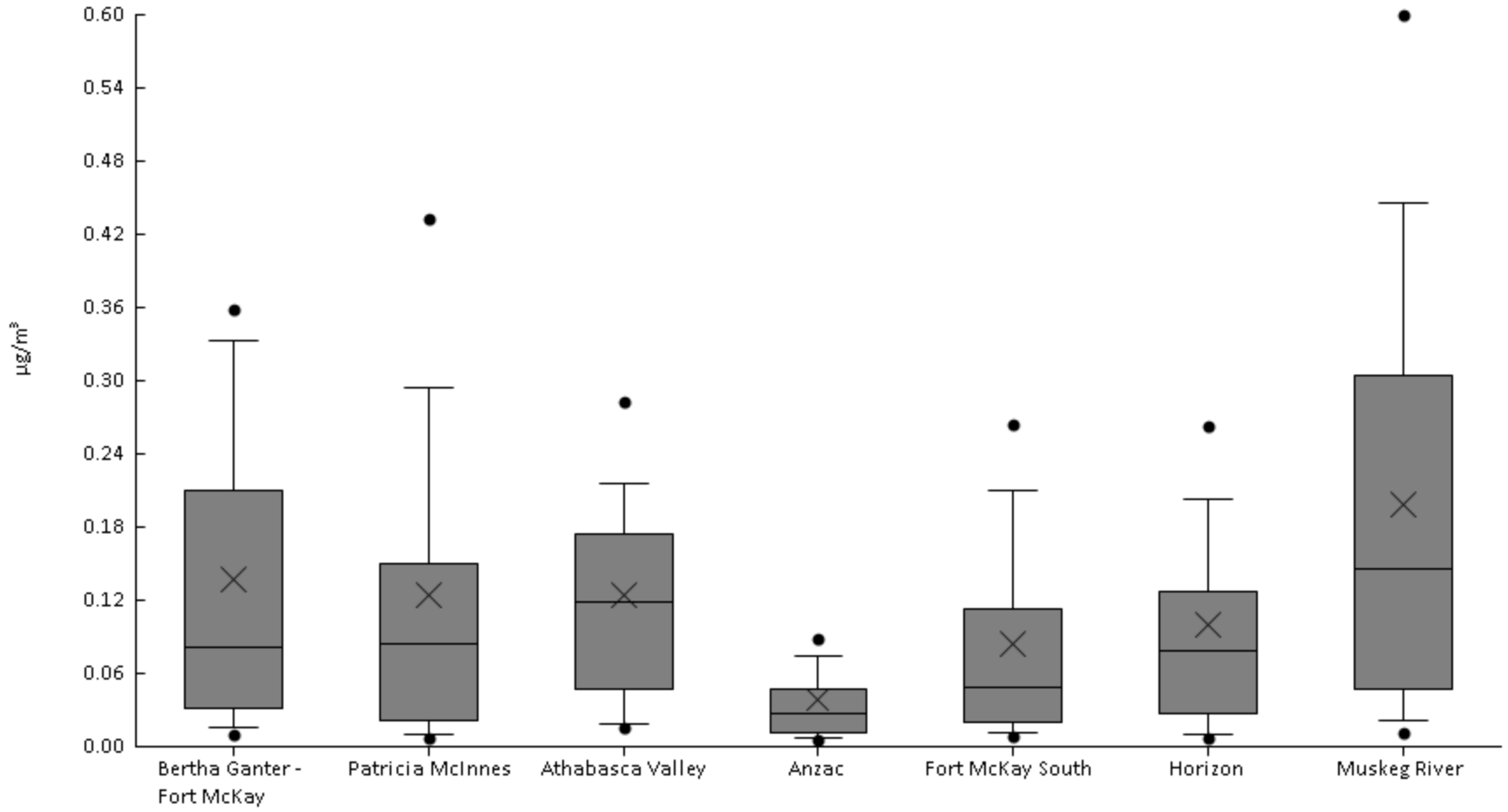
Particulate Matter (PM10 METALS) - Lithium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.5E-5	2.6E-5	5.7E-5	1.3E-4	3E-4	9.5E-4	1.5E-3	1.7E-3	4.2E-3	6.2E-4	7.4E-4
AMS 6	Patricia McInnes	61	100%	4.3E-6	1.4E-5	2.4E-5	3.8E-5	1.4E-4	3.4E-4	7.6E-4	1.2E-3	2.1E-3	2.9E-4	4E-4
AMS 7	Athabasca Valley	59	100%	2.2E-5	3E-5	3.4E-5	7E-5	2.3E-4	3.9E-4	5.3E-4	1E-3	2E-3	3E-4	3.4E-4
AMS 14	Anzac	60	98%	0	9E-6	1.2E-5	2.2E-5	4.7E-5	1.2E-4	2.3E-4	3.7E-4	7.2E-4	9.6E-5	1.3E-4
AMS 13	Fort McKay South	60	100%	1.7E-5	2.7E-5	4.1E-5	8.6E-5	2E-4	6.2E-4	1.1E-3	1.2E-3	2.4E-3	4.1E-4	4.7E-4
AMS 15	Horizon	59	100%	1.2E-5	1.9E-5	3.3E-5	1.2E-4	3.6E-4	6.3E-4	1.1E-3	1.6E-3	3.4E-3	5.2E-4	6E-4
AMS 16	Muskeg River	61	100%	2.1E-5	5.8E-5	7.8E-5	1.8E-4	7.5E-4	1.5E-3	3.3E-3	5.2E-3	6.8E-3	1.3E-3	1.6E-3



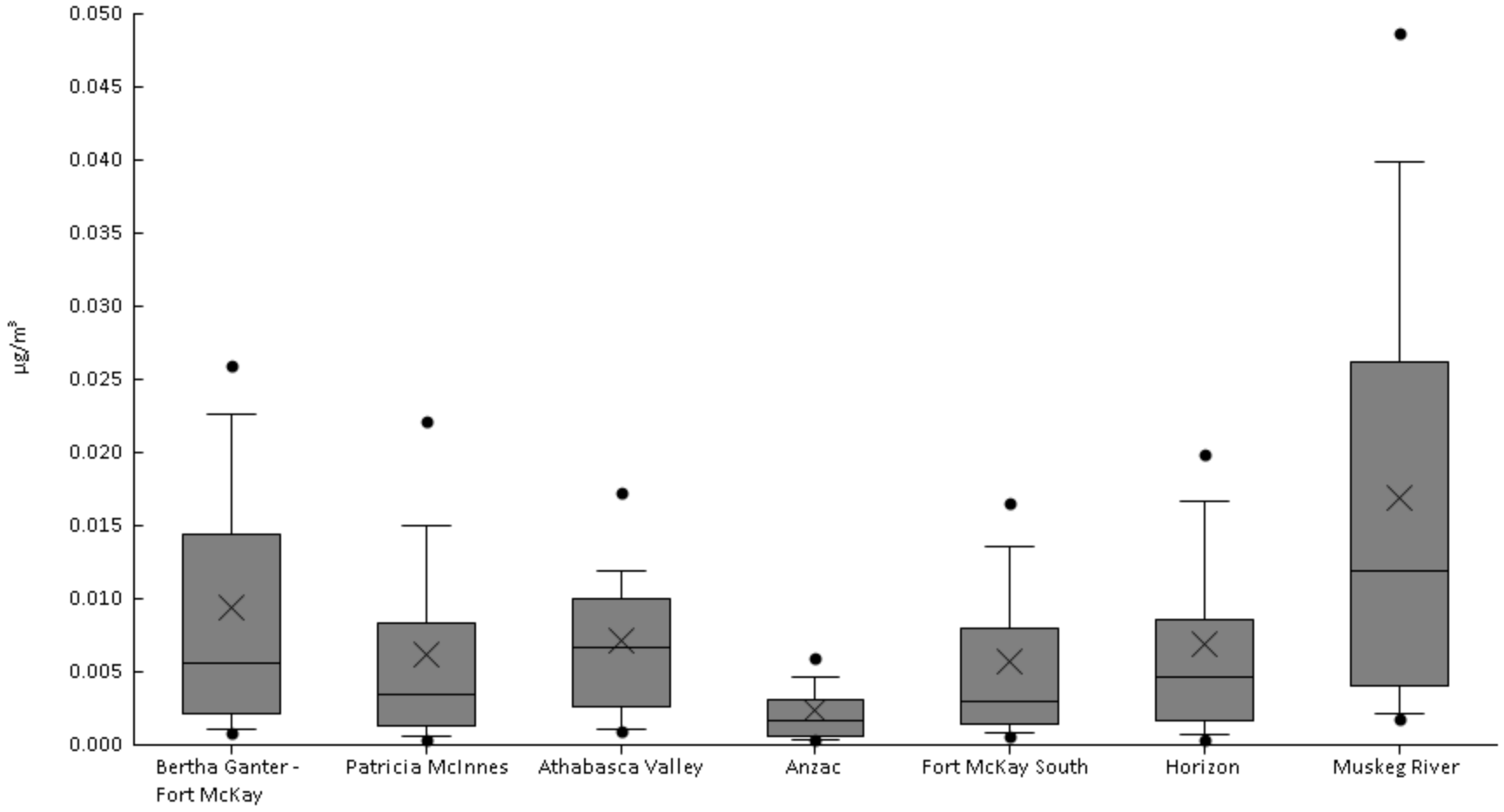
Particulate Matter (PM10 METALS) - Magnesium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	6.2E-3	9.5E-3	0.016	0.032	0.082	0.21	0.33	0.36	0.55	0.14	0.14
AMS 6	Patricia McInnes	61	100%	4.3E-3	7.2E-3	9.7E-3	0.021	0.084	0.15	0.29	0.43	0.82	0.12	0.16
AMS 7	Athabasca Valley	59	100%	0.013	0.016	0.019	0.047	0.12	0.17	0.22	0.28	0.56	0.12	0.098
AMS 14	Anzac	60	100%	4.3E-3	5.9E-3	6.5E-3	0.012	0.027	0.047	0.074	0.088	0.25	0.038	0.044
AMS 13	Fort McKay South	60	100%	4.7E-3	8.6E-3	0.011	0.02	0.049	0.11	0.21	0.26	0.39	0.084	0.084
AMS 15	Horizon	59	100%	3.9E-3	7.5E-3	1E-2	0.027	0.078	0.13	0.2	0.26	0.53	0.099	0.1
AMS 16	Muskeg River	61	100%	6.3E-3	0.012	0.022	0.047	0.15	0.3	0.45	0.6	0.79	0.2	0.19



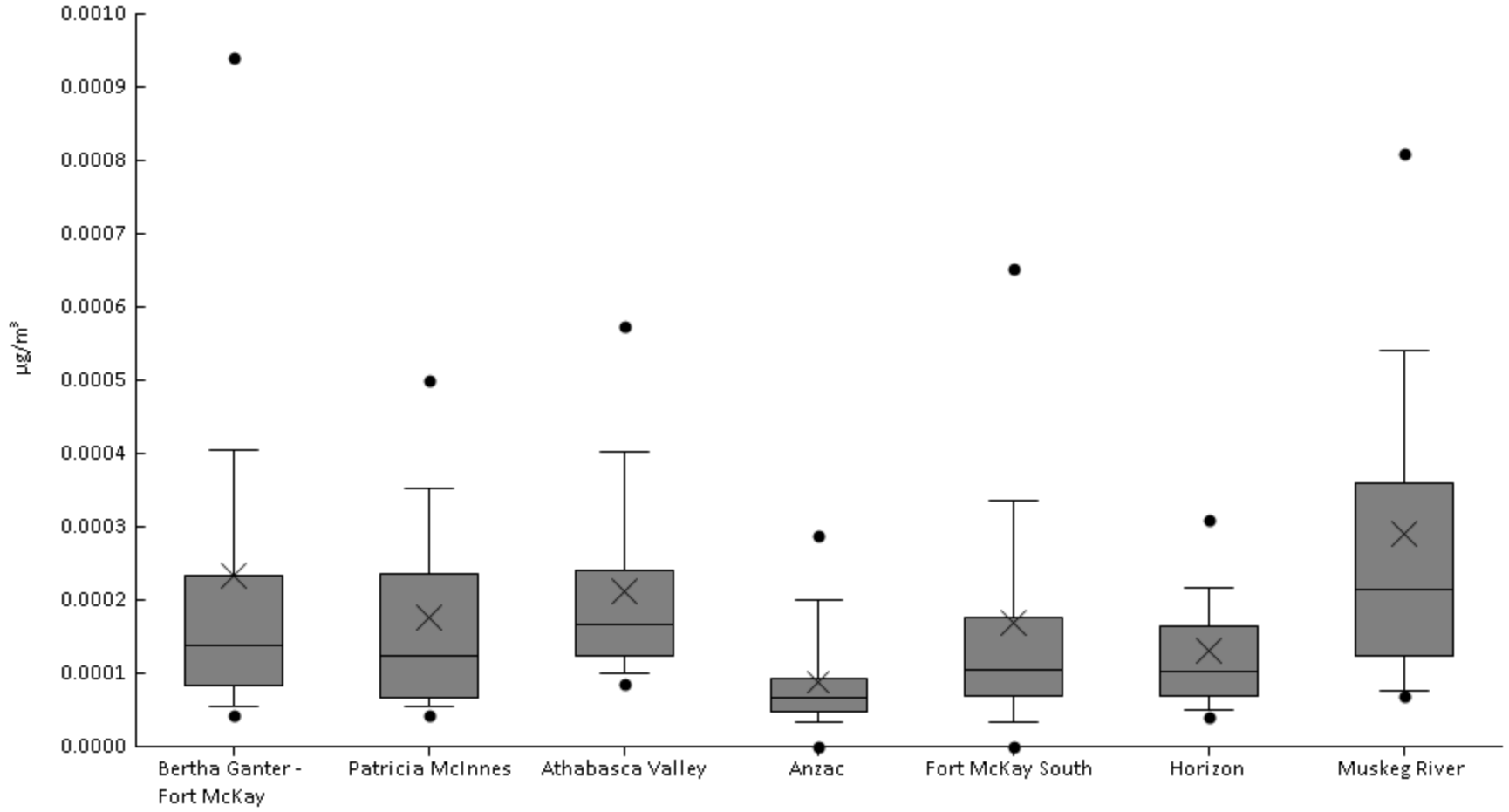
Particulate Matter (PM10 METALS) - Manganese (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.9E-4	8.6E-4	1.1E-3	2.2E-3	5.7E-3	0.014	0.023	0.026	0.044	9.4E-3	9.5E-3
AMS 6	Patricia McInnes	61	100%	2E-4	3.1E-4	5.8E-4	1.4E-3	3.4E-3	8.3E-3	0.015	0.022	0.039	6.2E-3	7.5E-3
AMS 7	Athabasca Valley	59	100%	8E-4	9.3E-4	1.1E-3	2.6E-3	6.6E-3	0.01	0.012	0.017	0.039	7.2E-3	6.2E-3
AMS 14	Anzac	60	100%	2.4E-4	3.5E-4	4.1E-4	6E-4	1.7E-3	3.2E-3	4.6E-3	5.9E-3	0.016	2.4E-3	2.8E-3
AMS 13	Fort McKay South	60	100%	5.1E-4	5.9E-4	7.9E-4	1.4E-3	3E-3	8E-3	0.014	0.017	0.034	5.7E-3	6.1E-3
AMS 15	Horizon	59	100%	2.8E-4	3.4E-4	7.1E-4	1.7E-3	4.7E-3	8.5E-3	0.017	0.02	0.046	6.9E-3	7.9E-3
AMS 16	Muskeg River	61	100%	8.5E-4	1.8E-3	2.1E-3	4E-3	0.012	0.026	0.04	0.049	0.067	0.017	0.016



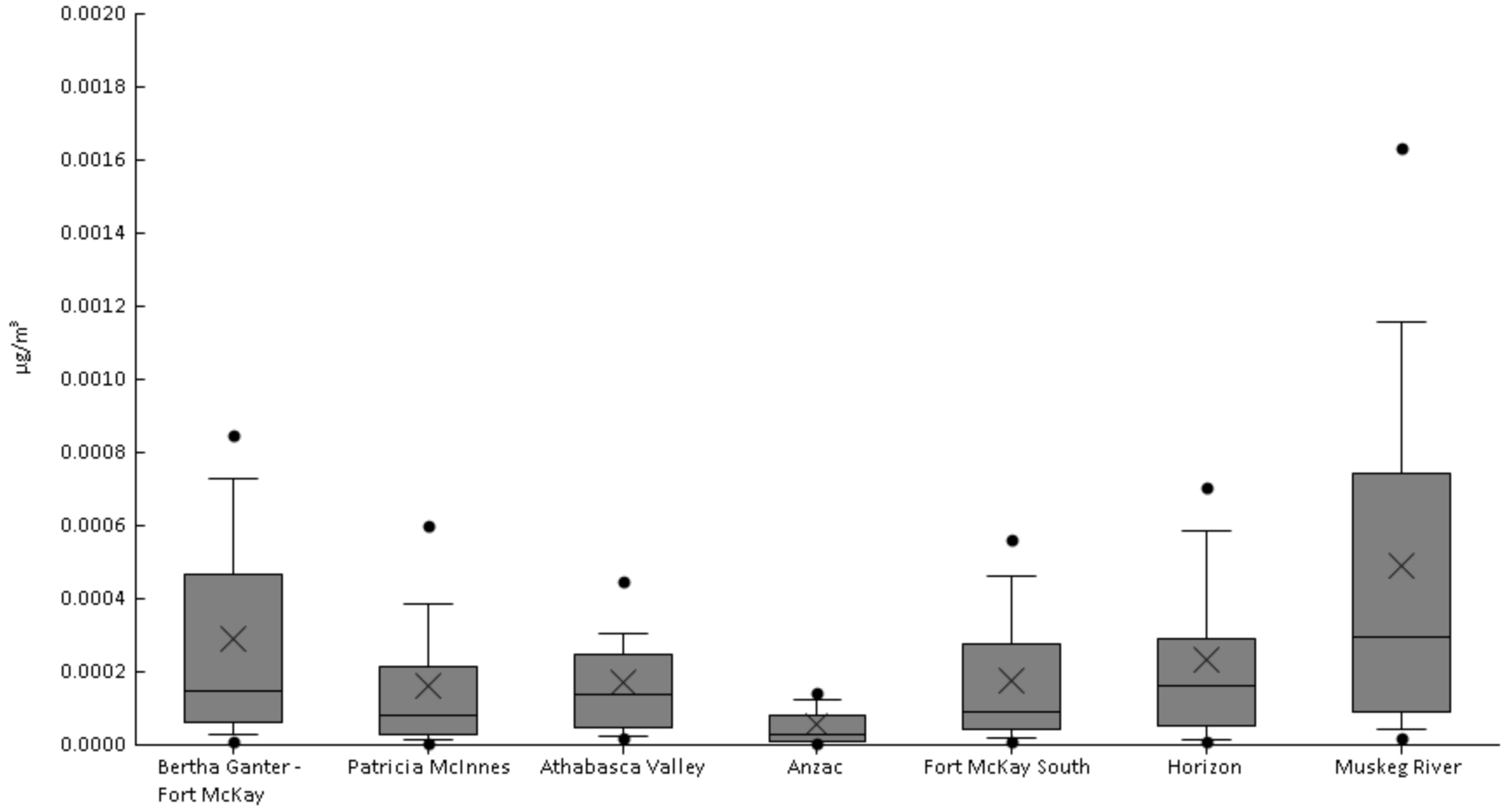
Particulate Matter (PM10 METALS) - Molybdenum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	3.5E-5	4.3E-5	5.4E-5	8.3E-5	1.4E-4	2.3E-4	4E-4	9.4E-4	1.8E-3	2.3E-4	3E-4
AMS 6	Patricia McInnes	60	97%	0	4.3E-5	5.6E-5	6.8E-5	1.2E-4	2.4E-4	3.5E-4	5E-4	9.8E-4	1.8E-4	1.7E-4
AMS 7	Athabasca Valley	59	100%	4.7E-5	8.5E-5	9.9E-5	1.2E-4	1.7E-4	2.4E-4	4E-4	5.7E-4	7E-4	2.1E-4	1.4E-4
AMS 14	Anzac	60	93%	0	0	3.4E-5	4.8E-5	6.8E-5	9.2E-5	2E-4	2.9E-4	3.6E-4	8.8E-5	7.5E-5
AMS 13	Fort McKay South	60	93%	0	0	3.4E-5	6.9E-5	1E-4	1.8E-4	3.4E-4	6.5E-4	1E-3	1.7E-4	2E-4
AMS 15	Horizon	59	98%	0	4E-5	5.1E-5	6.9E-5	1E-4	1.7E-4	2.2E-4	3.1E-4	6.3E-4	1.3E-4	1E-4
AMS 16	Muskeg River	61	100%	6.4E-5	6.9E-5	7.6E-5	1.2E-4	2.1E-4	3.6E-4	5.4E-4	8.1E-4	1.7E-3	2.9E-4	2.7E-4



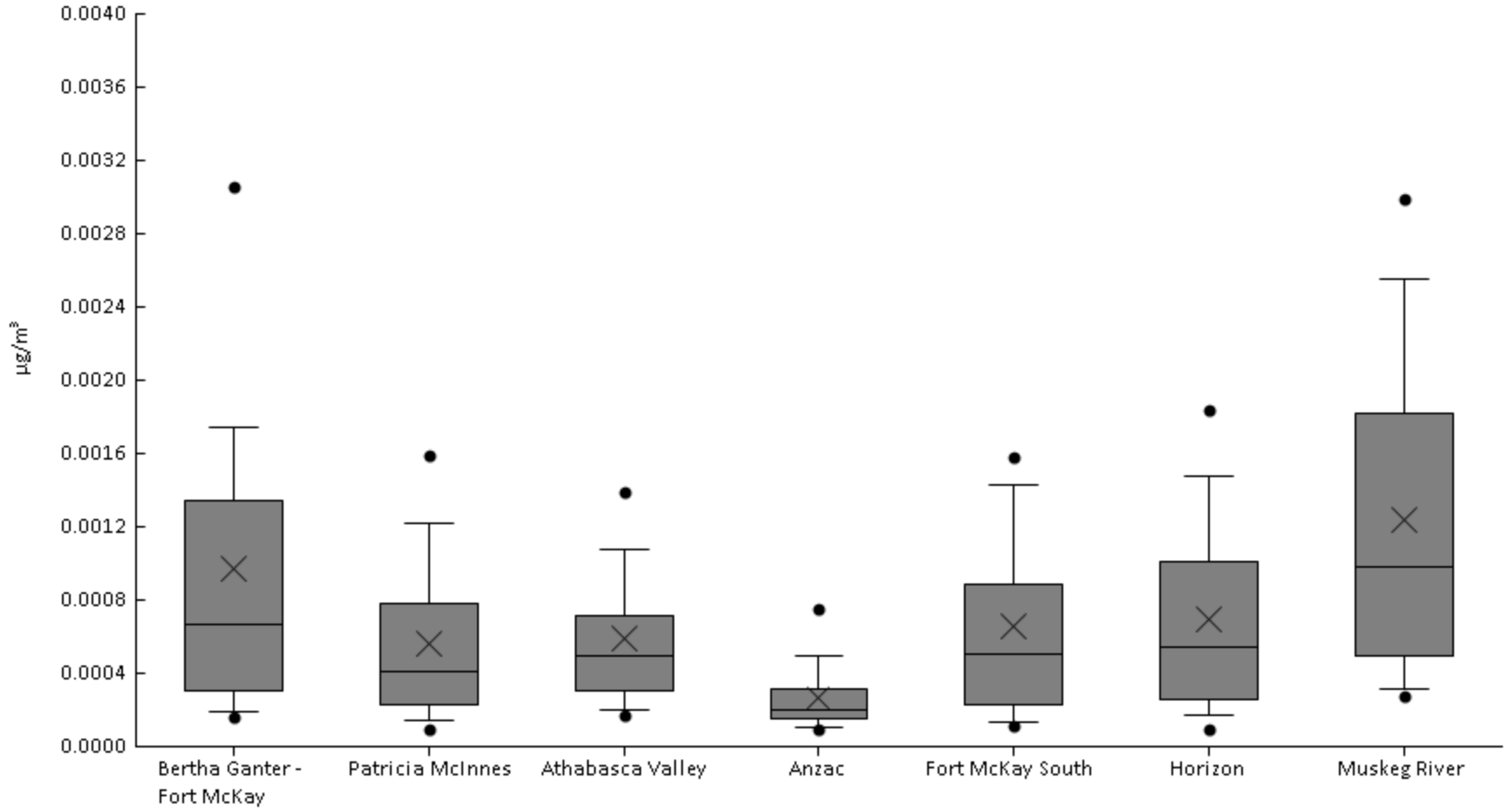
Particulate Matter (PM10 METALS) - Neodymium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.5E-6	1.1E-5	2.8E-5	6E-5	1.5E-4	4.7E-4	7.3E-4	8.5E-4	1.8E-3	2.9E-4	3.4E-4
AMS 6	Patricia McInnes	61	100%	2.6E-6	6.8E-6	1.2E-5	2.8E-5	8E-5	2.2E-4	3.9E-4	6E-4	9.7E-4	1.6E-4	2.1E-4
AMS 7	Athabasca Valley	59	100%	1.2E-5	1.8E-5	2.2E-5	4.8E-5	1.4E-4	2.5E-4	3E-4	4.5E-4	1.1E-3	1.7E-4	1.7E-4
AMS 14	Anzac	60	100%	3.2E-6	6.1E-6	7.6E-6	1E-5	2.9E-5	8.1E-5	1.3E-4	1.4E-4	3.8E-4	5.6E-5	7.2E-5
AMS 13	Fort McKay South	60	100%	7.3E-6	1.1E-5	1.9E-5	4.3E-5	9.1E-5	2.8E-4	4.6E-4	5.6E-4	1E-3	1.8E-4	2E-4
AMS 15	Horizon	59	100%	4.3E-6	9.7E-6	1.4E-5	5.3E-5	1.6E-4	2.9E-4	5.8E-4	7E-4	1.5E-3	2.3E-4	2.7E-4
AMS 16	Muskeg River	61	100%	7.7E-6	1.8E-5	4.4E-5	9E-5	3E-4	7.4E-4	1.2E-3	1.6E-3	2.3E-3	4.9E-4	5.3E-4



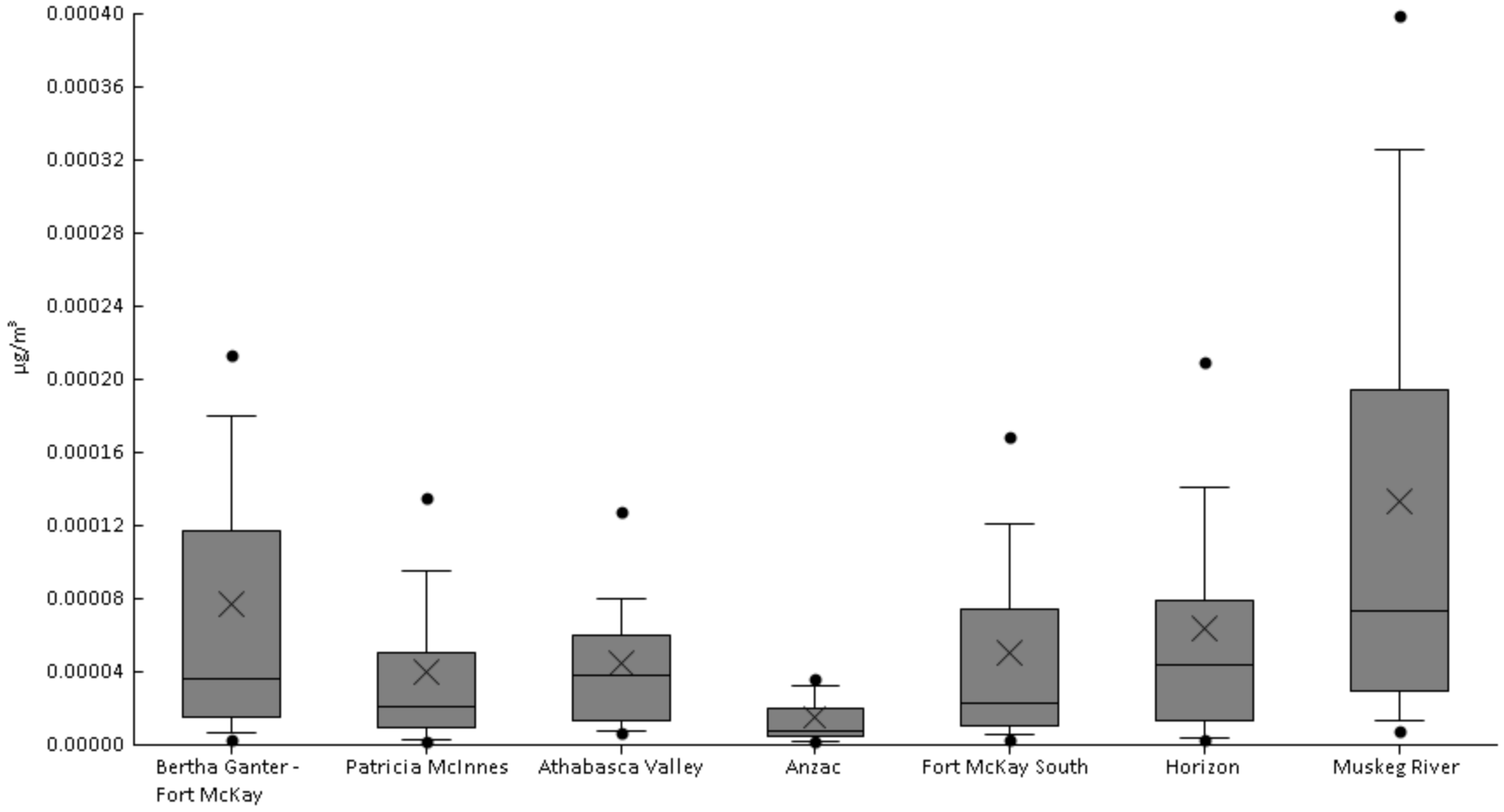
Particulate Matter (PM10 METALS) - Nickel (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	7.8E-5	1.6E-4	1.9E-4	3.1E-4	6.6E-4	1.3E-3	1.7E-3	3.1E-3	4.8E-3	9.7E-4	9.6E-4
AMS 6	Patricia McInnes	61	100%	7.7E-5	9.3E-5	1.4E-4	2.3E-4	4.1E-4	7.8E-4	1.2E-3	1.6E-3	2.5E-3	5.7E-4	5E-4
AMS 7	Athabasca Valley	59	100%	1.2E-4	1.7E-4	2E-4	3.1E-4	5E-4	7.1E-4	1.1E-3	1.4E-3	2.7E-3	5.9E-4	4.3E-4
AMS 14	Anzac	60	100%	7.3E-5	9.1E-5	1E-4	1.6E-4	2E-4	3.1E-4	5E-4	7.5E-4	1.1E-3	2.7E-4	2E-4
AMS 13	Fort McKay South	60	100%	1.1E-4	1.2E-4	1.3E-4	2.3E-4	5E-4	8.9E-4	1.4E-3	1.6E-3	3.1E-3	6.6E-4	5.9E-4
AMS 15	Horizon	59	100%	6.4E-5	9.4E-5	1.7E-4	2.6E-4	5.4E-4	1E-3	1.5E-3	1.8E-3	2.8E-3	6.9E-4	5.6E-4
AMS 16	Muskeg River	61	100%	1.7E-4	2.7E-4	3.1E-4	4.9E-4	9.8E-4	1.8E-3	2.6E-3	3E-3	4.3E-3	1.2E-3	9.2E-4



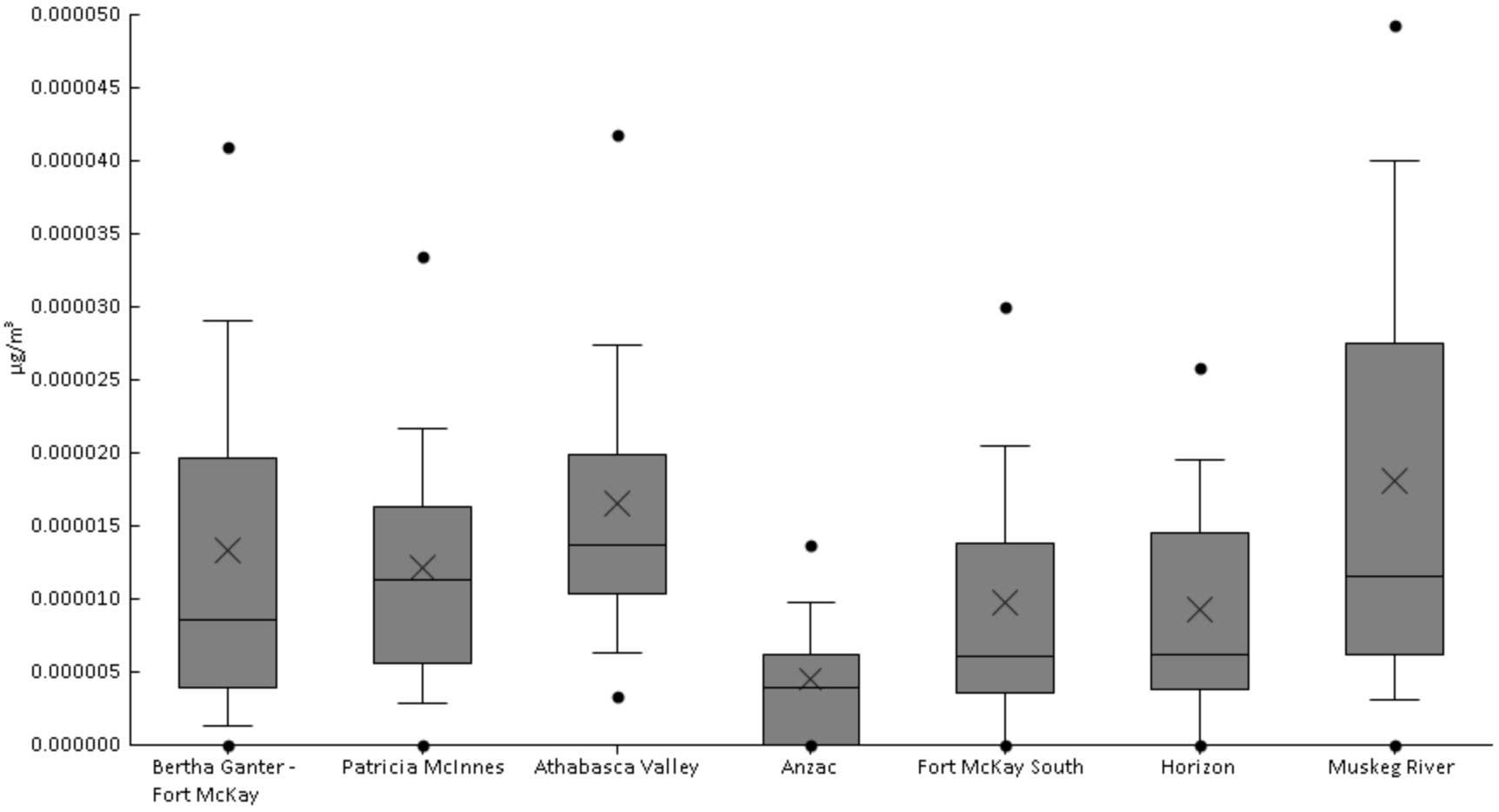
Particulate Matter (PM10 METALS) - Niobium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.1E-6	3.3E-6	6.9E-6	1.5E-5	3.7E-5	1.2E-4	1.8E-4	2.1E-4	6.2E-4	7.7E-5	1E-4
AMS 6	Patricia McInnes	61	100%	1.4E-6	2.2E-6	3.2E-6	9.5E-6	2.1E-5	5E-5	9.5E-5	1.3E-4	2.4E-4	4E-5	5.1E-5
AMS 7	Athabasca Valley	59	100%	4.4E-6	6.8E-6	7.3E-6	1.3E-5	3.8E-5	6E-5	8E-5	1.3E-4	2.6E-4	4.4E-5	4.3E-5
AMS 14	Anzac	60	100%	1.2E-6	1.9E-6	2.4E-6	5E-6	7.9E-6	2E-5	3.2E-5	3.6E-5	1E-4	1.5E-5	1.8E-5
AMS 13	Fort McKay South	60	100%	2.2E-6	3.1E-6	6E-6	1.1E-5	2.3E-5	7.5E-5	1.2E-4	1.7E-4	2.9E-4	5.1E-5	5.9E-5
AMS 15	Horizon	59	100%	1.5E-6	2.8E-6	4E-6	1.4E-5	4.4E-5	7.9E-5	1.4E-4	2.1E-4	3.9E-4	6.4E-5	7.5E-5
AMS 16	Muskeg River	61	100%	3.6E-6	7.5E-6	1.3E-5	3E-5	7.3E-5	1.9E-4	3.3E-4	4E-4	6.5E-4	1.3E-4	1.4E-4



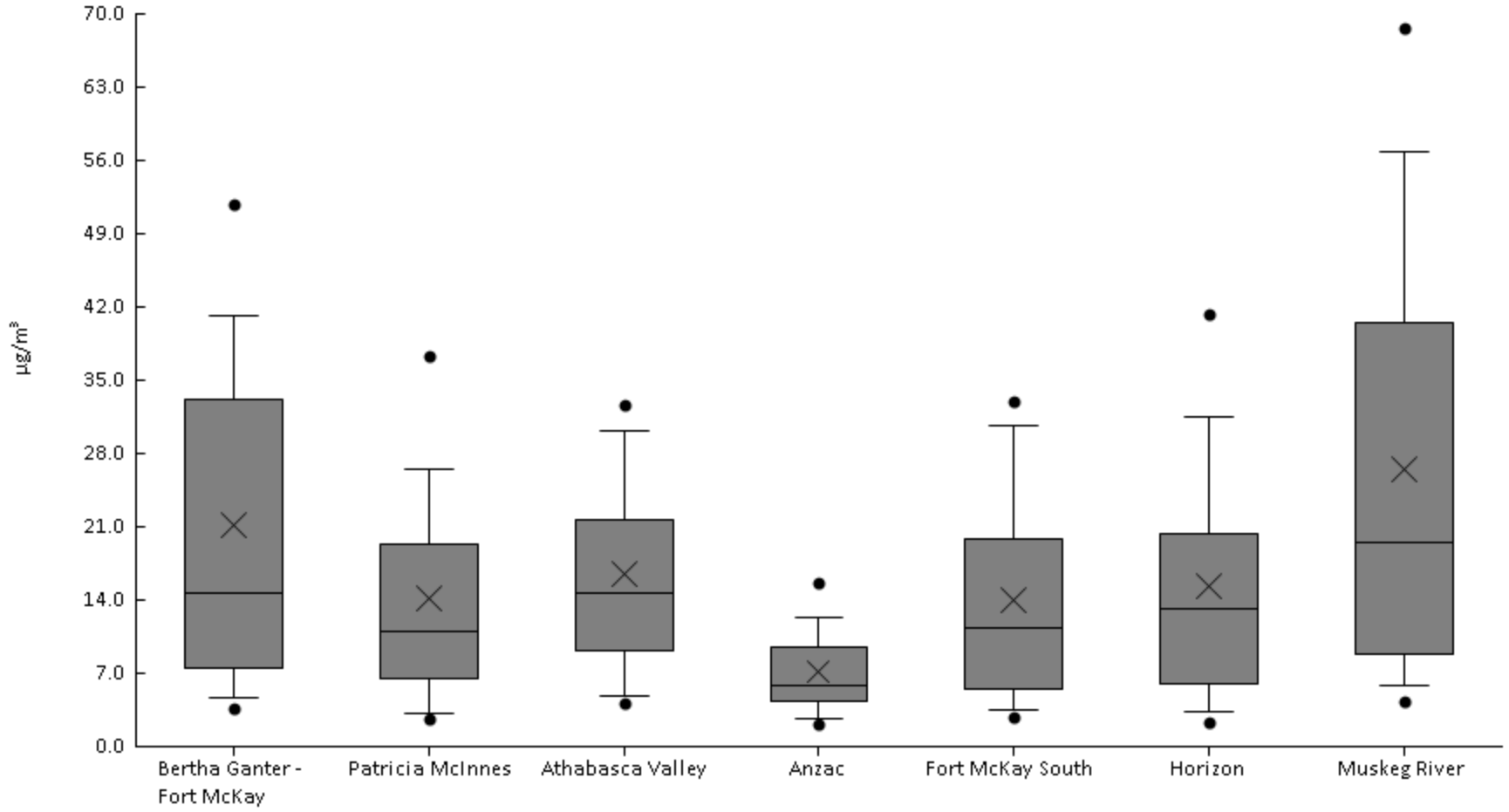
Particulate Matter (PM10 METALS) - Palladium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	90%	0	0	1.3E-6	3.9E-6	8.5E-6	2E-5	2.9E-5	4.1E-5	8E-5	1.3E-5	1.4E-5
AMS 6	Patricia McInnes	60	92%	0	0	2.9E-6	5.6E-6	1.1E-5	1.6E-5	2.2E-5	3.4E-5	3.6E-5	1.2E-5	8.8E-6
AMS 7	Athabasca Valley	59	100%	2.9E-6	3.3E-6	6.3E-6	1E-5	1.4E-5	2E-5	2.7E-5	4.2E-5	6.3E-5	1.7E-5	1.1E-5
AMS 14	Anzac	60	65%	0	0	0	0	4E-6	6.2E-6	9.7E-6	1.4E-5	3.1E-5	4.5E-6	5.4E-6
AMS 13	Fort McKay South	60	85%	0	0	0	3.5E-6	6.1E-6	1.4E-5	2E-5	3E-5	5.9E-5	9.7E-6	1.1E-5
AMS 15	Horizon	59	81%	0	0	0	3.8E-6	6.2E-6	1.5E-5	2E-5	2.6E-5	5.7E-5	9.3E-6	9.7E-6
AMS 16	Muskeg River	61	93%	0	0	3.1E-6	6.2E-6	1.2E-5	2.8E-5	4E-5	4.9E-5	8.2E-5	1.8E-5	1.7E-5



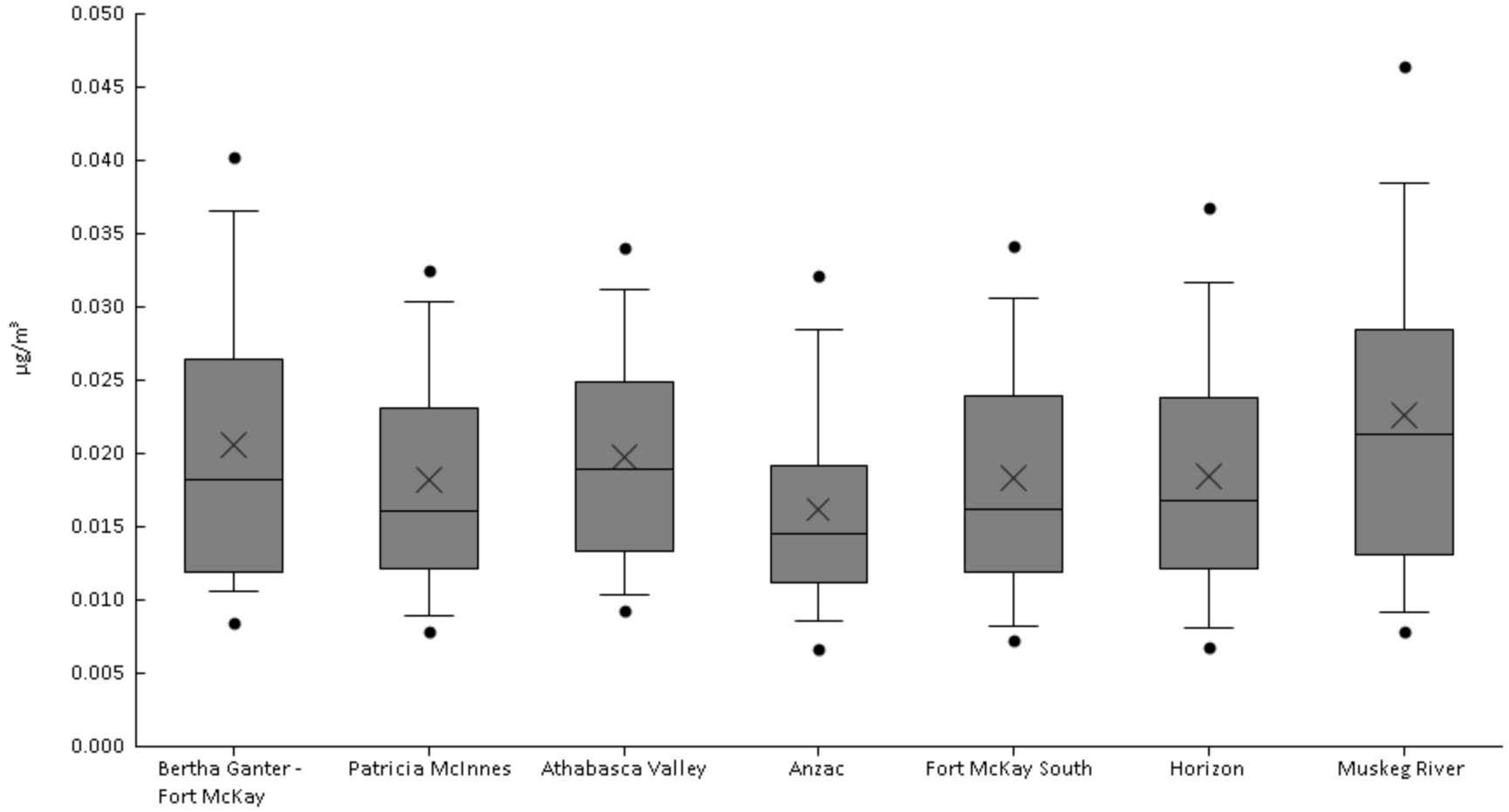
Particulate Matter (PM10 METALS) - Particulate Matter (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	2.3	3.7	4.6	7.5	15	33	41	52	81	21	17
AMS 6	Patricia McInnes	61	100%	1.5	2.7	3.2	6.5	11	19	26	37	59	14	11
AMS 7	Athabasca Valley	59	100%	3.4	4.2	4.8	9.1	15	22	30	33	60	16	10
AMS 14	Anzac	60	100%	2	2.1	2.6	4.3	5.8	9.5	12	16	26	7.2	4.7
AMS 13	Fort McKay South	60	100%	2.3	2.8	3.4	5.6	11	20	31	33	54	14	11
AMS 15	Horizon	59	100%	1.3	2.3	3.3	6	13	20	31	41	59	15	13
AMS 16	Muskeg River	61	100%	3.1	4.4	5.8	8.9	20	40	57	69	96	27	22



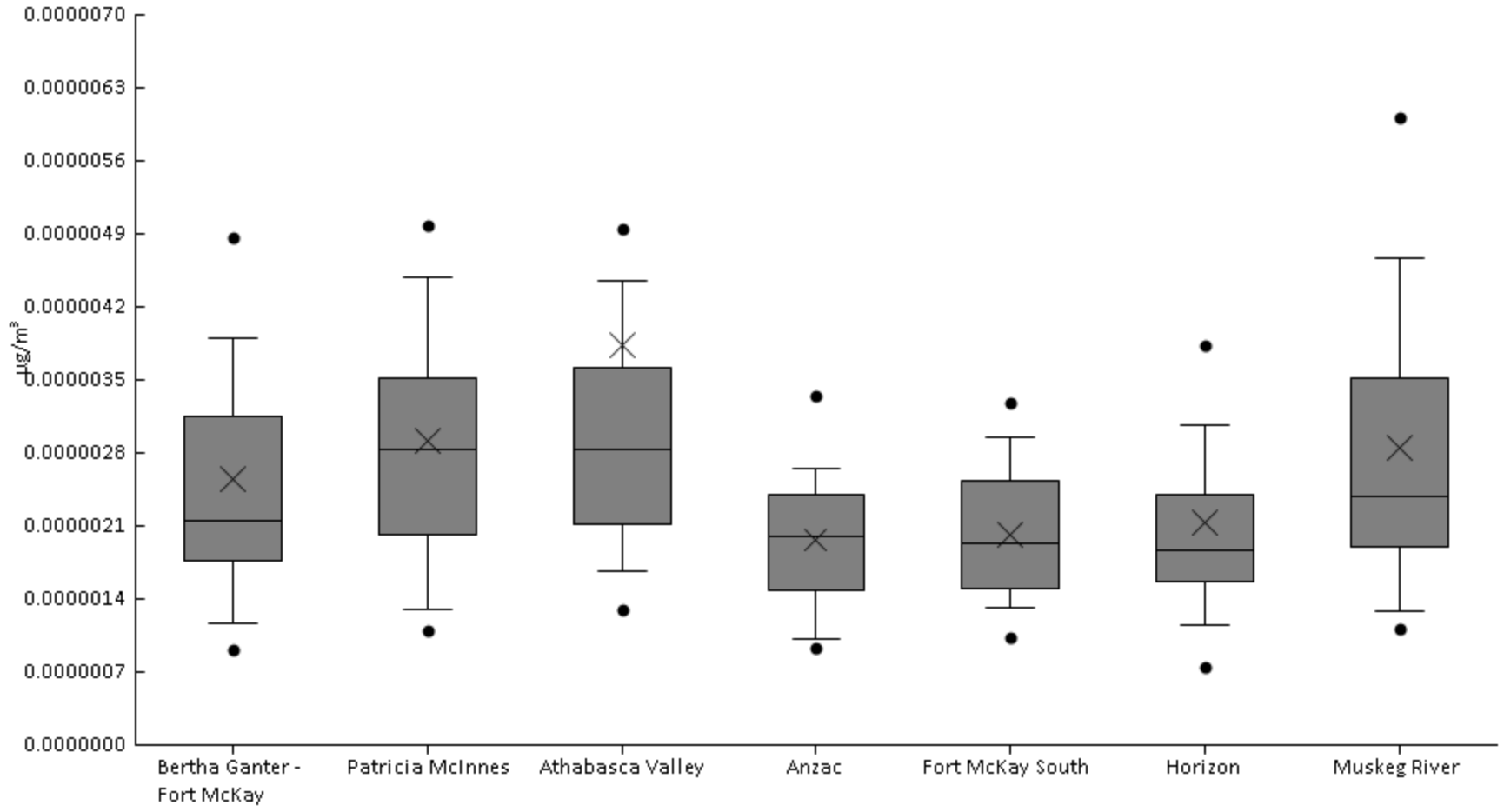
Particulate Matter (PM10 METALS) - Phosphorus (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	8.2E-3	8.4E-3	0.011	0.012	0.018	0.026	0.037	0.04	0.048	0.021	0.01
AMS 6	Patricia McInnes	61	100%	4.2E-3	7.8E-3	8.9E-3	0.012	0.016	0.023	0.03	0.032	0.037	0.018	8E-3
AMS 7	Athabasca Valley	59	100%	6.9E-3	9.3E-3	0.01	0.013	0.019	0.025	0.031	0.034	0.036	0.02	7.7E-3
AMS 14	Anzac	60	100%	5.7E-3	6.7E-3	8.6E-3	0.011	0.015	0.019	0.028	0.032	0.034	0.016	7.3E-3
AMS 13	Fort McKay South	60	100%	6.7E-3	7.2E-3	8.2E-3	0.012	0.016	0.024	0.031	0.034	0.04	0.018	8.3E-3
AMS 15	Horizon	59	100%	4.4E-3	6.8E-3	8.1E-3	0.012	0.017	0.024	0.032	0.037	0.043	0.018	8.9E-3
AMS 16	Muskeg River	61	100%	5.8E-3	7.9E-3	9.2E-3	0.013	0.021	0.028	0.038	0.046	0.058	0.023	0.012



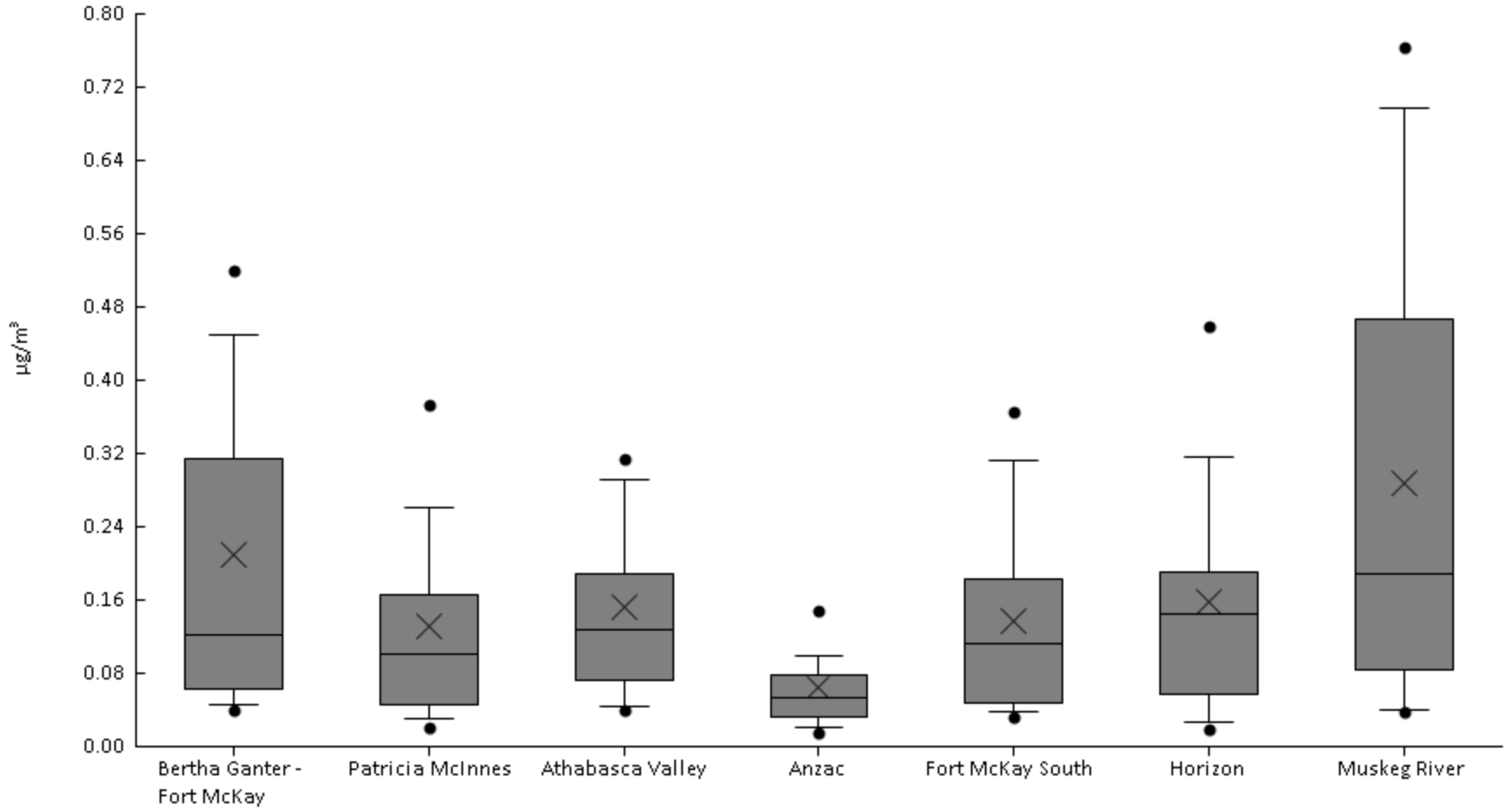
Particulate Matter (PM10 METALS) - Platinum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.4E-7	9.2E-7	1.2E-6	1.8E-6	2.2E-6	3.2E-6	3.9E-6	4.9E-6	8.6E-6	2.5E-6	1.5E-6
AMS 6	Patricia McInnes	61	100%	5.9E-7	1.1E-6	1.3E-6	2E-6	2.8E-6	3.5E-6	4.5E-6	5E-6	7.3E-6	2.9E-6	1.2E-6
AMS 7	Athabasca Valley	59	100%	1.1E-6	1.3E-6	1.7E-6	2.1E-6	2.8E-6	3.6E-6	4.4E-6	4.9E-6	5.8E-5	3.8E-6	7.3E-6
AMS 14	Anzac	60	100%	7.3E-7	9.4E-7	1E-6	1.5E-6	2E-6	2.4E-6	2.6E-6	3.3E-6	4.1E-6	2E-6	7.2E-7
AMS 13	Fort McKay South	60	100%	5.8E-7	1E-6	1.3E-6	1.5E-6	1.9E-6	2.5E-6	3E-6	3.3E-6	3.5E-6	2E-6	6.7E-7
AMS 15	Horizon	59	100%	6E-7	7.5E-7	1.2E-6	1.6E-6	1.9E-6	2.4E-6	3.1E-6	3.8E-6	9.1E-6	2.1E-6	1.2E-6
AMS 16	Muskeg River	60	100%	3.7E-7	1.1E-6	1.3E-6	1.9E-6	2.4E-6	3.5E-6	4.7E-6	6E-6	9.1E-6	2.9E-6	1.6E-6



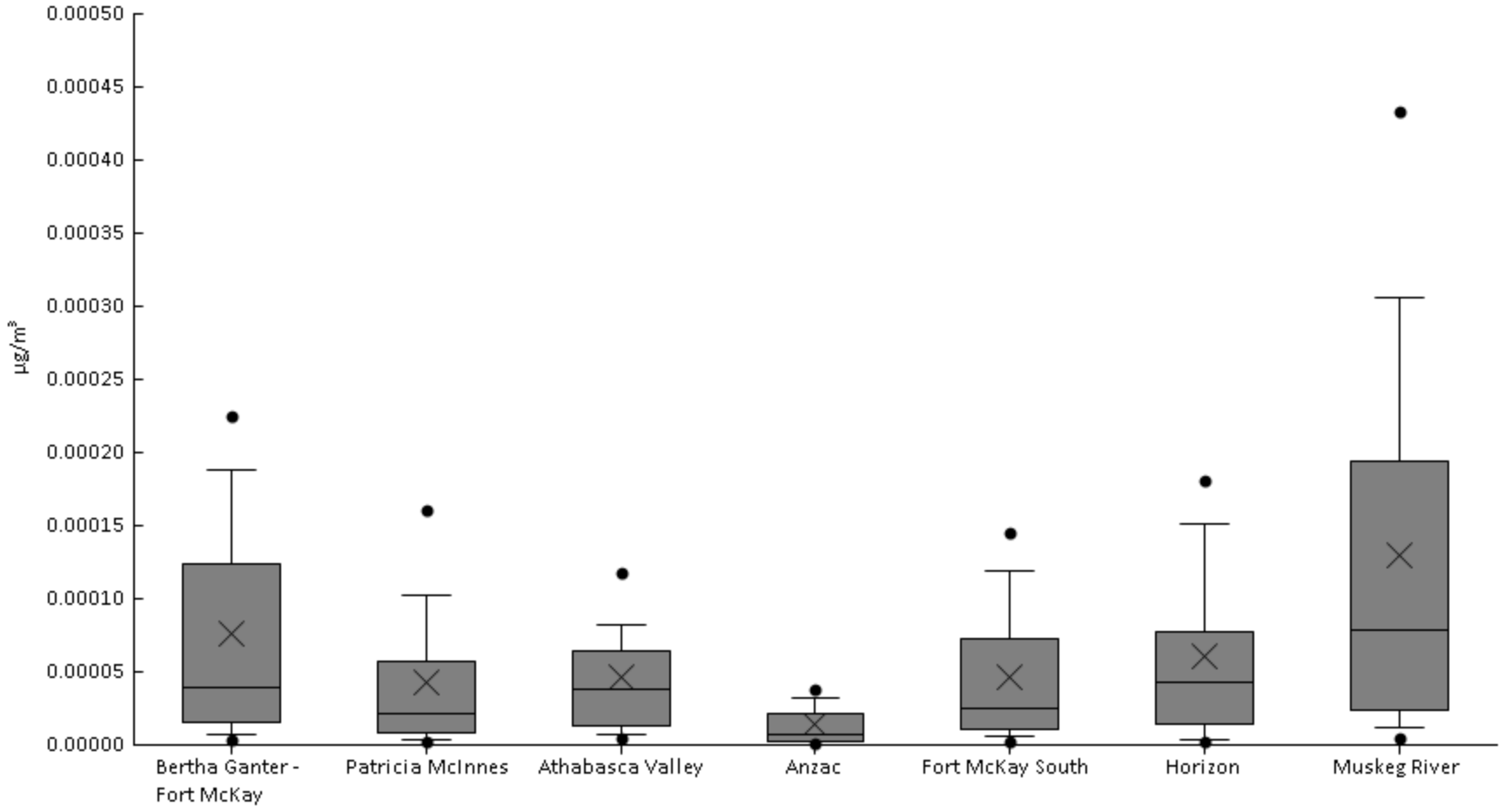
Particulate Matter (PM10 METALS) - Potassium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	0.02	0.04	0.045	0.063	0.12	0.31	0.45	0.52	1	0.21	0.2
AMS 6	Patricia McInnes	61	100%	0.011	0.021	0.03	0.045	0.1	0.17	0.26	0.37	0.64	0.13	0.13
AMS 7	Athabasca Valley	59	100%	0.023	0.039	0.044	0.073	0.13	0.19	0.29	0.31	0.79	0.15	0.12
AMS 14	Anzac	60	100%	0.012	0.016	0.021	0.033	0.054	0.079	0.1	0.15	0.29	0.064	0.049
AMS 13	Fort McKay South	60	100%	0.027	0.032	0.039	0.049	0.11	0.18	0.31	0.37	0.69	0.14	0.12
AMS 15	Horizon	59	100%	8.9E-3	0.019	0.026	0.058	0.14	0.19	0.32	0.46	0.9	0.16	0.15
AMS 16	Muskeg River	61	100%	0.027	0.038	0.04	0.083	0.19	0.47	0.7	0.76	1.3	0.29	0.28



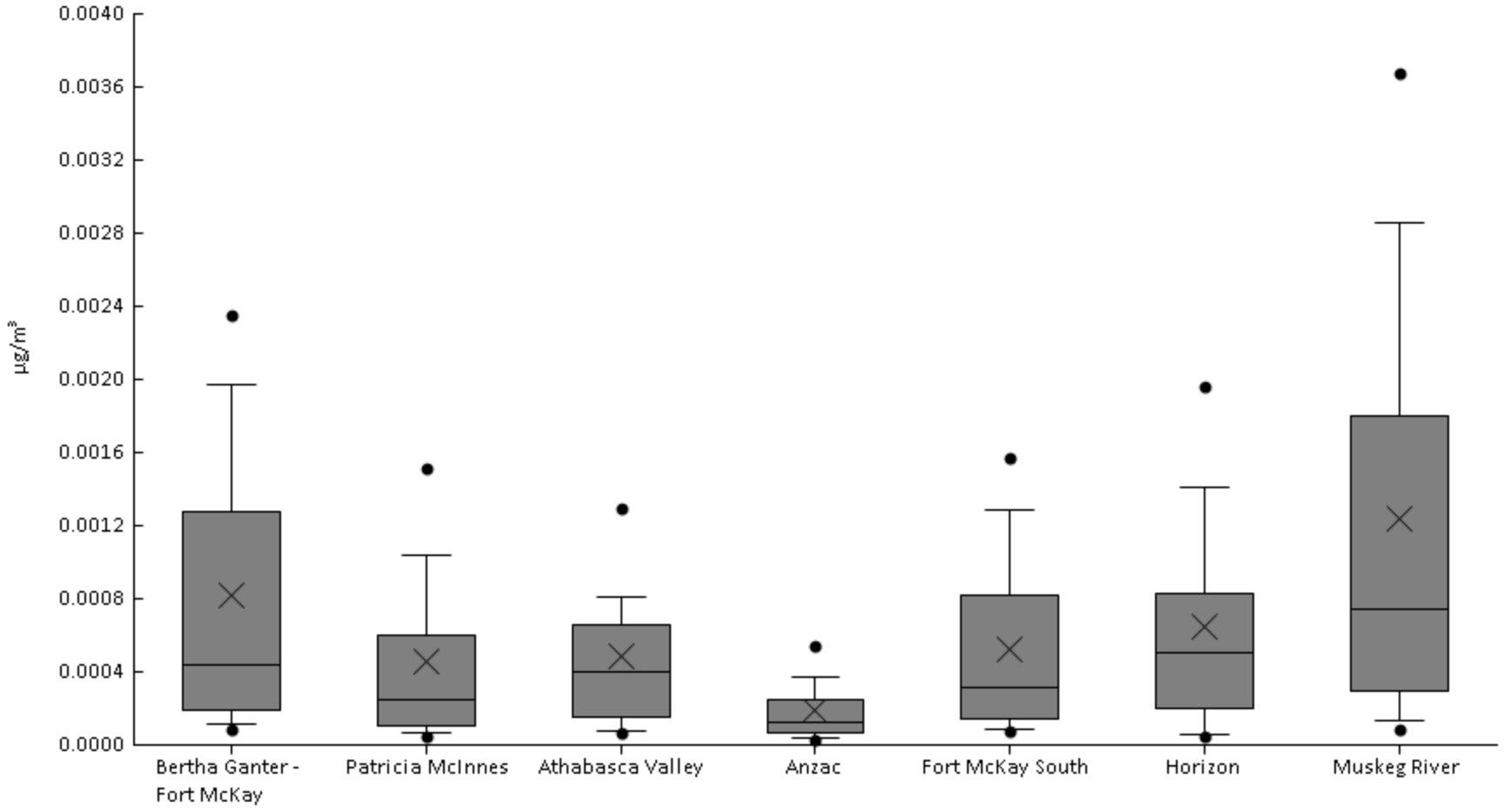
Particulate Matter (PM10 METALS) - Praseodymium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.5E-6	3E-6	7.4E-6	1.6E-5	3.9E-5	1.2E-4	1.9E-4	2.2E-4	4.6E-4	7.6E-5	8.8E-5
AMS 6	Patricia McInnes	61	100%	8.5E-7	2E-6	3.4E-6	8E-6	2.2E-5	5.8E-5	1E-4	1.6E-4	2.6E-4	4.3E-5	5.6E-5
AMS 7	Athabasca Valley	59	100%	3.7E-6	5.2E-6	6.6E-6	1.3E-5	3.8E-5	6.4E-5	8.2E-5	1.2E-4	2.8E-4	4.6E-5	4.4E-5
AMS 14	Anzac	60	100%	7.2E-7	1.4E-6	2E-6	2.6E-6	7.2E-6	2.1E-5	3.3E-5	3.8E-5	1E-4	1.5E-5	1.9E-5
AMS 13	Fort McKay South	60	100%	1.8E-6	3E-6	5.5E-6	1.1E-5	2.5E-5	7.3E-5	1.2E-4	1.5E-4	2.7E-4	4.7E-5	5.2E-5
AMS 15	Horizon	59	100%	1.1E-6	2.5E-6	3.5E-6	1.4E-5	4.3E-5	7.7E-5	1.5E-4	1.8E-4	4.1E-4	6.1E-5	7E-5
AMS 16	Muskeg River	61	100%	1.9E-6	4.9E-6	1.2E-5	2.3E-5	7.9E-5	1.9E-4	3.1E-4	4.3E-4	6E-4	1.3E-4	1.4E-4



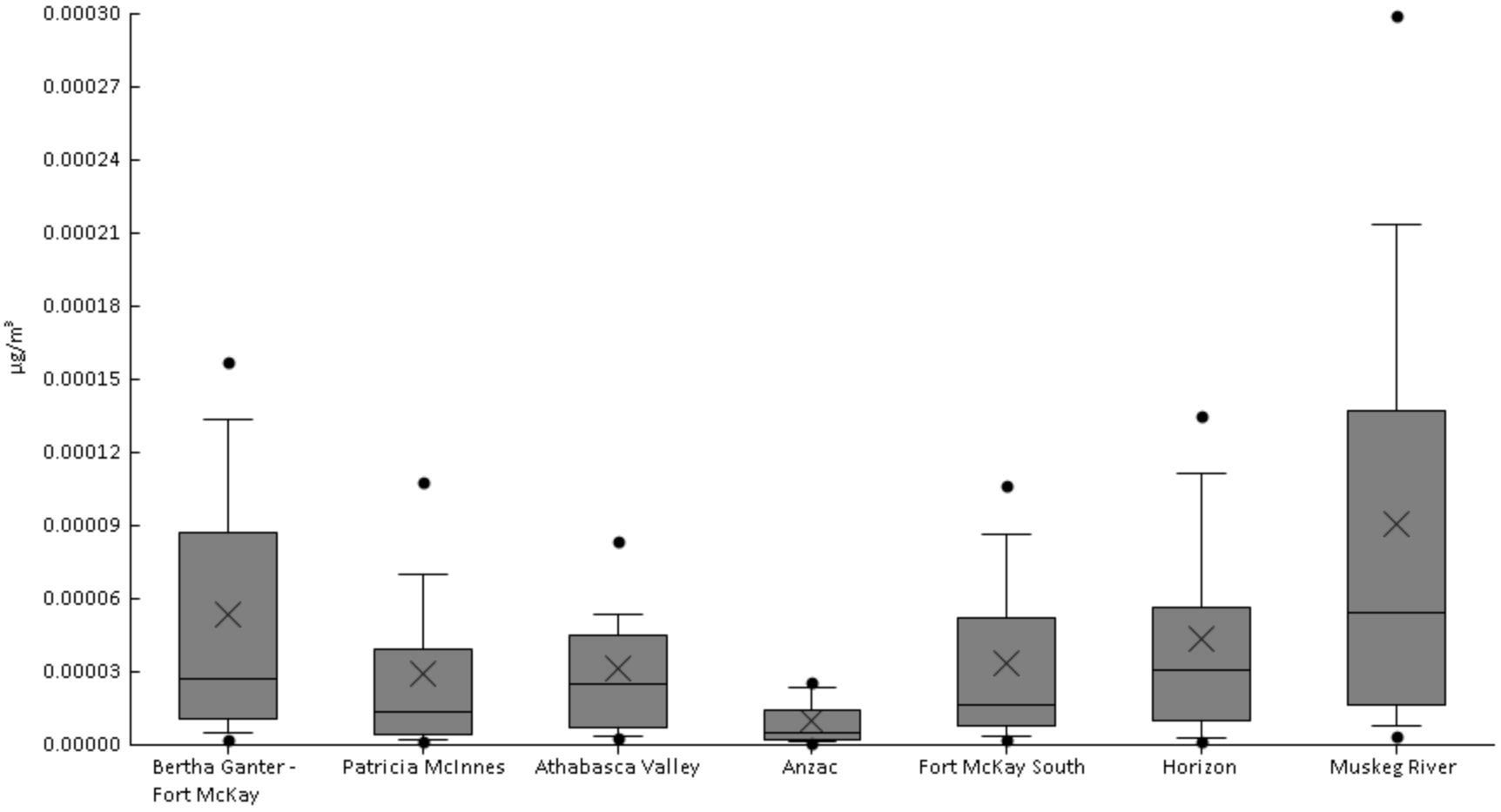
Particulate Matter (PM10 METALS) - Rubidium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.5E-5	8.2E-5	1.1E-4	1.9E-4	4.4E-4	1.3E-3	2E-3	2.3E-3	4.2E-3	8.2E-4	8.6E-4
AMS 6	Patricia McInnes	61	100%	2.3E-5	4.5E-5	6.4E-5	1E-4	2.5E-4	6E-4	1E-3	1.5E-3	2.5E-3	4.6E-4	5.3E-4
AMS 7	Athabasca Valley	59	100%	5E-5	6.6E-5	7.5E-5	1.6E-4	4E-4	6.6E-4	8.1E-4	1.3E-3	2.7E-3	4.8E-4	4.5E-4
AMS 14	Anzac	60	100%	2.1E-5	3E-5	3.7E-5	6.8E-5	1.2E-4	2.4E-4	3.7E-4	5.4E-4	1E-3	1.9E-4	2E-4
AMS 13	Fort McKay South	60	100%	4.6E-5	7.7E-5	8.8E-5	1.4E-4	3.2E-4	8.2E-4	1.3E-3	1.6E-3	2.8E-3	5.2E-4	5.3E-4
AMS 15	Horizon	59	100%	1.9E-5	4.5E-5	5.9E-5	2E-4	5.1E-4	8.3E-4	1.4E-3	2E-3	3.8E-3	6.5E-4	6.8E-4
AMS 16	Muskeg River	61	100%	7E-5	8.7E-5	1.3E-4	2.9E-4	7.4E-4	1.8E-3	2.9E-3	3.7E-3	5.5E-3	1.2E-3	1.3E-3



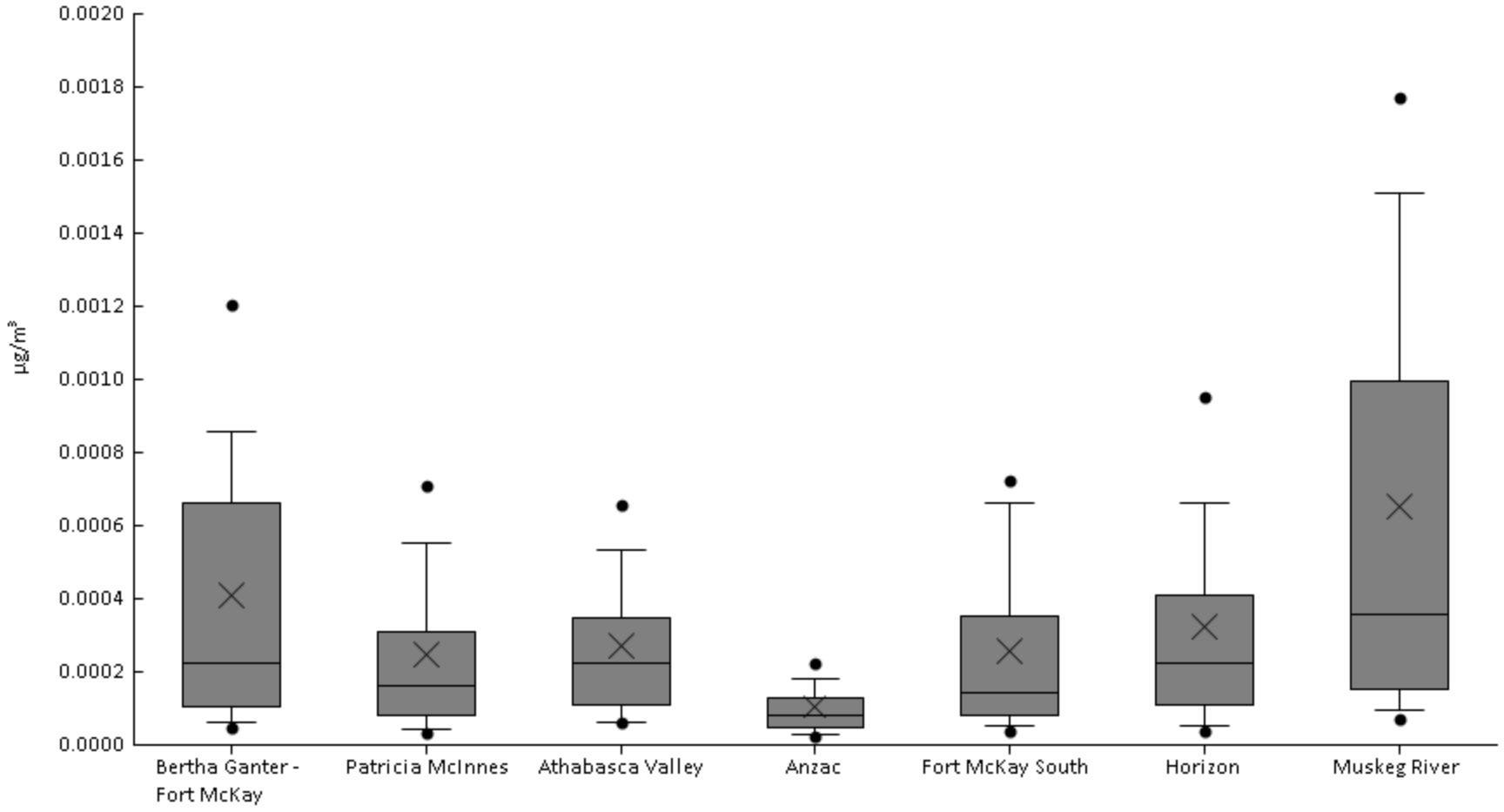
Particulate Matter (PM10 METALS) - Samarium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.1E-6	2.1E-6	5.2E-6	1.1E-5	2.7E-5	8.7E-5	1.3E-4	1.6E-4	3.2E-4	5.3E-5	6.2E-5
AMS 6	Patricia McInnes	61	100%	5.8E-7	1.1E-6	1.9E-6	4E-6	1.4E-5	3.9E-5	7E-5	1.1E-4	1.8E-4	2.9E-5	3.8E-5
AMS 7	Athabasca Valley	59	100%	1.1E-6	2.9E-6	3.8E-6	7.1E-6	2.5E-5	4.5E-5	5.4E-5	8.4E-5	2E-4	3.1E-5	3.2E-5
AMS 14	Anzac	60	98%	0	9E-7	1.2E-6	1.8E-6	5.1E-6	1.5E-5	2.3E-5	2.6E-5	7E-5	1E-5	1.3E-5
AMS 13	Fort McKay South	60	100%	1.5E-6	2.1E-6	3.5E-6	7.6E-6	1.7E-5	5.2E-5	8.6E-5	1.1E-4	1.9E-4	3.3E-5	3.7E-5
AMS 15	Horizon	59	100%	8.6E-7	1.8E-6	2.7E-6	1E-5	3.1E-5	5.6E-5	1.1E-4	1.4E-4	2.8E-4	4.4E-5	5E-5
AMS 16	Muskeg River	61	100%	1.3E-6	3.2E-6	8.2E-6	1.6E-5	5.4E-5	1.4E-4	2.1E-4	3E-4	4.2E-4	9E-5	9.8E-5



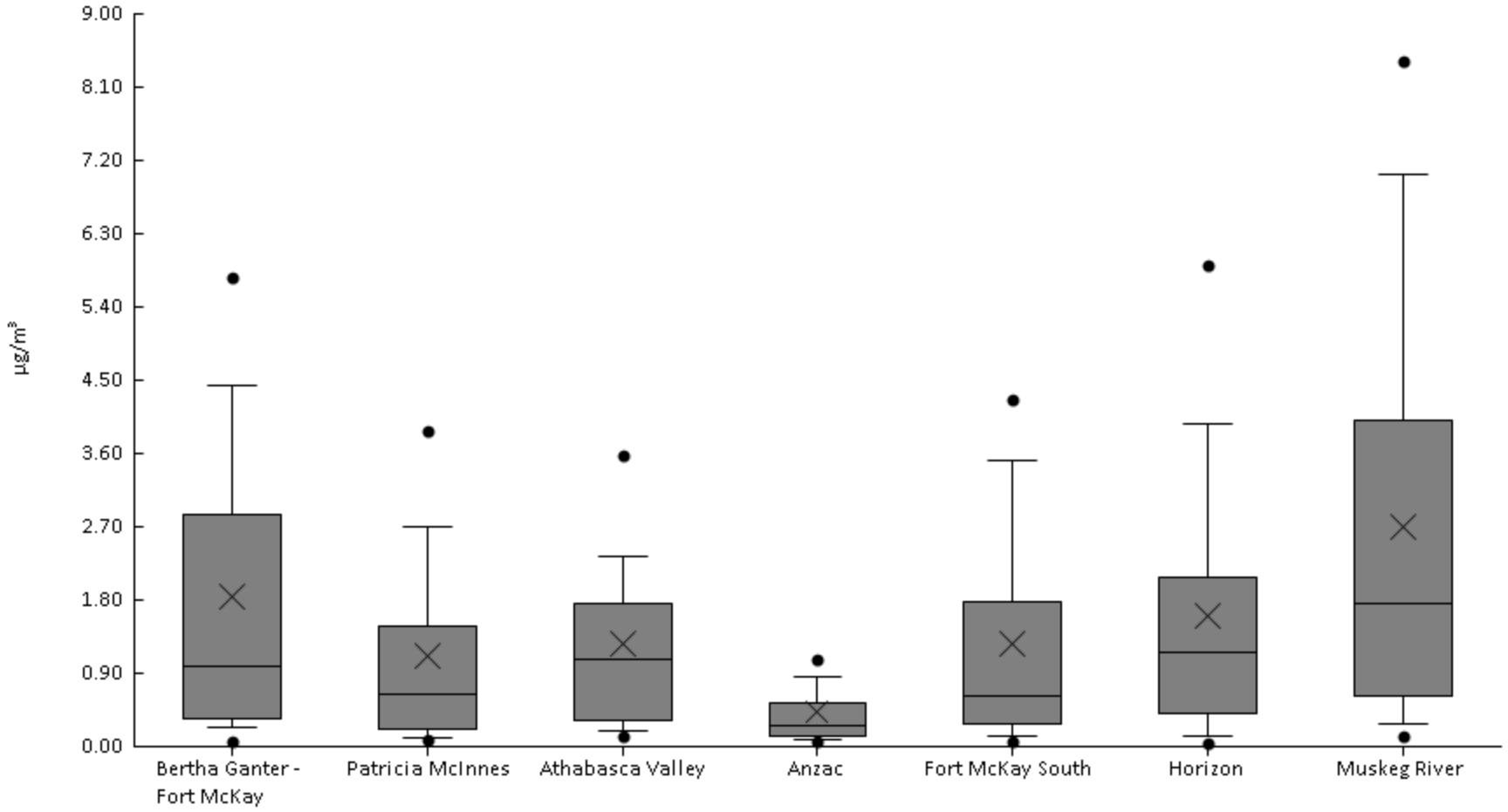
Particulate Matter (PM10 METALS) - Selenium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	2.8E-5	4.7E-5	6.4E-5	1.1E-4	2.2E-4	6.6E-4	8.6E-4	1.2E-3	2.6E-3	4.1E-4	4.5E-4
AMS 6	Patricia McInnes	60	100%	2.1E-5	3.4E-5	4.4E-5	8.1E-5	1.6E-4	3.1E-4	5.5E-4	7.1E-4	1.4E-3	2.5E-4	2.6E-4
AMS 7	Athabasca Valley	59	100%	5.3E-5	6.2E-5	6.4E-5	1.1E-4	2.2E-4	3.5E-4	5.3E-4	6.6E-4	1.6E-3	2.7E-4	2.4E-4
AMS 14	Anzac	60	100%	2.1E-5	2.5E-5	2.9E-5	4.7E-5	8.3E-5	1.3E-4	1.8E-4	2.2E-4	6E-4	1E-4	9.8E-5
AMS 13	Fort McKay South	60	100%	2.9E-5	3.7E-5	5.1E-5	8.3E-5	1.4E-4	3.5E-4	6.6E-4	7.2E-4	1.6E-3	2.6E-4	2.7E-4
AMS 15	Horizon	59	100%	2.1E-5	3.6E-5	5.4E-5	1.1E-4	2.2E-4	4.1E-4	6.6E-4	9.5E-4	2.2E-3	3.2E-4	3.6E-4
AMS 16	Muskeg River	61	100%	3.9E-5	7E-5	9.7E-5	1.5E-4	3.6E-4	9.9E-4	1.5E-3	1.8E-3	3.4E-3	6.5E-4	6.9E-4



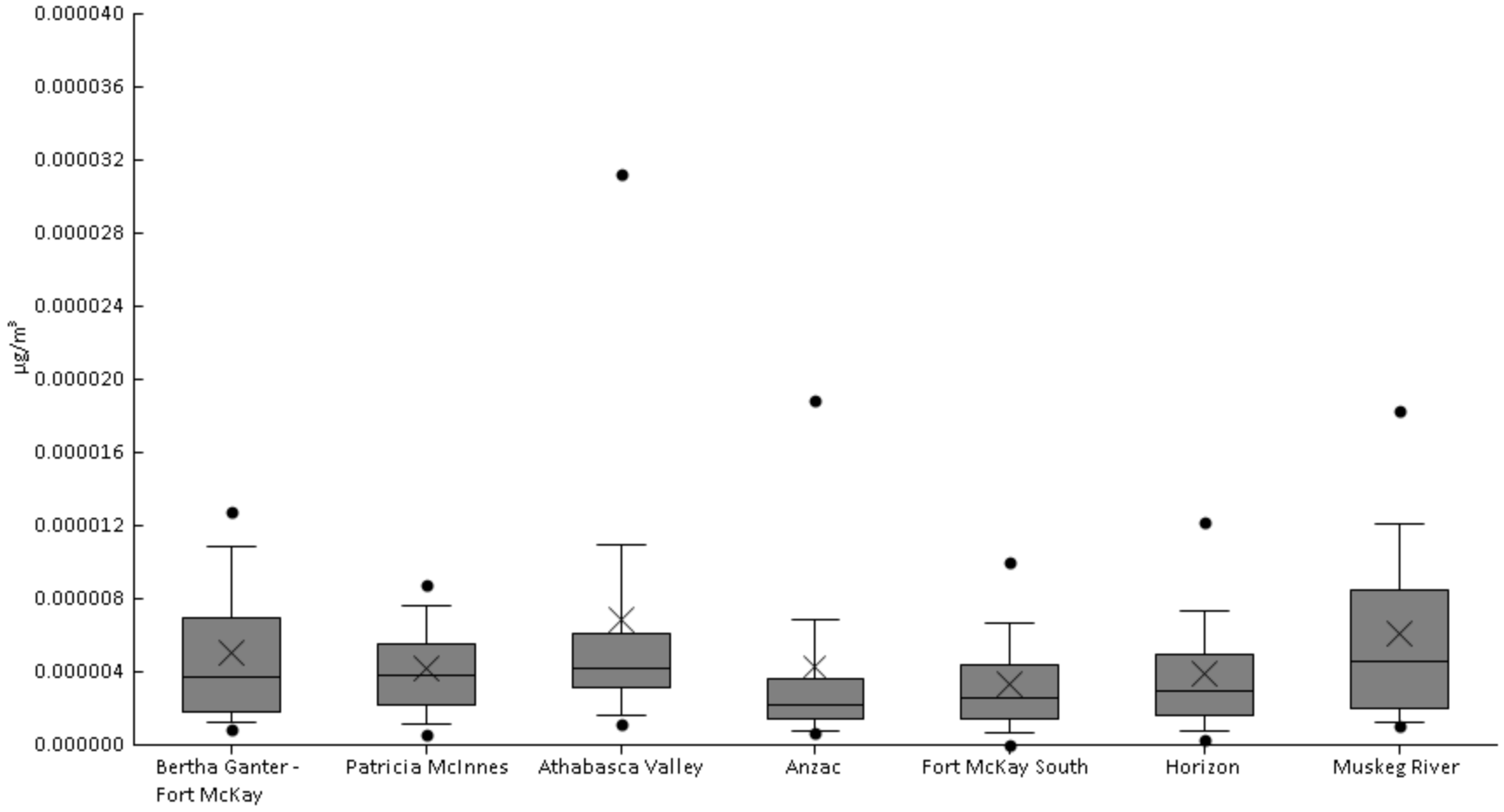
Particulate Matter (PM10 METALS) - Silicon (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	98%	0	0.073	0.24	0.35	0.98	2.8	4.4	5.8	9.5	1.8	2.1
AMS 6	Patricia McInnes	61	98%	0	0.09	0.12	0.22	0.63	1.5	2.7	3.9	5.8	1.1	1.3
AMS 7	Athabasca Valley	59	98%	0	0.14	0.19	0.32	1.1	1.8	2.3	3.6	6.8	1.3	1.2
AMS 14	Anzac	60	97%	0	0.056	0.077	0.12	0.25	0.53	0.85	1.1	3.2	0.42	0.53
AMS 13	Fort McKay South	60	98%	0	0.061	0.14	0.27	0.61	1.8	3.5	4.3	7.8	1.3	1.5
AMS 15	Horizon	59	98%	0	0.052	0.12	0.4	1.2	2.1	4	5.9	8.8	1.6	1.8
AMS 16	Muskeg River	61	100%	0.078	0.14	0.27	0.62	1.8	4	7	8.4	11	2.7	2.7



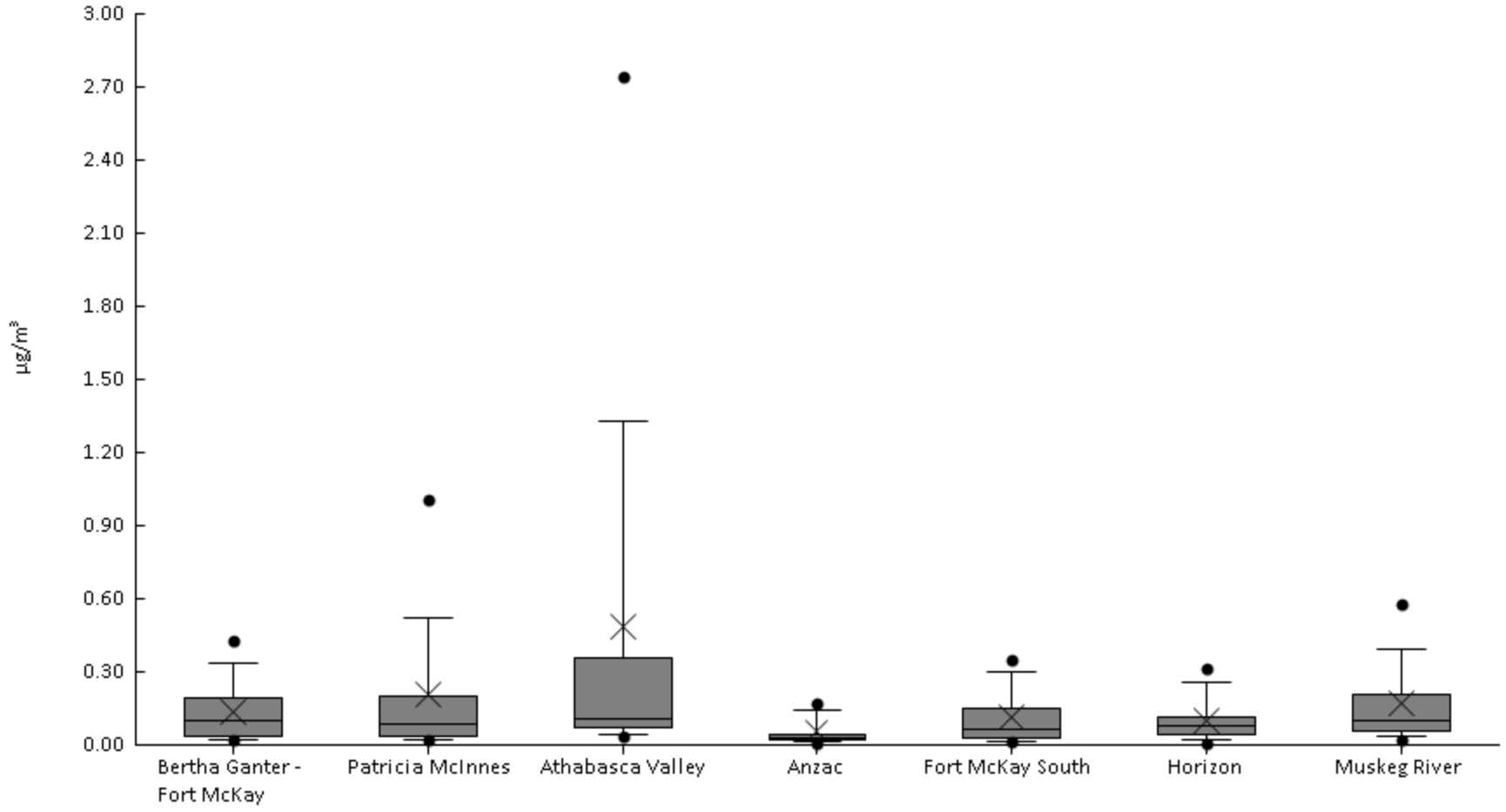
Particulate Matter (PM10 METALS) - Silver (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	98%	0	8.8E-7	1.2E-6	1.8E-6	3.7E-6	7E-6	1.1E-5	1.3E-5	2E-5	5E-6	4.2E-6
AMS 6	Patricia McInnes	59	98%	0	5.3E-7	1.2E-6	2.2E-6	3.8E-6	5.6E-6	7.6E-6	8.7E-6	1.5E-5	4.2E-6	2.8E-6
AMS 7	Athabasca Valley	58	100%	5E-7	1.2E-6	1.6E-6	3.1E-6	4.2E-6	6.1E-6	1.1E-5	3.1E-5	5.6E-5	6.9E-6	9.9E-6
AMS 14	Anzac	59	97%	0	6.5E-7	8E-7	1.4E-6	2.2E-6	3.7E-6	6.9E-6	1.9E-5	4.6E-5	4.2E-6	7.2E-6
AMS 13	Fort McKay South	60	93%	0	0	6.4E-7	1.4E-6	2.6E-6	4.4E-6	6.6E-6	1E-5	1.5E-5	3.3E-6	3.1E-6
AMS 15	Horizon	59	95%	0	2.7E-7	7.5E-7	1.6E-6	3E-6	4.9E-6	7.3E-6	1.2E-5	1.5E-5	3.9E-6	3.4E-6
AMS 16	Muskeg River	61	100%	5.2E-7	1E-6	1.2E-6	2E-6	4.5E-6	8.4E-6	1.2E-5	1.8E-5	2.3E-5	6.1E-6	5.2E-6



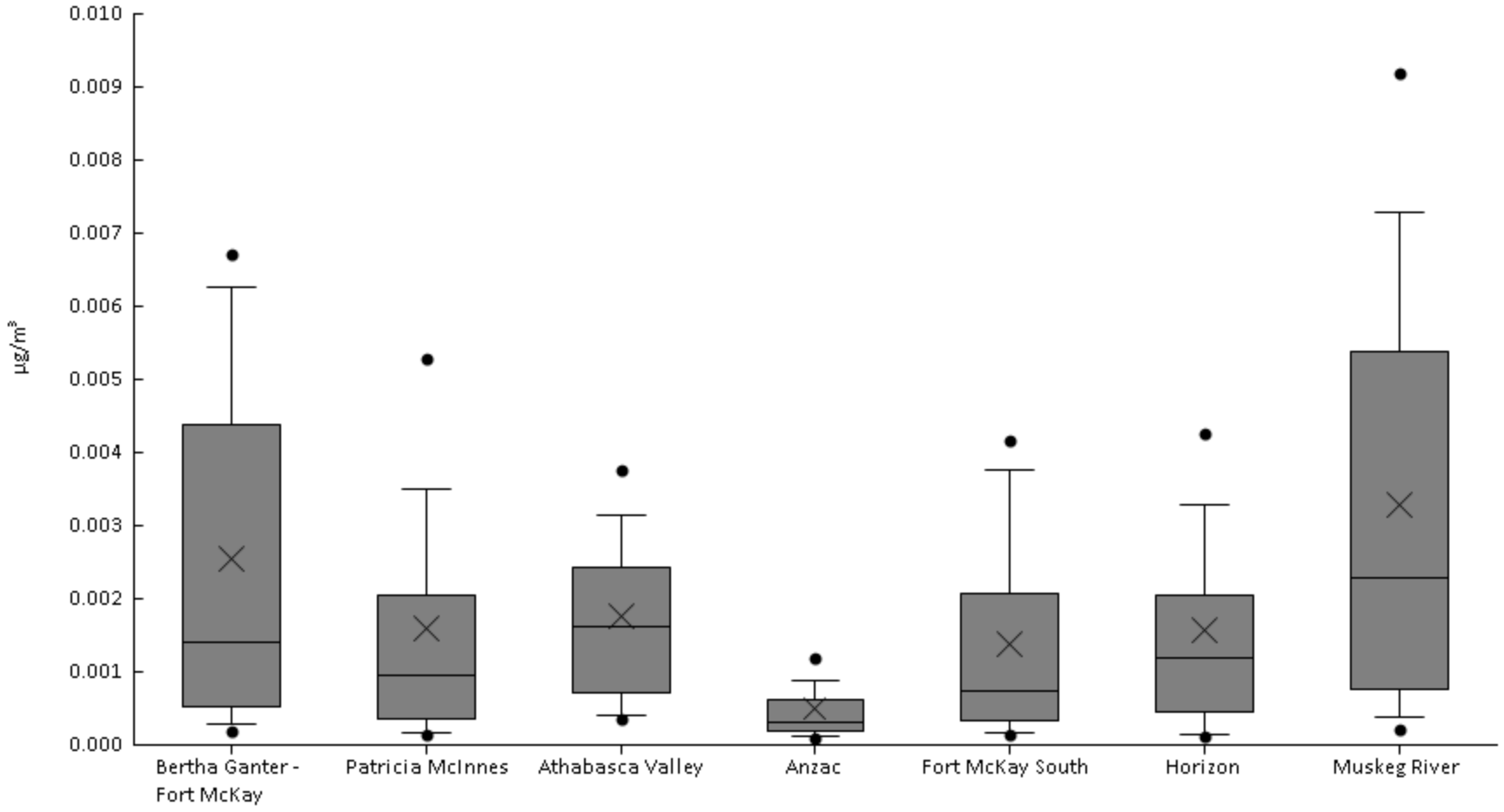
Particulate Matter (PM10 METALS) - Sodium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.3E-3	0.019	0.022	0.033	0.097	0.2	0.33	0.43	0.51	0.14	0.13
AMS 6	Patricia McInnes	61	100%	6.4E-3	0.021	0.024	0.039	0.082	0.2	0.52	1	1.8	0.21	0.34
AMS 7	Athabasca Valley	59	100%	0.011	0.037	0.041	0.069	0.11	0.36	1.3	2.7	4.6	0.48	0.89
AMS 14	Anzac	60	100%	8E-3	0.01	0.014	0.02	0.03	0.044	0.14	0.17	0.47	0.056	0.074
AMS 13	Fort McKay South	60	100%	8E-3	0.015	0.017	0.028	0.064	0.15	0.3	0.35	0.48	0.11	0.11
AMS 15	Horizon	59	100%	6.6E-3	9E-3	0.02	0.04	0.08	0.12	0.26	0.31	0.51	0.1	0.097
AMS 16	Muskeg River	61	100%	0.02	0.023	0.032	0.054	0.1	0.2	0.39	0.58	0.85	0.17	0.18



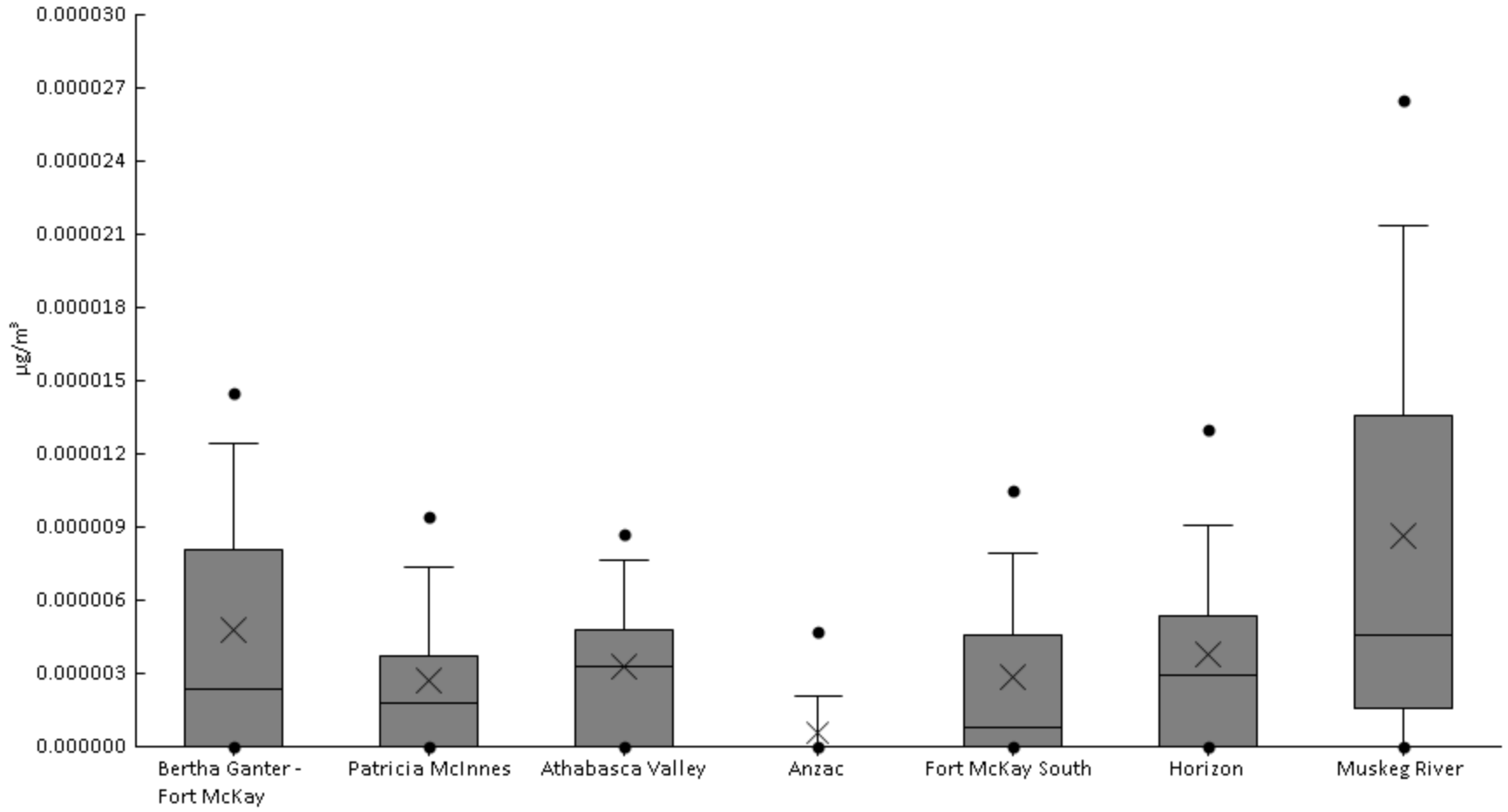
Particulate Matter (PM10 METALS) - Strontium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.1E-4	1.8E-4	2.7E-4	5.2E-4	1.4E-3	4.4E-3	6.3E-3	6.7E-3	0.011	2.5E-3	2.6E-3
AMS 6	Patricia McInnes	61	100%	7.4E-5	1.4E-4	1.7E-4	3.6E-4	9.5E-4	2E-3	3.5E-3	5.3E-3	0.01	1.6E-3	1.8E-3
AMS 7	Athabasca Valley	59	100%	2.5E-4	3.6E-4	4.1E-4	7.2E-4	1.6E-3	2.4E-3	3.2E-3	3.8E-3	8.8E-3	1.8E-3	1.4E-3
AMS 14	Anzac	60	100%	7.6E-5	9.1E-5	1.1E-4	1.9E-4	3.2E-4	6.3E-4	8.9E-4	1.2E-3	3.2E-3	4.9E-4	5.3E-4
AMS 13	Fort McKay South	60	100%	1.1E-4	1.5E-4	1.7E-4	3.4E-4	7.5E-4	2.1E-3	3.8E-3	4.2E-3	7.1E-3	1.4E-3	1.4E-3
AMS 15	Horizon	59	100%	5.9E-5	1.1E-4	1.5E-4	4.4E-4	1.2E-3	2E-3	3.3E-3	4.3E-3	9.2E-3	1.6E-3	1.7E-3
AMS 16	Muskeg River	61	100%	1.4E-4	2.1E-4	3.8E-4	7.6E-4	2.3E-3	5.4E-3	7.3E-3	9.2E-3	0.014	3.3E-3	3.2E-3



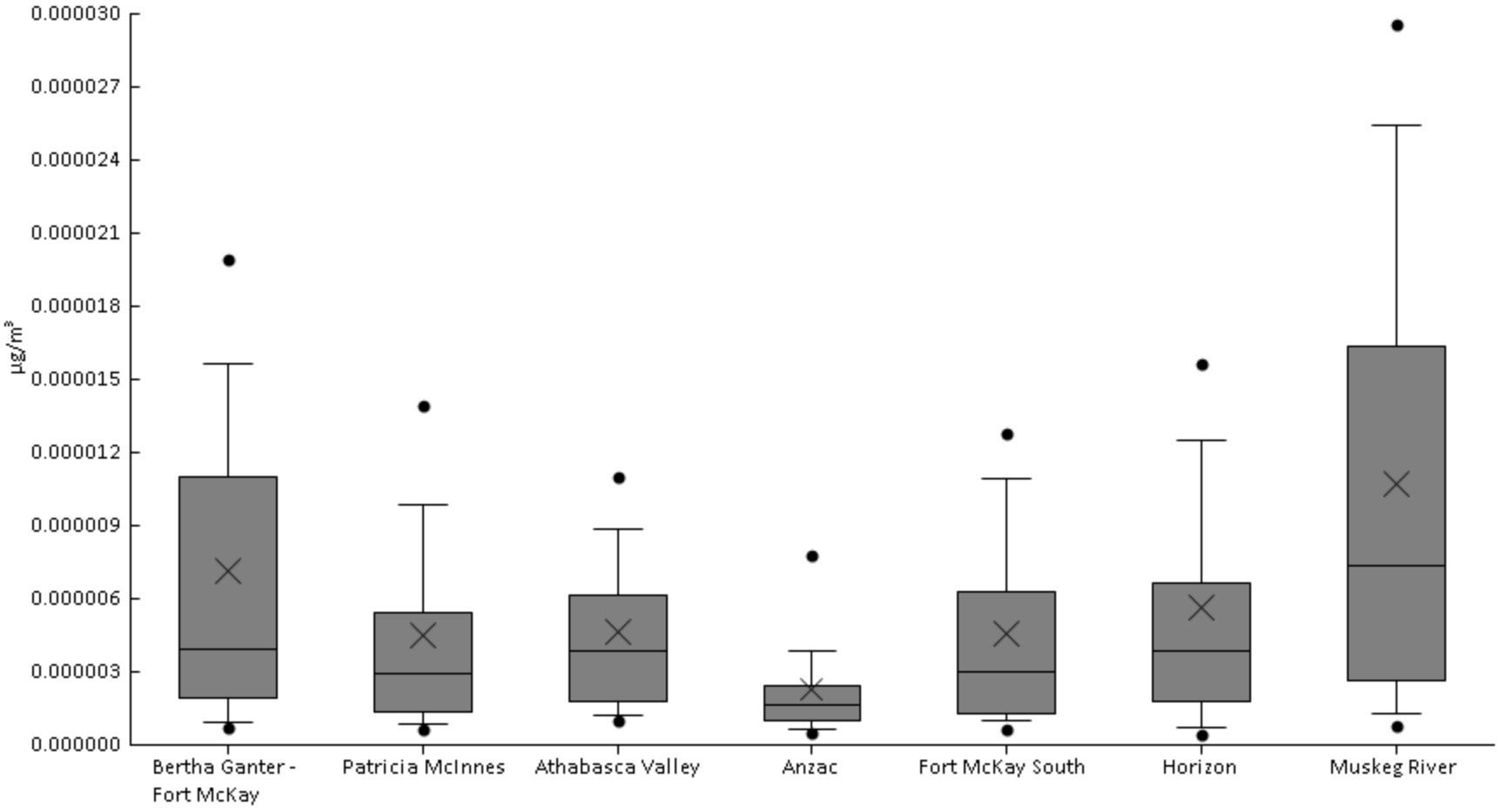
Particulate Matter (PM10 METALS) - Tantalum (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	57%	0	0	0	0	2.3E-6	8.1E-6	1.2E-5	1.4E-5	3.8E-5	4.8E-6	6.7E-6
AMS 6	Patricia McInnes	60	52%	0	0	0	0	1.8E-6	3.7E-6	7.4E-6	9.4E-6	1.9E-5	2.7E-6	3.9E-6
AMS 7	Athabasca Valley	59	66%	0	0	0	0	3.3E-6	4.8E-6	7.7E-6	8.7E-6	2.2E-5	3.3E-6	3.7E-6
AMS 14	Anzac	60	17%	0	0	0	0	0	0	2.1E-6	4.7E-6	7.9E-6	6E-7	1.7E-6
AMS 13	Fort McKay South	60	50%	0	0	0	0	8.2E-7	4.5E-6	7.9E-6	1E-5	2.2E-5	2.9E-6	4E-6
AMS 15	Horizon	59	61%	0	0	0	0	3E-6	5.4E-6	9.1E-6	1.3E-5	2.7E-5	3.8E-6	4.9E-6
AMS 16	Muskeg River	61	75%	0	0	0	1.5E-6	4.6E-6	1.4E-5	2.1E-5	2.6E-5	4.7E-5	8.6E-6	1E-5



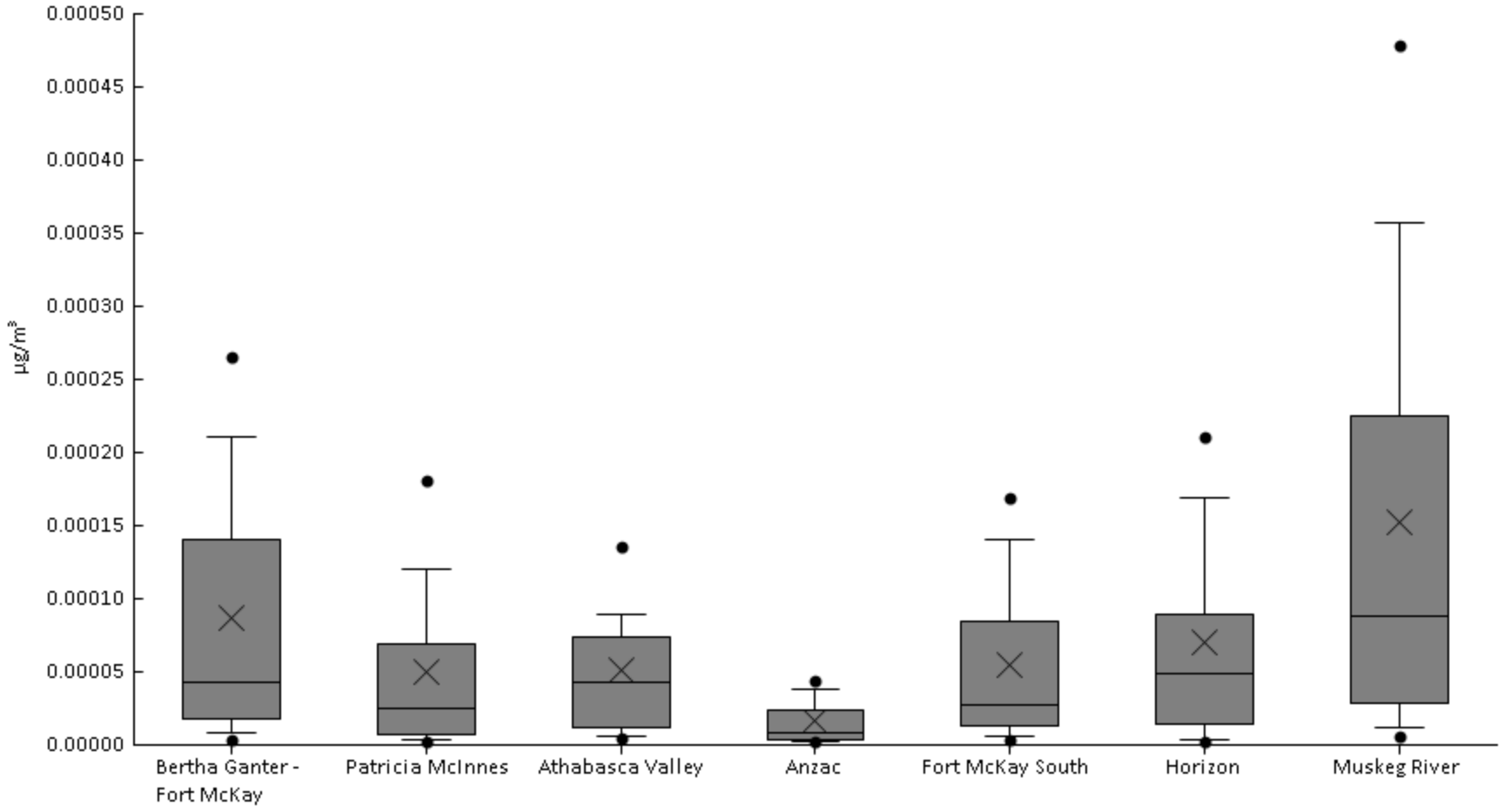
Particulate Matter (PM10 METALS) - Thallium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.1E-7	7E-7	9.2E-7	1.9E-6	3.9E-6	1.1E-5	1.6E-5	2E-5	3.6E-5	7.1E-6	7.2E-6
AMS 6	Patricia McInnes	60	100%	4.4E-7	6.7E-7	8.4E-7	1.4E-6	2.9E-6	5.4E-6	9.8E-6	1.4E-5	2.3E-5	4.5E-6	4.7E-6
AMS 7	Athabasca Valley	59	100%	7.4E-7	9.7E-7	1.2E-6	1.8E-6	3.8E-6	6.2E-6	8.9E-6	1.1E-5	2.5E-5	4.7E-6	3.9E-6
AMS 14	Anzac	60	97%	0	5.3E-7	6.1E-7	9.9E-7	1.7E-6	2.5E-6	3.9E-6	7.8E-6	1.3E-5	2.3E-6	2.4E-6
AMS 13	Fort McKay South	60	98%	0	6.5E-7	9.9E-7	1.3E-6	3E-6	6.3E-6	1.1E-5	1.3E-5	2.5E-5	4.6E-6	4.6E-6
AMS 15	Horizon	59	97%	0	4.6E-7	6.8E-7	1.8E-6	3.9E-6	6.7E-6	1.3E-5	1.6E-5	3.3E-5	5.6E-6	5.9E-6
AMS 16	Muskeg River	61	100%	6E-7	7.8E-7	1.3E-6	2.6E-6	7.4E-6	1.6E-5	2.5E-5	3E-5	4.5E-5	1.1E-5	1E-5



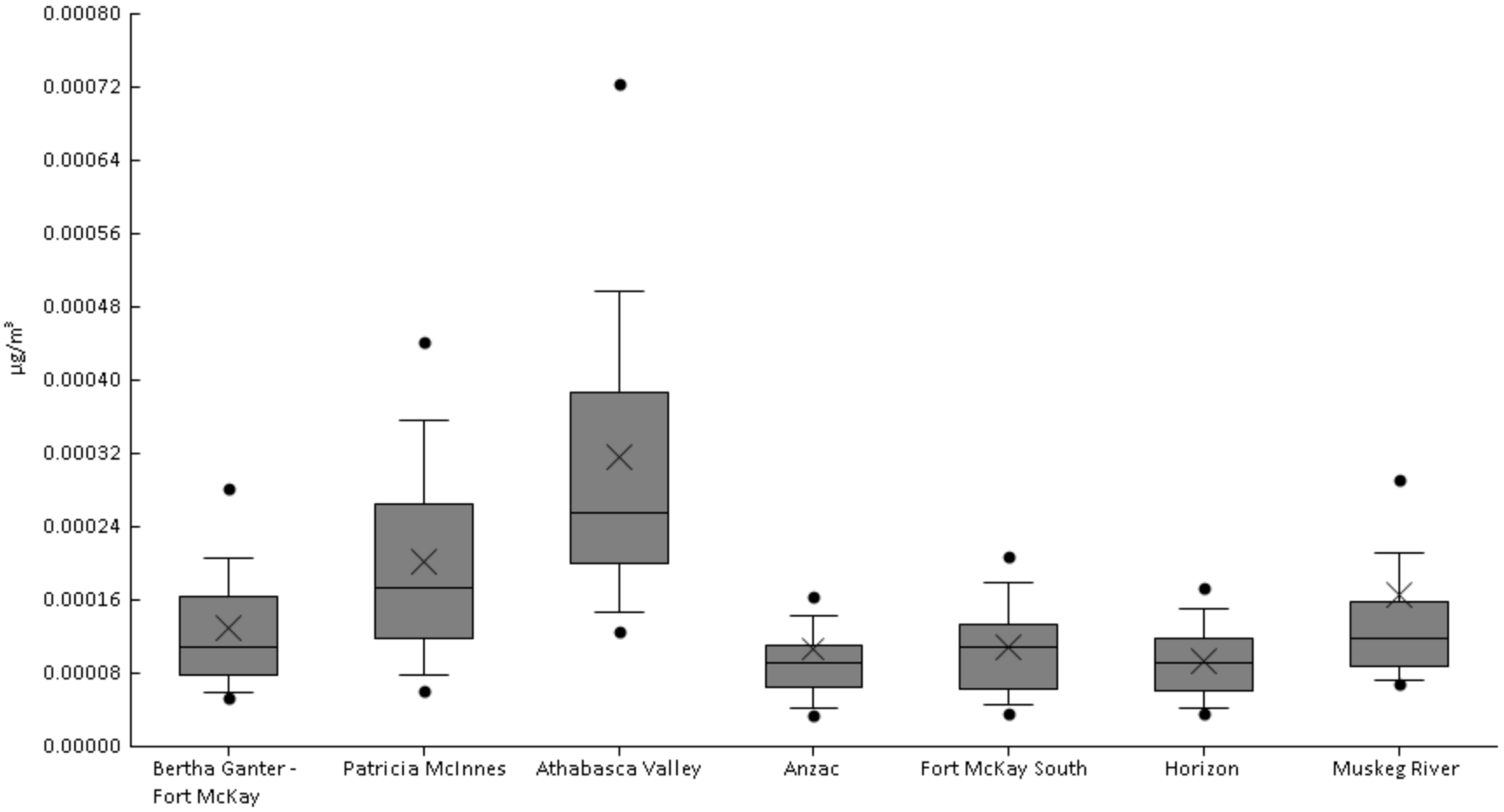
Particulate Matter (PM10 METALS) - Thorium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	1.8E-6	3.2E-6	8.2E-6	1.8E-5	4.3E-5	1.4E-4	2.1E-4	2.7E-4	5.5E-4	8.7E-5	1E-4
AMS 6	Patricia McInnes	61	100%	7E-7	2E-6	3.4E-6	7E-6	2.4E-5	7E-5	1.2E-4	1.8E-4	3.3E-4	5E-5	6.7E-5
AMS 7	Athabasca Valley	59	100%	2.9E-6	5.1E-6	5.6E-6	1.2E-5	4.3E-5	7.3E-5	8.9E-5	1.4E-4	3.3E-4	5.1E-5	5.1E-5
AMS 14	Anzac	60	100%	7.5E-7	2E-6	2.3E-6	3.3E-6	8.5E-6	2.4E-5	3.8E-5	4.4E-5	1.2E-4	1.7E-5	2.2E-5
AMS 13	Fort McKay South	60	100%	2.2E-6	3.3E-6	5.8E-6	1.3E-5	2.7E-5	8.4E-5	1.4E-4	1.7E-4	3.4E-4	5.5E-5	6.2E-5
AMS 15	Horizon	59	100%	1.3E-6	2.9E-6	4.1E-6	1.5E-5	4.9E-5	9E-5	1.7E-4	2.1E-4	5.1E-4	7.1E-5	8.4E-5
AMS 16	Muskeg River	61	100%	2.5E-6	5.6E-6	1.2E-5	2.8E-5	8.8E-5	2.3E-4	3.6E-4	4.8E-4	7.9E-4	1.5E-4	1.7E-4



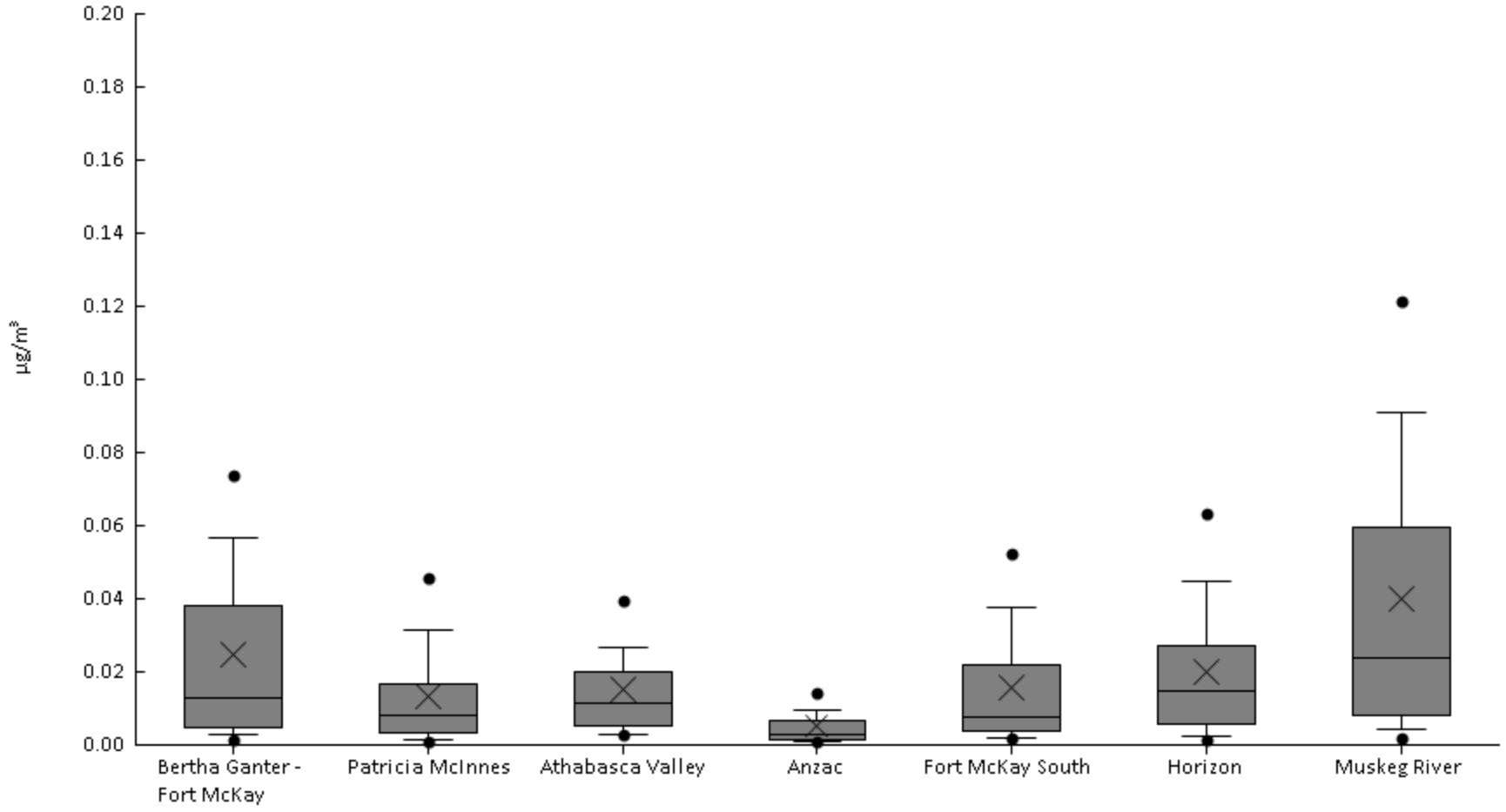
Particulate Matter (PM10 METALS) - Tin (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	4.3E-5	5.3E-5	5.8E-5	7.9E-5	1.1E-4	1.6E-4	2.1E-4	2.8E-4	5.9E-4	1.3E-4	8.6E-5
AMS 6	Patricia McInnes	60	100%	4.8E-5	6.1E-5	7.8E-5	1.2E-4	1.7E-4	2.6E-4	3.6E-4	4.4E-4	5.6E-4	2E-4	1.2E-4
AMS 7	Athabasca Valley	59	100%	8E-5	1.3E-4	1.5E-4	2E-4	2.6E-4	3.9E-4	5E-4	7.2E-4	1.1E-3	3.2E-4	1.9E-4
AMS 14	Anzac	60	100%	2.7E-5	3.4E-5	4.3E-5	6.5E-5	9.1E-5	1.1E-4	1.4E-4	1.6E-4	9.8E-4	1.1E-4	1.2E-4
AMS 13	Fort McKay South	60	100%	3.3E-5	3.6E-5	4.5E-5	6.2E-5	1.1E-4	1.3E-4	1.8E-4	2.1E-4	2.7E-4	1.1E-4	5.4E-5
AMS 15	Horizon	59	100%	3E-5	3.7E-5	4.2E-5	6.1E-5	9.1E-5	1.2E-4	1.5E-4	1.7E-4	1.9E-4	9.4E-5	3.9E-5
AMS 16	Muskeg River	61	100%	5.7E-5	6.9E-5	7.2E-5	8.8E-5	1.2E-4	1.6E-4	2.1E-4	2.9E-4	2.2E-3	1.7E-4	2.7E-4



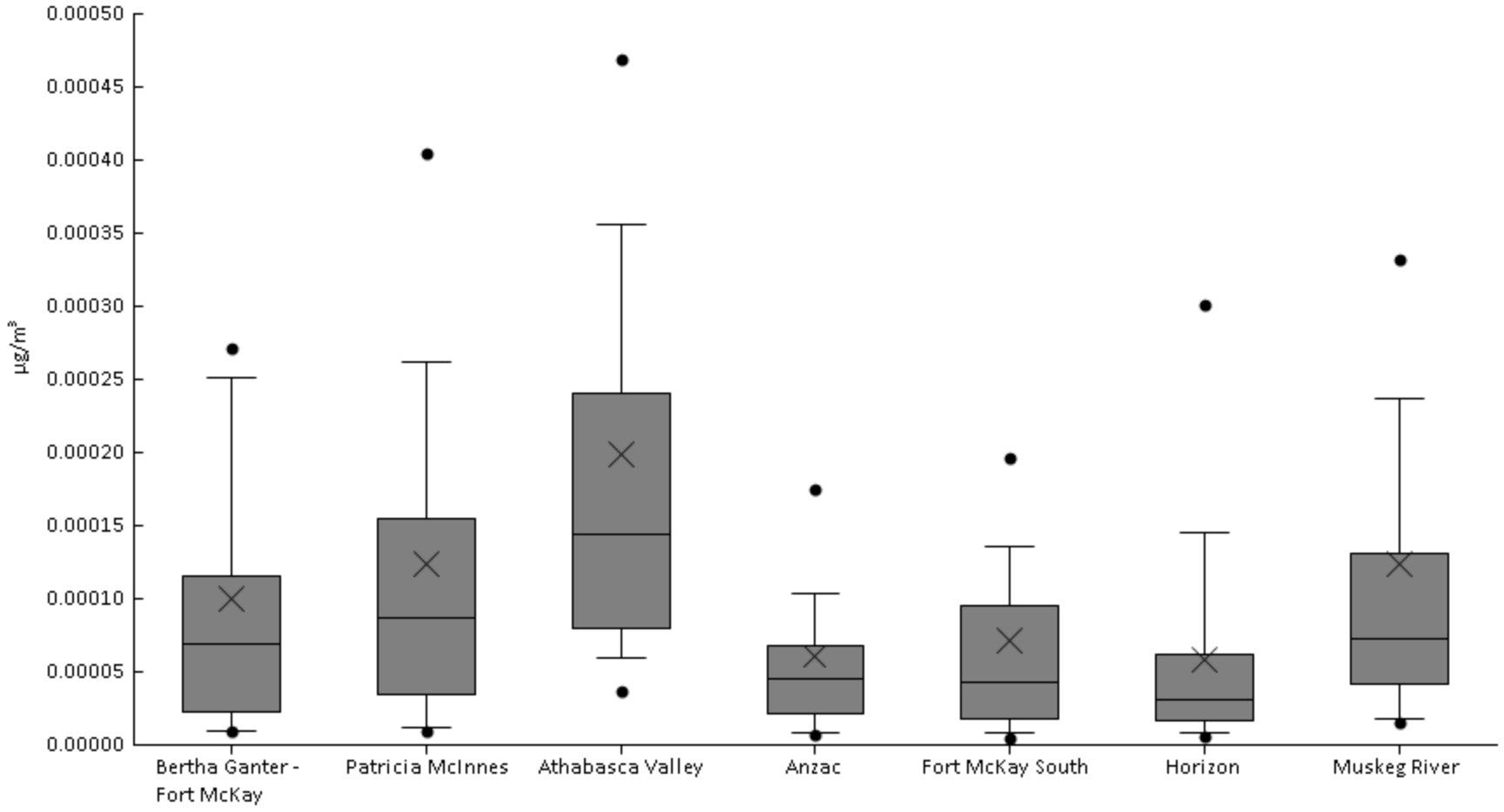
Particulate Matter (PM10 METALS) - Titanium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	9.1E-4	1.2E-3	2.7E-3	4.8E-3	0.013	0.038	0.057	0.074	0.15	0.025	0.028
AMS 6	Patricia McInnes	61	100%	9.4E-4	1E-3	1.3E-3	3.4E-3	8E-3	0.017	0.031	0.046	0.074	0.013	0.016
AMS 7	Athabasca Valley	59	100%	2.6E-3	2.8E-3	2.8E-3	5.1E-3	0.012	0.02	0.027	0.04	0.084	0.015	0.014
AMS 14	Anzac	60	100%	6.3E-4	8.4E-4	1E-3	1.6E-3	3.1E-3	6.6E-3	9.7E-3	0.014	0.031	5.1E-3	5.6E-3
AMS 13	Fort McKay South	60	100%	8.3E-4	1.8E-3	2E-3	3.8E-3	7.7E-3	0.022	0.038	0.053	0.093	0.016	0.018
AMS 15	Horizon	59	100%	7.9E-4	1.4E-3	2.1E-3	5.8E-3	0.015	0.027	0.045	0.064	0.11	0.02	0.021
AMS 16	Muskeg River	61	100%	9.2E-4	2E-3	4.4E-3	8.1E-3	0.024	0.06	0.091	0.12	0.2	0.04	0.043



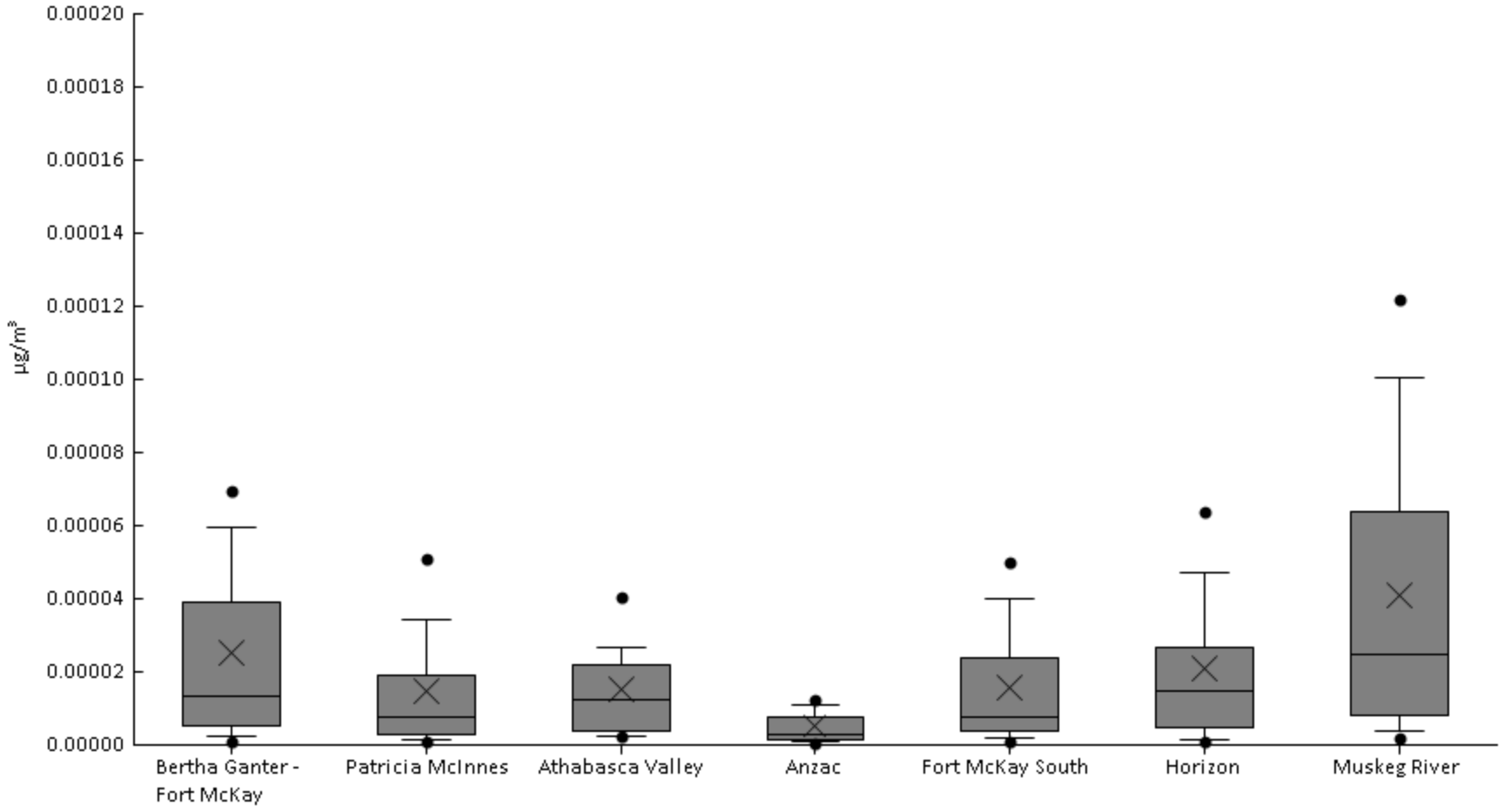
Particulate Matter (PM10 METALS) - Tungsten (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	5.2E-6	8.9E-6	9.8E-6	2.2E-5	6.9E-5	1.2E-4	2.5E-4	2.7E-4	9E-4	1E-4	1.3E-4
AMS 6	Patricia McInnes	61	100%	5.7E-6	1E-5	1.2E-5	3.5E-5	8.7E-5	1.6E-4	2.6E-4	4E-4	6.6E-4	1.2E-4	1.3E-4
AMS 7	Athabasca Valley	59	100%	1.9E-5	3.6E-5	5.9E-5	8E-5	1.4E-4	2.4E-4	3.6E-4	4.7E-4	1.3E-3	2E-4	2.2E-4
AMS 14	Anzac	60	100%	4.4E-6	6.9E-6	8.4E-6	2.1E-5	4.6E-5	6.8E-5	1E-4	1.7E-4	4.9E-4	6.1E-5	7.5E-5
AMS 13	Fort McKay South	60	97%	0	5.2E-6	8E-6	1.8E-5	4.2E-5	9.5E-5	1.4E-4	2E-4	7.3E-4	7.1E-5	1E-4
AMS 15	Horizon	58	97%	0	6.3E-6	7.8E-6	1.6E-5	3.1E-5	6.2E-5	1.5E-4	3E-4	3.7E-4	5.9E-5	8.2E-5
AMS 16	Muskeg River	61	100%	8.8E-6	1.5E-5	1.8E-5	4.2E-5	7.3E-5	1.3E-4	2.4E-4	3.3E-4	9.6E-4	1.2E-4	1.7E-4



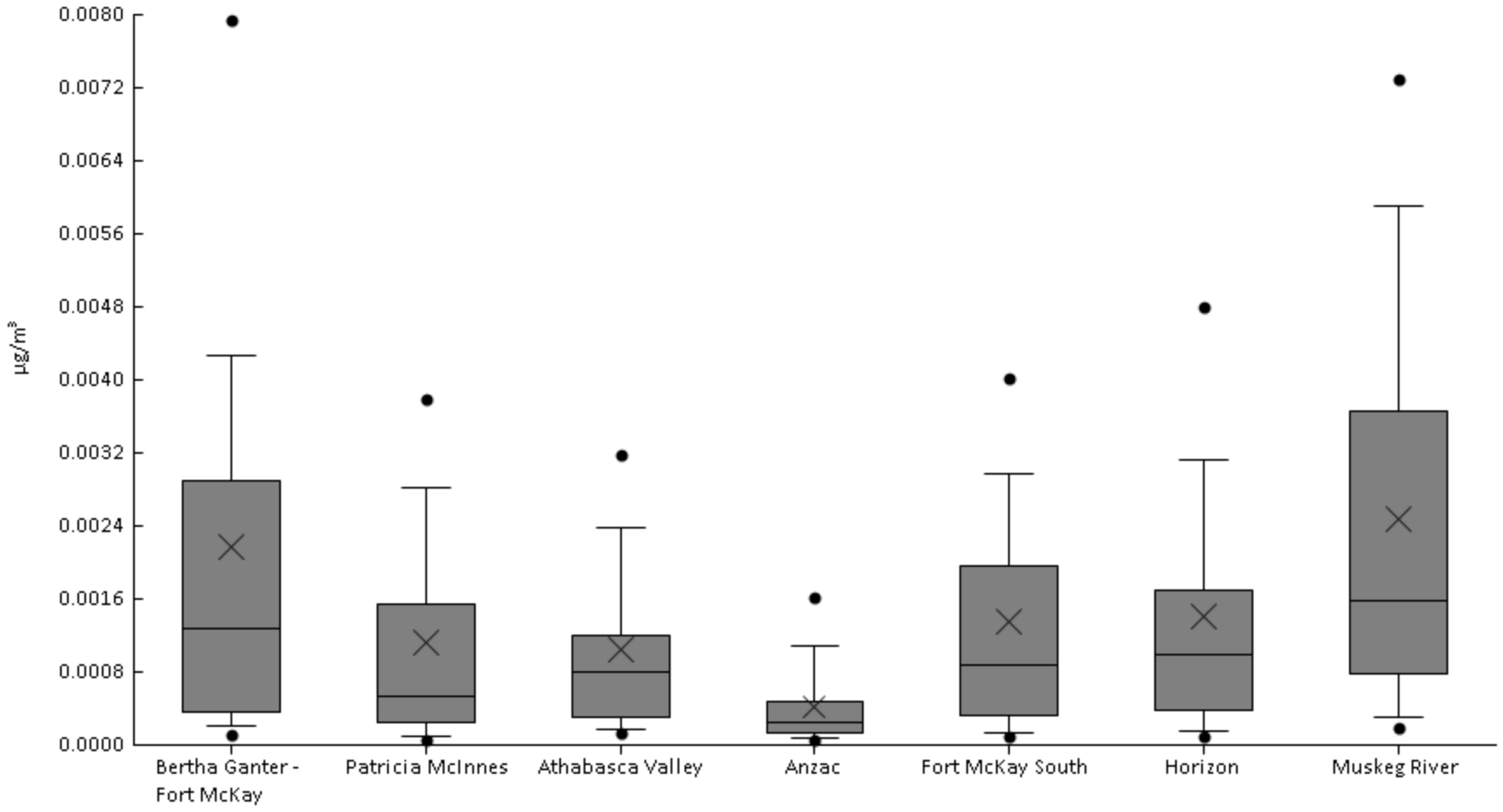
Particulate Matter (PM10 METALS) - Uranium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	7E-7	1E-6	2.3E-6	5.1E-6	1.3E-5	3.9E-5	5.9E-5	7E-5	1.5E-4	2.5E-5	2.9E-5
AMS 6	Patricia McInnes	61	100%	3E-7	8.4E-7	1.2E-6	2.7E-6	7.5E-6	1.9E-5	3.4E-5	5.1E-5	9E-5	1.5E-5	1.8E-5
AMS 7	Athabasca Valley	59	100%	1.4E-6	2.2E-6	2.4E-6	4E-6	1.3E-5	2.2E-5	2.7E-5	4E-5	8.9E-5	1.5E-5	1.4E-5
AMS 14	Anzac	60	100%	4E-7	5.4E-7	8.2E-7	1.6E-6	3E-6	7.5E-6	1.1E-5	1.2E-5	3.5E-5	5.4E-6	6.5E-6
AMS 13	Fort McKay South	60	100%	5.5E-7	1E-6	1.7E-6	3.6E-6	7.8E-6	2.4E-5	4E-5	5E-5	1E-4	1.6E-5	1.8E-5
AMS 15	Horizon	59	100%	6.6E-7	1.1E-6	1.5E-6	4.6E-6	1.5E-5	2.6E-5	4.7E-5	6.4E-5	1.3E-4	2.1E-5	2.4E-5
AMS 16	Muskeg River	61	100%	8E-7	1.8E-6	3.9E-6	8E-6	2.5E-5	6.4E-5	1E-4	1.2E-4	2E-4	4.1E-5	4.4E-5



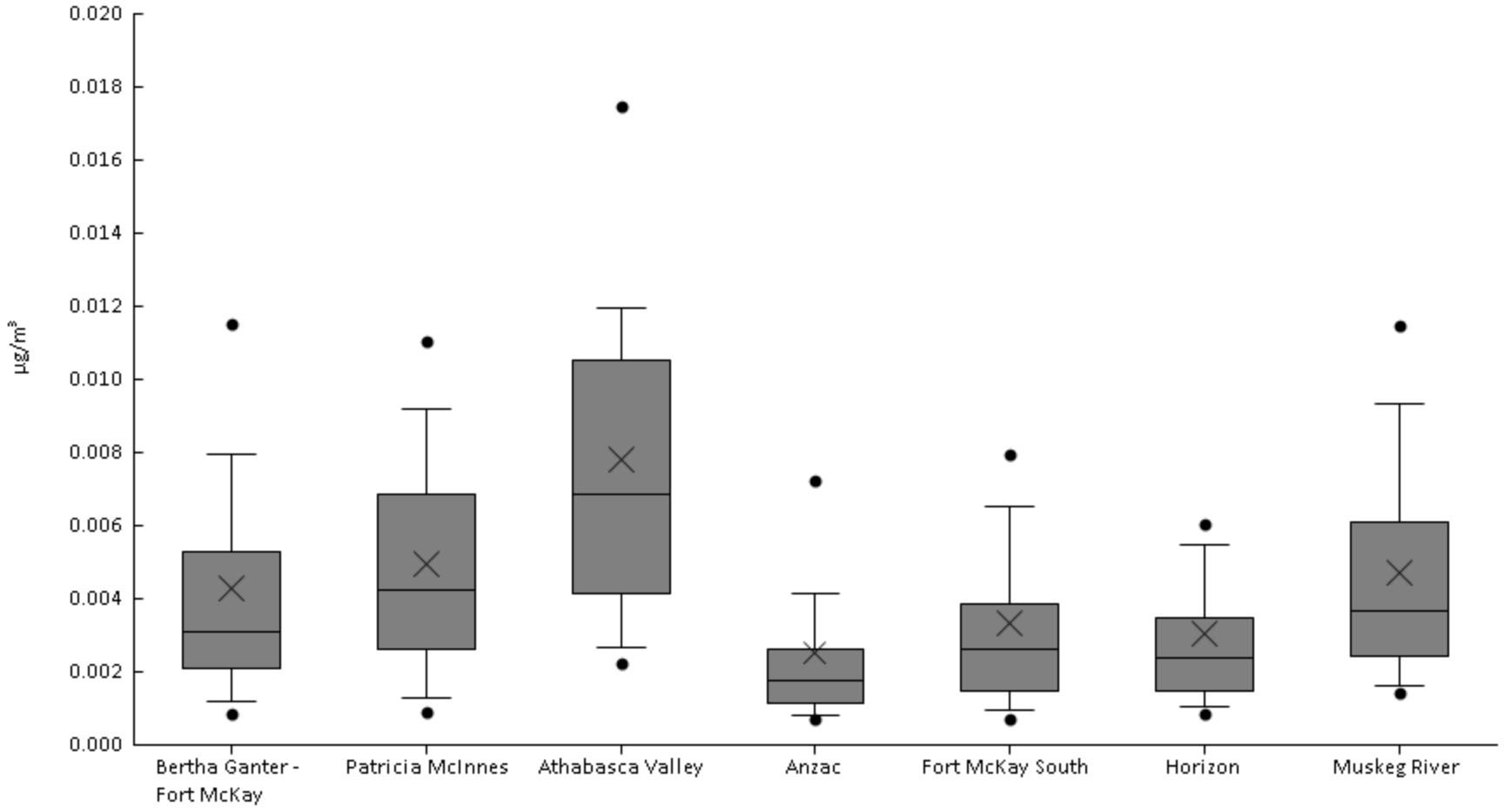
Particulate Matter (PM10 METALS) - Vanadium (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	4.8E-5	1.2E-4	2.1E-4	3.7E-4	1.3E-3	2.9E-3	4.3E-3	7.9E-3	0.015	2.2E-3	2.7E-3
AMS 6	Patricia McInnes	61	98%	0	5.2E-5	9.1E-5	2.4E-4	5.4E-4	1.5E-3	2.8E-3	3.8E-3	7.2E-3	1.1E-3	1.5E-3
AMS 7	Athabasca Valley	59	100%	1.1E-4	1.3E-4	1.6E-4	3.1E-4	8.1E-4	1.2E-3	2.4E-3	3.2E-3	6.7E-3	1E-3	1.1E-3
AMS 14	Anzac	60	98%	0	5.1E-5	7.7E-5	1.3E-4	2.4E-4	4.8E-4	1.1E-3	1.6E-3	2.3E-3	4.1E-4	4.9E-4
AMS 13	Fort McKay South	60	100%	5.4E-5	1E-4	1.4E-4	3.2E-4	8.8E-4	2E-3	3E-3	4E-3	9E-3	1.4E-3	1.6E-3
AMS 15	Horizon	59	100%	4.1E-5	9.5E-5	1.5E-4	3.9E-4	1E-3	1.7E-3	3.1E-3	4.8E-3	6.3E-3	1.4E-3	1.4E-3
AMS 16	Muskeg River	61	100%	1.3E-4	1.8E-4	3E-4	7.8E-4	1.6E-3	3.6E-3	5.9E-3	7.3E-3	0.011	2.5E-3	2.4E-3



Particulate Matter (PM10 METALS) - Zinc (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	60	100%	6.9E-4	8.7E-4	1.2E-3	2.1E-3	3.1E-3	5.3E-3	7.9E-3	0.012	0.022	4.3E-3	3.7E-3
AMS 6	Patricia McInnes	61	100%	7.1E-4	9E-4	1.3E-3	2.6E-3	4.2E-3	6.9E-3	9.2E-3	0.011	0.017	4.9E-3	3.3E-3
AMS 7	Athabasca Valley	59	100%	1.3E-3	2.2E-3	2.7E-3	4.1E-3	6.9E-3	0.011	0.012	0.017	0.026	7.8E-3	4.7E-3
AMS 14	Anzac	60	100%	6.2E-4	6.9E-4	8E-4	1.1E-3	1.8E-3	2.6E-3	4.2E-3	7.2E-3	0.021	2.5E-3	2.9E-3
AMS 13	Fort McKay South	60	100%	3.8E-4	6.9E-4	9.8E-4	1.5E-3	2.6E-3	3.9E-3	6.5E-3	8E-3	0.016	3.3E-3	2.8E-3
AMS 15	Horizon	59	100%	4.6E-4	8.5E-4	1E-3	1.5E-3	2.4E-3	3.5E-3	5.5E-3	6E-3	0.018	3E-3	2.7E-3
AMS 16	Muskeg River	61	100%	1.1E-3	1.4E-3	1.6E-3	2.4E-3	3.7E-3	6.1E-3	9.3E-3	0.011	0.018	4.7E-3	3.4E-3



REVISIONS

Station Name		Fort McKay South		Travel Blank	
Station #		AMS 13			
Sample Date		13-Apr		13-Apr	
Particulate Size		PM10		PM10	
Total Air Volume (m³)		20.9		24	
Compound Name	MDL (µg/sample)	Results (µg/m³)	QC Flag	Results (µg/m³)	QC Flag
Particulate Matter	1.00	21.18	V6	0.12	V0
Aluminum	0.1380326	0.8854919	V6	0.0000000	V1
Antimony	0.0001784	0.0000733	V6	0.0000000	V1
Arsenic	0.0001060	0.0001774	V6	0.0000000	V1
Barium	0.0092847	0.0064747	V6	0.0000000	V1
Beryllium	0.0000946	0.0000263	V6	0.0000000	V1
Bismuth	0.0000093	0.0000073	V6	0.0000013	V0
Cadmium	0.0000174	0.0000108	V6	0.0000000	V1
Calcium	0.4112124	1.2280220	V6	0.0000000	V1
Cerium	0.0000174	0.0008748	V6	0.0000000	V1
Cesium	0.0000100	0.0000545	V6	0.0000000	V1
Chromium	0.0022262	0.0010529	V6	0.0000000	V1
Cobalt	0.0000273	0.0002299	V6	0.0000013	V0
Copper	0.0017171	0.0007315	V6	0.0000000	V1
Iron	0.0393063	0.8737144	V6	0.0000000	V1
Lanthanum	0.0000130	0.0004124	V6	0.0000000	V1
Lead	0.0008577	0.0004442	V6	0.0000000	V1
Lithium	0.0000374	0.0009057	V6	0.0000000	V1
Magnesium	0.0091409	0.1819171	V6	0.0005941	V0
Manganese	0.0006949	0.0143373	V6	0.0000000	V1
Molybdenum	0.0007116	0.0001426	V6	0.0000000	V1
Neodymium	0.0000140	0.0003623	V6	0.0000000	V1
Nickel	0.0005429	0.0008255	V6	0.0000682	V0
Niobium	0.0000202	0.0001032	V6	0.0000000	V1
Palladium	0.0000632	0.0000187	V6	0.0000000	V1
Phosphorus	0.0459574	0.0211316	V6	0.0090694	V0
Platinum	0.0000088	0.0000023	V6	0.0000010	V0
Potassium	0.0061261	0.2192144	V6	0.0008458	V0
Praseodymium	0.0000070	0.0000973	V6	0.0000000	V1
Rubidium	0.0000184	0.0010098	V6	0.0000009	V0
Samarium	0.0000133	0.0000686	V6	0.0000000	V1
Selenium	0.0003366	0.0004953	V6	0.0000000	V1
Silicon	0.7676322	2.5471950	V6	0.0000000	V1
Silver	0.0000100	0.0000082	V6	0.0000000	V1
Sodium	0.0169447	0.0989478	V6	0.0017831	V0
Strontium	0.0003375	0.0030158	V6	0.0000000	V1
Tantalum	0.0000394	0.0000064	V6	0.0000000	V1
Thallium	0.0000090	0.0000092	V6	0.0000000	V1
Thorium	0.0000059	0.0001142	V6	0.0000000	V1
Tin	0.0004414	0.0001192	V6	0.0000000	V1
Titanium	0.0015201	0.0347401	V6	0.0004055	V0
Tungsten	0.0000938	0.0000912	V6	0.0000000	V1
Uranium	0.0000048	0.0000335	V6	0.0000000	V1
Vanadium	0.0007697	0.0015527	V6	0.0000000	V1
Zinc	0.0055897	0.0033166	V6	0.0000000	V1

Station Name		Athabasca Valley		Travel Blank	
Station #		AMS 7			
Sample Date		31-May		31-May	
Particulate Size		PM10		PM10	
Total Air Volume (m^3)		17.2		24	
Compound Name	MDL (µg/sample)	Results (µg/m^3)	QC Flag	Results (µg/m^3)	QC Flag
Particulate Matter	1.00	37.08	V6	0.11	V0
Aluminum	0.1380326	0.9483895	V6	0.0000000	V1
Antimony	0.0001784	0.0004310	V6	0.0000000	V1
Arsenic	0.0001060	0.0002878	V6	0.0000000	V1
Barium	0.0092847	0.0144571	V6	0.0000000	V1
Beryllium	0.0000946	0.0000307	V6	0.0000000	V1
Bismuth	0.0000093	0.0000220	V6	0.0000004	V0
Cadmium	0.0000174	0.0000191	V6	0.0000000	V1
Calcium	0.4112124	1.3731079	V6	0.0000000	V1
Cerium	0.0000174	0.0010878	V6	0.0000013	V0
Cesium	0.0000100	0.0000620	V6	0.0000000	V1
Chromium	0.0022262	0.0014316	V6	0.0000000	V1
Cobalt	0.0000273	0.0003014	V6	0.0000026	V0
Copper	0.0017171	0.0035973	V6	0.0007168	V0
Iron	0.0393063	1.0484961	V6	0.0021662	V0
Lanthanum	0.0000130	0.0005200	V6	0.0000006	V0
Lead	0.0008577	0.0010092	V6	0.0000427	V0
Lithium	0.0000374	0.0006574	V6	0.0000021	V0
Magnesium	0.0091409	0.3587605	V6	0.0006461	V0
Manganese	0.0006949	0.0190397	V6	0.0000000	V1
Molybdenum	0.0007116	0.0002429	V6	0.0000410	V0
Neodymium	0.0000140	0.0004518	V6	0.0000000	V1
Nickel	0.0005429	0.0010762	V6	0.0000560	V0
Niobium	0.0000202	0.0001185	V6	0.0000000	V1
Palladium	0.0000632	0.0000230	V6	0.0000000	V1
Phosphorus	0.0459574	0.0361208	V6	0.0080407	V0
Platinum	0.0000088	0.0000045	V6	0.0000018	V0
Potassium	0.0061261	0.3074290	V6	0.0007662	V0
Praseodymium	0.0000070	0.0001168	V6	0.0000000	V1
Rubidium	0.0000184	0.0012275	V6	0.0000020	V0
Samarium	0.0000133	0.0000831	V6	0.0000000	V1
Selenium	0.0003366	0.0006881	V6	0.0000000	V1
Silicon	0.7676322	3.7301555	V6	0.0000000	V1
Silver	0.0000100	0.0000562	V6	0.0000000	V1
Sodium	0.0169447	0.1746422	V6	0.0009116	V0
Strontium	0.0003375	0.0040064	V6	0.0000000	V1
Tantalum	0.0000394	0.0000089	V6	0.0000021	V0
Thallium	0.0000090	0.0000134	V6	0.0000000	V1
Thorium	0.0000059	0.0001383	V6	0.0000000	V1
Tin	0.0004414	0.0004727	V6	0.0000000	V1
Titanium	0.0015201	0.0377000	V6	0.0004369	V0
Tungsten	0.0000938	0.0003940	V6	0.0000133	V0
Uranium	0.0000048	0.0000412	V6	0.0000000	V1
Vanadium	0.0007697	0.0020881	V6	0.0000930	V0
Zinc	0.0055897	0.0119707	V6	0.0005162	V0

Station Name		Travel Blank	
Station #			
Sample Date		22-Oct	
Particulate Size			
Total Air Volume (m^3)		24	
Compound Name	MDL (µg/sample)	Results (µg/m^3)	QC Flag
Particulate Matter	1.00	-9999	M1
Aluminum	0.1380326	-9999	M1
Antimony	0.0001784	-9999	M1
Arsenic	0.0001060	-9999	M1
Barium	0.0092847	-9999	M1
Beryllium	0.0000946	-9999	M1
Bismuth	0.0000093	-9999	M1
Cadmium	0.0000174	-9999	M1
Calcium	0.4112124	-9999	M1
Cerium	0.0000174	-9999	M1
Cesium	0.0000100	-9999	M1
Chromium	0.0022262	-9999	M1
Cobalt	0.0000273	-9999	M1
Copper	0.0017171	-9999	M1
Iron	0.0393063	-9999	M1
Lanthanum	0.0000130	-9999	M1
Lead	0.0008577	-9999	M1
Lithium	0.0000374	-9999	M1
Magnesium	0.0091409	-9999	M1
Manganese	0.0006949	-9999	M1
Molybdenum	0.0007116	-9999	M1
Neodymium	0.0000140	-9999	M1
Nickel	0.0005429	-9999	M1
Niobium	0.0000202	-9999	M1
Palladium	0.0000632	-9999	M1
Phosphorus	0.0459574	-9999	M1
Platinum	0.0000088	-9999	M1
Potassium	0.0061261	-9999	M1
Praseodymium	0.0000070	-9999	M1
Rubidium	0.0000184	-9999	M1
Samarium	0.0000133	-9999	M1
Selenium	0.0003366	-9999	M1
Silicon	0.7676322	-9999	M1
Silver	0.0000100	-9999	M1
Sodium	0.0169447	-9999	M1
Strontium	0.0003375	-9999	M1
Tantalum	0.0000394	-9999	M1
Thallium	0.0000090	-9999	M1
Thorium	0.0000059	-9999	M1
Tin	0.0004414	-9999	M1
Titanium	0.0015201	-9999	M1
Tungsten	0.0000938	-9999	M1
Uranium	0.0000048	-9999	M1
Vanadium	0.0007697	-9999	M1
Zinc	0.0055897	-9999	M1

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER – ELEMENTAL CARBON/ORGANIC CARBON DATA SUMMARY 2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

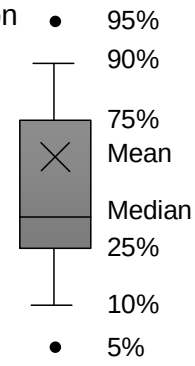
LABORATORY ANALYSIS BY:

EC/OC: Desert Research Institute
Reno, NV

FILE CONTENTS DESCRIPTION	Partisol Sampler Measurements of elemental carbon (EC) and organic carbon (OC)
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection Limits (MDL) are provided with each observation
UNITS	µg/m^3 (microgram per cubic meter)
OBSERVATION TYPE	Particles
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	Filtration with PM_{10} Inlet/Very Sharp Cut Cyclone for $PM_{2.5}$
PARTICLE DIAMETER	< 2.5 µm
MEDIUM	47 mm Quartz Filter
ANALYTICALMETHODS	DRI Model 2001 Thermal/Optical Carbon Analyzer
SAMPLE PREPARATION	NA
ANALYTICAL LABORATORY	Desert Research Institute
USER NOTE 1	Data are blank corrected
USER NOTE 2	Volume is given at actual conditions of temperature and pressure during sampling as measured by the sampler
USER NOTE 3	Blank sample concentration (µg/m^3) is calculated using expected actual volume of sampler
USER NOTE 4	O1TC Organic Carbon Fraction 1 O2TC Organic Carbon Fraction 2 O3TC Organic Carbon Fraction 3 O4TC Organic Carbon Fraction 4 OPTTC Pyrolyzed organic carbon, thermal (transmittance) OPTRC Pyrolyzed organic carbon, thermal (reflectance) OCTTC Organic carbon, thermal (transmittance) OCTRC Organic carbon, thermal (reflectance) E1TC Elemental Carbon Fraction 1 E2TC Elemental Carbon Fraction 2 E3TC Elemental Carbon Fraction 3 ECTTC Elemental carbon, thermal (transmittance) ECTRC Elemental carbon, thermal (reflectance) TCTC Total Carbon
VOLUME STANDARDIZATION	Actual Volume at Ambient Conditions
SAMPLING INSTRUMENT TYPE	FRM Partisol $PM_{2.5}$ sampler

FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Jan-1		Jan-7		Jan-13	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.204	V0	0.234	V0	0.426	V0
O2TC	0.049	0.319	V0	0.327	V0	0.563	V0
O3TC	0.147	0.829	V0	0.402	V0	0.483	V0
O4TC	0.005	0.408	V0	0.235	V0	0.305	V0
OPTTC	0.005	0.204	V0	0.398	V0	0.748	V0
OPTRC	0.005	0.119	V0	0.268	V0	0.545	V0
OCTTC	0.191	1.963	V0	1.596	V0	2.525	V0
OCTRC	0.191	1.879	V0	1.466	V0	2.322	V0
E1TC	0.001	0.485	V0	0.643	V0	0.921	V0
E2TC	0.001	0.142	V0	0.209	V0	0.221	V0
E3TC	0.001	0.006	V0	0.000	V1	0.000	V1
ECTTC	0.005	0.429	V0	0.455	V0	0.394	V0
ECTRC	0.005	0.514	V0	0.585	V0	0.597	V0
TCTC	0.206	2.392	V0	2.050	V0	2.919	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Jan-19		Jan-25		Jan-31	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.152	V0	0.803	V0	0.080	V0
O2TC	0.049	0.529	V0	1.669	V0	0.127	V0
O3TC	0.147	0.888	V0	2.687	V0	0.431	V0
O4TC	0.005	0.399	V0	1.893	V0	0.177	V0
OPTTC	0.005	0.433	V0	2.753	V0	0.160	V0
OPTRC	0.005	0.337	V0	2.422	V0	0.130	V0
OCTTC	0.191	2.400	V0	9.805	V0	0.975	V0
OCTRC	0.191	2.304	V0	9.474	V0	0.945	V0
E1TC	0.001	0.475	V0	3.086	V0	0.165	V0
E2TC	0.001	0.242	V0	0.320	V0	0.094	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.284	V0	0.653	V0	0.099	V0
ECTRC	0.005	0.380	V0	0.984	V0	0.129	V0
TCTC	0.206	2.684	V0	10.458	V0	1.073	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Feb-6		Feb-12		Feb-18	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.582	V0	0.279	V0	0.237	V0
O2TC	0.049	0.791	V0	0.160	V0	0.341	V0
O3TC	0.147	1.322	V0	0.278	V0	0.236	V0
O4TC	0.005	0.655	V0	0.093	V0	0.085	V0
OPTTC	0.005	0.874	V0	0.065	V0	0.105	V0
OPTRC	0.005	0.708	V0	0.046	V0	0.105	V0
OCTTC	0.191	4.225	V0	0.875	V0	1.003	V0
OCTRC	0.191	4.059	V0	0.856	V0	1.003	V0
E1TC	0.001	1.373	V0	0.046	V0	0.105	V0
E2TC	0.001	0.229	V0	0.039	V0	0.201	V0
E3TC	0.001	0.002	V0	0.000	V1	0.000	V1
ECTTC	0.005	0.729	V0	0.020	V0	0.201	V0
ECTRC	0.005	0.895	V0	0.039	V0	0.201	V0
TCTC	0.206	4.954	V0	0.895	V0	1.203	V0

Station Name		Bertha Ganter - Fort McKay	
Station #		AMS 1	
Sample Date		Feb-24	
Particulate Size		PM2.5	
Total Air Volume (m³)		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag
O1TC	0.002	0.171	V0
O2TC	0.049	0.180	V0
O3TC	0.147	0.315	V0
O4TC	0.005	0.150	V0
OPTTC	0.005	0.348	V0
OPTRC	0.005	0.311	V0
OCTTC	0.191	1.164	V0
OCTRC	0.191	1.127	V0
E1TC	0.001	0.348	V0
E2TC	0.001	0.120	V0
E3TC	0.001	0.000	V1
ECTTC	0.005	0.120	V0
ECTRC	0.005	0.157	V0
TCTC	0.206	1.284	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Mar-2		Mar-8		Mar-14	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.412	V0	0.308	V0	0.340	V0
O2TC	0.049	0.506	V0	0.238	V0	0.819	V0
O3TC	0.147	0.746	V0	0.441	V0	0.842	V0
O4TC	0.005	0.533	V0	0.253	V0	0.515	V0
OPTTC	0.005	0.690	V0	0.376	V0	1.103	V0
OPTRC	0.005	0.672	V0	0.292	V0	0.738	V0
OCTTC	0.191	2.885	V0	1.616	V0	3.619	V0
OCTRC	0.191	2.868	V0	1.531	V0	3.254	V0
E1TC	0.001	0.898	V0	0.437	V0	1.329	V0
E2TC	0.001	0.366	V0	0.083	V0	0.259	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.575	V0	0.144	V0	0.484	V0
ECTRC	0.005	0.592	V0	0.228	V0	0.849	V0
TCTC	0.206	3.460	V0	1.760	V0	4.103	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Mar-20		Mar-26	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.228	V0	0.444	V0
O2TC	0.049	0.199	V0	0.699	V0
O3TC	0.147	0.498	V0	1.002	V0
O4TC	0.005	0.334	V0	0.852	V0
OPTTC	0.005	0.342	V0	0.892	V0
OPTRC	0.005	0.240	V0	0.566	V0
OCTTC	0.191	1.601	V0	3.889	V0
OCTRC	0.191	1.499	V0	3.563	V0
E1TC	0.001	0.479	V0	0.714	V0
E2TC	0.001	0.112	V0	0.407	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.249	V0	0.229	V0
ECTRC	0.005	0.351	V0	0.555	V0
TCTC	0.206	1.850	V0	4.118	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Apr-1		Apr-7		Apr-13	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		23.8	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.214	V0	0.257	V0	0.206	V0
O2TC	0.049	0.260	V0	0.273	V0	0.288	V0
O3TC	0.147	0.689	V0	0.437	V0	0.391	V0
O4TC	0.005	0.279	V0	0.181	V0	0.148	V0
OPTTC	0.005	0.122	V0	0.000	V1	0.070	V0
OPTRC	0.005	0.016	V0	0.000	V1	0.070	V0
OCTTC	0.191	1.563	V0	1.147	V0	1.103	V0
OCTRC	0.191	1.457	V0	1.147	V0	1.103	V0
E1TC	0.001	0.121	V0	0.000	V1	0.070	V0
E2TC	0.001	0.100	V0	0.163	V0	0.169	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.099	V0	0.163	V0	0.169	V0
ECTRC	0.005	0.205	V0	0.163	V0	0.169	V0
TCTC	0.206	1.662	V0	1.310	V0	1.272	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Apr-19		Apr-25	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.240	V0	0.171	V0
O2TC	0.049	0.303	V0	0.277	V0
O3TC	0.147	0.435	V0	0.661	V0
O4TC	0.005	0.188	V0	0.251	V0
OPTTC	0.005	0.203	V0	0.195	V0
OPTRC	0.005	0.068	V0	0.195	V0
OCTTC	0.191	1.368	V0	1.555	V0
OCTRC	0.191	1.233	V0	1.555	V0
E1TC	0.001	0.204	V0	0.195	V0
E2TC	0.001	0.182	V0	0.090	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.183	V0	0.090	V0
ECTRC	0.005	0.319	V0	0.090	V0
TCTC	0.206	1.552	V0	1.644	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		May-1		May-7		May-13	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.327	V0	0.216	V0	0.162	V0
O2TC	0.049	0.631	V0	0.351	V0	0.375	V0
O3TC	0.147	0.824	V0	0.456	V0	0.529	V0
O4TC	0.005	0.368	V0	0.134	V0	0.193	V0
OPTTC	0.005	0.288	V0	0.047	V0	0.073	V0
OPTRC	0.005	0.252	V0	0.047	V0	0.065	V0
OCTTC	0.191	2.438	V0	1.205	V0	1.331	V0
OCTRC	0.191	2.402	V0	1.205	V0	1.324	V0
E1TC	0.001	0.288	V0	0.047	V0	0.065	V0
E2TC	0.001	0.323	V0	0.102	V0	0.055	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.323	V0	0.102	V0	0.048	V0
ECTRC	0.005	0.359	V0	0.102	V0	0.055	V0
TCTC	0.206	2.761	V0	1.307	V0	1.379	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		May-19		May-25		May-31	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.284	V0	0.423	V0	0.608	V0
O2TC	0.049	0.824	V0	0.401	V0	1.189	V0
O3TC	0.147	1.131	V0	0.511	V0	1.538	V0
O4TC	0.005	0.474	V0	0.246	V0	0.736	V0
OPTTC	0.005	0.582	V0	0.000	V1	0.838	V0
OPTRC	0.005	0.927	V0	0.000	V1	0.910	V0
OCTTC	0.191	3.295	V0	1.581	V0	4.909	V0
OCTRC	0.191	3.640	V0	1.581	V0	4.982	V0
E1TC	0.001	0.376	V0	0.000	V1	0.616	V0
E2TC	0.001	0.598	V0	0.162	V0	0.450	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.392	V0	0.162	V0	0.229	V0
ECTRC	0.005	0.047	V0	0.162	V0	0.157	V0
TCTC	0.206	3.687	V0	1.744	V0	5.138	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Jun-6		Jun-12		Jun-18	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.486	V0	0.646	V0	0.062	V0
O2TC	0.049	0.751	V0	0.616	V0	0.294	V0
O3TC	0.147	1.200	V0	0.757	V0	0.828	V0
O4TC	0.005	0.548	V0	0.349	V0	0.157	V0
OPTTC	0.005	0.705	V0	0.387	V0	0.097	V0
OPTRC	0.005	0.411	V0	0.181	V0	0.004	V1
OCTTC	0.191	3.690	V0	2.756	V0	1.438	V0
OCTRC	0.191	3.397	V0	2.550	V0	1.345	V0
E1TC	0.001	0.491	V0	0.026	V0	0.004	V0
E2TC	0.001	0.458	V0	0.382	V0	0.341	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.245	V0	0.021	V0	0.248	V0
ECTRC	0.005	0.538	V0	0.227	V0	0.341	V0
TCTC	0.206	3.935	V0	2.777	V0	1.686	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Jun-24		Jun-30	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.180	V0	0.622	V0
O2TC	0.049	0.489	V0	1.202	V0
O3TC	0.147	1.334	V0	1.857	V0
O4TC	0.005	0.441	V0	0.568	V0
OPTTC	0.005	0.293	V0	0.604	V0
OPTRC	0.005	0.159	V0	0.408	V0
OCTTC	0.191	2.736	V0	4.852	V0
OCTRC	0.191	2.602	V0	4.656	V0
E1TC	0.001	0.159	V0	0.408	V0
E2TC	0.001	0.356	V0	0.325	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.222	V0	0.129	V0
ECTRC	0.005	0.356	V0	0.325	V0
TCTC	0.206	2.959	V0	4.981	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Jul-6		Jul-12		Jul-18	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.071	V0	0.430	V0	0.183	V0
O2TC	0.049	0.369	V0	1.075	V0	0.271	V0
O3TC	0.147	1.009	V0	1.767	V0	0.595	V0
O4TC	0.005	0.227	V0	0.699	V0	0.120	V0
OPTTC	0.005	0.083	V0	0.941	V0	0.065	V0
OPTRC	0.005	0.083	V0	0.615	V0	0.000	V1
OCTTC	0.191	1.759	V0	4.913	V0	1.234	V0
OCTRC	0.191	1.759	V0	4.587	V0	1.169	V0
E1TC	0.001	0.000	V1	0.725	V0	0.000	V1
E2TC	0.001	0.083	V0	0.633	V0	0.135	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.000	V1	0.417	V0	0.070	V0
ECTRC	0.005	0.000	V1	0.742	V0	0.135	V0
TCTC	0.206	1.759	V0	5.329	V0	1.304	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Jul-24		Jul-30	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.432	V0	0.327	V0
O2TC	0.049	0.905	V0	0.810	V0
O3TC	0.147	1.840	V0	1.101	V0
O4TC	0.005	0.838	V0	0.444	V0
OPTTC	0.005	1.100	V0	0.540	V0
OPTRC	0.005	0.949	V0	0.540	V0
OCTTC	0.191	5.114	V0	3.222	V0
OCTRC	0.191	4.963	V0	3.222	V0
E1TC	0.001	0.428	V0	0.540	V0
E2TC	0.001	0.778	V0	0.332	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.105	V0	0.332	V0
ECTRC	0.005	0.256	V0	0.332	V0
TCTC	0.206	5.219	V0	3.555	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Aug-5		Aug-11		Aug-17	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.000	V1	0.275	V0	0.511	V0
O2TC	0.049	1.278	V0	1.020	V0	1.084	V0
O3TC	0.147	1.691	V0	1.696	V0	2.341	V0
O4TC	0.005	0.743	V0	0.712	V0	0.782	V0
OPTTC	0.005	0.957	V0	0.770	V0	0.972	V0
OPTRC	0.005	0.937	V0	0.630	V0	0.862	V0
OCTTC	0.191	4.637	V0	4.472	V0	5.690	V0
OCTRC	0.191	4.617	V0	4.332	V0	5.580	V0
E1TC	0.001	0.941	V0	0.637	V0	0.972	V0
E2TC	0.001	0.400	V0	0.463	V0	0.235	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.385	V0	0.330	V0	0.235	V0
ECTRC	0.005	0.404	V0	0.470	V0	0.345	V0
TCTC	0.206	5.022	V0	4.802	V0	5.925	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Aug-23		Aug-29	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.303	V0	0.320	V0
O2TC	0.049	0.776	V0	0.499	V0
O3TC	0.147	1.393	V0	0.748	V0
O4TC	0.005	0.591	V0	0.280	V0
OPTTC	0.005	0.496	V0	0.333	V0
OPTRC	0.005	0.330	V0	0.305	V0
OCTTC	0.191	3.558	V0	2.180	V0
OCTRC	0.191	3.392	V0	2.152	V0
E1TC	0.001	0.492	V0	0.162	V0
E2TC	0.001	0.432	V0	0.194	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.428	V0	0.023	V0
ECTRC	0.005	0.594	V0	0.051	V0
TCTC	0.206	3.986	V0	2.203	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Sep-4		Sep-10		Sep-16	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.002	V1	0.000	V1	0.000	V1
O2TC	0.049	0.140	V0	0.439	V0	0.413	V0
O3TC	0.147	0.441	V0	1.339	V0	0.662	V0
O4TC	0.005	0.087	V0	0.507	V0	0.243	V0
OPTTC	0.005	0.039	V0	0.467	V0	0.062	V0
OPTRC	0.005	0.000	V1	0.442	V0	0.005	V0
OCTTC	0.191	0.709	V0	2.629	V0	1.261	V0
OCTRC	0.191	0.670	V0	2.604	V0	1.204	V0
E1TC	0.001	0.000	V1	0.342	V0	0.005	V0
E2TC	0.001	0.039	V0	0.127	V0	0.152	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.000	V1	0.002	V1	0.096	V0
ECTRC	0.005	0.039	V0	0.027	V0	0.152	V0
TCTC	0.206	0.709	V0	2.631	V0	1.356	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Sep-22		Sep-28	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.000	V1	0.017	V0
O2TC	0.049	0.262	V0	0.521	V0
O3TC	0.147	0.357	V0	0.640	V0
O4TC	0.005	0.136	V0	0.310	V0
OPTTC	0.005	0.098	V0	0.326	V0
OPTRC	0.005	0.010	V0	0.185	V0
OCTTC	0.191	0.728	V0	1.814	V0
OCTRC	0.191	0.641	V0	1.673	V0
E1TC	0.001	0.010	V0	0.221	V0
E2TC	0.001	0.226	V0	0.218	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.139	V0	0.113	V0
ECTRC	0.005	0.226	V0	0.254	V0
TCTC	0.206	0.867	V0	1.927	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Oct-4		Oct-10		Oct-16	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.098	V0	0.000	V1	0.000	V1
O2TC	0.049	0.293	V0	0.110	V0	0.217	V0
O3TC	0.147	0.365	V0	0.227	V0	0.602	V0
O4TC	0.005	0.192	V0	0.008	V0	0.189	V0
OPTTC	0.005	0.371	V0	0.000	V1	0.075	V0
OPTRC	0.005	0.115	V0	0.065	V0	0.161	V0
OCTTC	0.191	1.318	V0	0.220	V0	1.021	V0
OCTRC	0.191	1.063	V0	0.285	V0	1.107	V0
E1TC	0.001	0.028	V0	0.000	V1	0.015	V0
E2TC	0.001	0.434	V0	0.065	V0	0.145	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.091	V0	0.065	V0	0.086	V0
ECTRC	0.005	0.347	V0	0.000	V1	0.000	V1
TCTC	0.206	1.410	V0	0.285	V0	1.107	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Oct-22		Oct-28	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.164	V0	0.000	V1
O2TC	0.049	0.576	V0	0.115	V0
O3TC	0.147	0.380	V0	0.414	V0
O4TC	0.005	0.271	V0	0.106	V0
OPTTC	0.005	0.762	V0	0.000	V1
OPTRC	0.005	0.268	V0	0.039	V0
OCTTC	0.191	2.152	V0	0.511	V0
OCTRC	0.191	1.658	V0	0.550	V0
E1TC	0.001	0.930	V0	0.000	V1
E2TC	0.001	0.254	V0	0.039	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.422	V0	0.039	V0
ECTRC	0.005	0.916	V0	0.000	V1
TCTC	0.206	2.574	V0	0.550	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Nov-3		Nov-9		Nov-15	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.111	V0	0.281	V0	0.146	V0
O2TC	0.049	0.106	V0	0.427	V0	0.005	V1
O3TC	0.147	0.317	V0	0.669	V0	0.315	V0
O4TC	0.005	0.107	V0	0.468	V0	0.131	V0
OPTTC	0.005	0.200	V0	0.683	V0	0.234	V0
OPTRC	0.005	0.091	V0	0.524	V0	0.056	V0
OCTTC	0.191	0.840	V0	2.527	V0	0.830	V0
OCTRC	0.191	0.731	V0	2.368	V0	0.653	V0
E1TC	0.001	0.107	V0	0.827	V0	0.125	V0
E2TC	0.001	0.298	V0	0.162	V0	0.162	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.205	V0	0.306	V0	0.053	V0
ECTRC	0.005	0.313	V0	0.465	V0	0.231	V0
TCTC	0.206	1.045	V0	2.833	V0	0.884	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Nov-21		Nov-27	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.100	V0	0.091	V0
O2TC	0.049	0.113	V0	0.006	V1
O3TC	0.147	0.221	V0	0.175	V0
O4TC	0.005	0.150	V0	0.082	V0
OPTTC	0.005	0.079	V0	0.099	V0
OPTRC	0.005	0.084	V0	0.009	V0
OCTTC	0.191	0.663	V0	0.453	V0
OCTRC	0.191	0.667	V0	0.364	V0
E1TC	0.001	0.094	V0	0.009	V0
E2TC	0.001	0.146	V0	0.116	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.161	V0	0.027	V0
ECTRC	0.005	0.156	V0	0.116	V0
TCTC	0.206	0.823	V0	0.480	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1		AMS 1	
Sample Date		Dec-3		Dec-9		Dec-15	
Particulate Size		PM2.5		PM2.5		PM2.5	
Total Air Volume (m³)		24		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.396	V0	2.623	V0	0.871	V0
O2TC	0.049	0.479	V0	2.162	V0	0.639	V0
O3TC	0.147	0.488	V0	3.359	V0	1.013	V0
O4TC	0.005	0.200	V0	1.687	V0	0.642	V0
OPTTC	0.005	0.185	V0	1.074	V0	0.570	V0
OPTRC	0.005	0.087	V0	0.662	V0	0.429	V0
OCTTC	0.191	1.747	V0	10.905	V0	3.734	V0
OCTRC	0.191	1.649	V0	10.493	V0	3.594	V0
E1TC	0.001	0.294	V0	1.453	V0	0.830	V0
E2TC	0.001	0.524	V0	0.294	V0	0.274	V0
E3TC	0.001	0.000	V1	0.000	V1	0.000	V1
ECTTC	0.005	0.633	V0	0.673	V0	0.534	V0
ECTRC	0.005	0.731	V0	1.084	V0	0.675	V0
TCTC	0.206	2.380	V0	11.578	V0	4.268	V0

Station Name		Bertha Ganter - Fort McKay		Bertha Ganter - Fort McKay	
Station #		AMS 1		AMS 1	
Sample Date		Dec-21		Dec-27	
Particulate Size		PM2.5		PM2.5	
Total Air Volume (m³)		24		24	
Compound Name	MDL (µg/m³)	Results (µg/m³)	QA Flag	Results (µg/m³)	QA Flag
O1TC	0.002	0.634	V0	0.845	V0
O2TC	0.049	0.583	V0	0.657	V0
O3TC	0.147	0.844	V0	0.765	V0
O4TC	0.005	0.473	V0	0.415	V0
OPTTC	0.005	0.589	V0	0.570	V0
OPTRC	0.005	0.189	V0	0.283	V0
OCTTC	0.191	3.122	V0	3.252	V0
OCTRC	0.191	2.722	V0	2.964	V0
E1TC	0.001	0.737	V0	0.947	V0
E2TC	0.001	0.205	V0	0.286	V0
E3TC	0.001	0.000	V1	0.000	V1
ECTTC	0.005	0.353	V0	0.663	V0
ECTRC	0.005	0.753	V0	0.950	V0
TCTC	0.206	3.475	V0	3.914	V0

Station Name	Bertha Ganter - Fort McKay	Bertha Ganter - Fort McKay	Bertha Ganter - Fort McKay	Bertha Ganter - Fort McKay
Station #	AMS 1	AMS 1	AMS 1	AMS 1
Sample Date	Jan-1 - Dec-31	Jan-1 - Dec-31	Jan-1 - Dec-31	Jan-1 - Dec-31
Particulate Size	PM2.5	PM2.5	PM2.5	PM2.5
	Average	Std Dev	Total Samples (#)	Total ≥ MDL (#)
Compound Name	µg/m³	µg/m³		
O1TC	0.3	0.4	61	53
O2TC	0.5	0.4	61	59
O3TC	0.9	0.6	61	61
O4TC	0.4	0.3	61	61
OPTTC	0.4	0.4	61	57
OPTRC	0.3	0.4	61	56
OCTTC	2.5	2.0	61	61
OCTRC	2.4	1.9	61	61
E1TC	0.4	0.5	61	54
E2TC	0.2	0.2	61	61
E3TC	0.0	0.0	61	2
ECTTC	0.2	0.2	61	58
ECTRC	0.4	0.3	61	57
TCTC	2.8	2.1	61	61

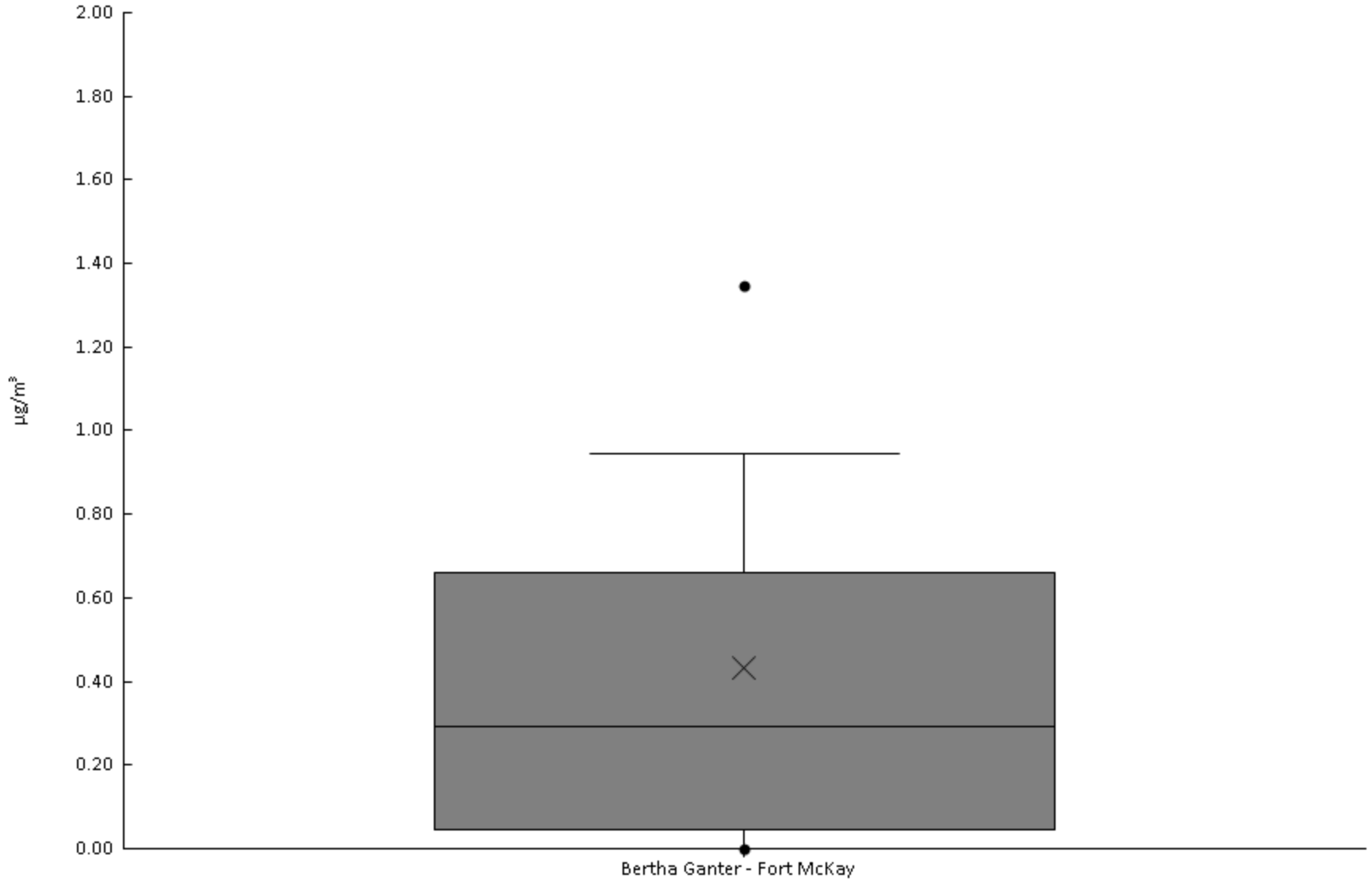
Wood Buffalo Environmental Association

Elemental Carbon and Organic Carbon (µg/sample) Summary **2017**

Compound	% Det	N	N < Det.	Min.	10%	25%	50%	60%	75%	80%	90%	95%	99%	Max.	Mean	Std. Dev.	Median	Outlier Test
O1TC	69.2%	26	8	0.00	0.00	0.00	0.15	0.27	0.33	0.40	0.84	0.87	2.62	2.62	0.31	0.54	0.15	2.99
O2TC	92.3%	26	2	0.00	0.11	0.14	0.48	0.52	0.66	0.78	1.08	1.28	2.16	2.16	0.53	0.47	0.48	2.90
O3TC	100.0%	26	0	0.18	0.23	0.37	0.66	0.75	1.10	1.34	1.70	2.34	3.36	3.36	0.87	0.74	0.66	4.57
O4TC	100.0%	26	0	0.01	0.09	0.14	0.28	0.42	0.51	0.59	0.74	0.78	1.69	1.69	0.38	0.35	0.28	2.13
OPTTC	92.3%	26	2	0.00	0.04	0.10	0.37	0.50	0.59	0.68	0.96	0.97	1.07	1.07	0.41	0.33	0.37	2.03
OPTRC	96.2%	26	1	0.00	0.01	0.07	0.19	0.28	0.44	0.52	0.66	0.86	0.94	0.94	0.28	0.27	0.19	1.64
OCTTC	100.0%	26	0	0.22	0.51	0.83	2.15	2.53	3.25	3.56	4.64	5.69	10.90	10.90	2.47	2.27	2.15	13.80
OCTRC	100.0%	26	0	0.29	0.55	0.67	1.67	2.37	3.22	3.39	4.62	5.58	10.49	10.49	2.34	2.20	1.67	13.36
E1TC	88.5%	26	3	0.00	0.00	0.02	0.29	0.49	0.83	0.83	0.95	0.97	1.45	1.45	0.41	0.42	0.29	2.52
E2TC	100.0%	26	0	0.04	0.07	0.15	0.23	0.25	0.30	0.33	0.43	0.46	0.52	0.52	0.24	0.13	0.23	0.90
E3TC	0.0%	26	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	
ECTTC	92.3%	26	2	0.00	0.02	0.07	0.20	0.31	0.38	0.42	0.63	0.66	0.67	0.67	0.25	0.21	0.20	1.31
ECTRC	88.5%	26	3	0.00	0.00	0.12	0.33	0.35	0.59	0.67	0.92	0.95	1.08	1.08	0.37	0.32	0.33	1.96
TCTC	100.0%	26	0	0.29	0.55	0.88	2.38	2.63	3.91	3.99	5.02	5.92	11.58	11.58	2.71	2.41	2.38	14.76

ECOC - Elemental Carbon Fraction 1 concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	89%	0	0	0	0.047	0.29	0.66	0.94	1.3	3.1	0.43	0.52



ECOC - Elemental Carbon Fraction 2 concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.039	0.048	0.083	0.13	0.22	0.33	0.45	0.56	0.78	0.25	0.16

ECOC - Elemental Carbon Fraction 3 concentration (µg/m³) - 2017

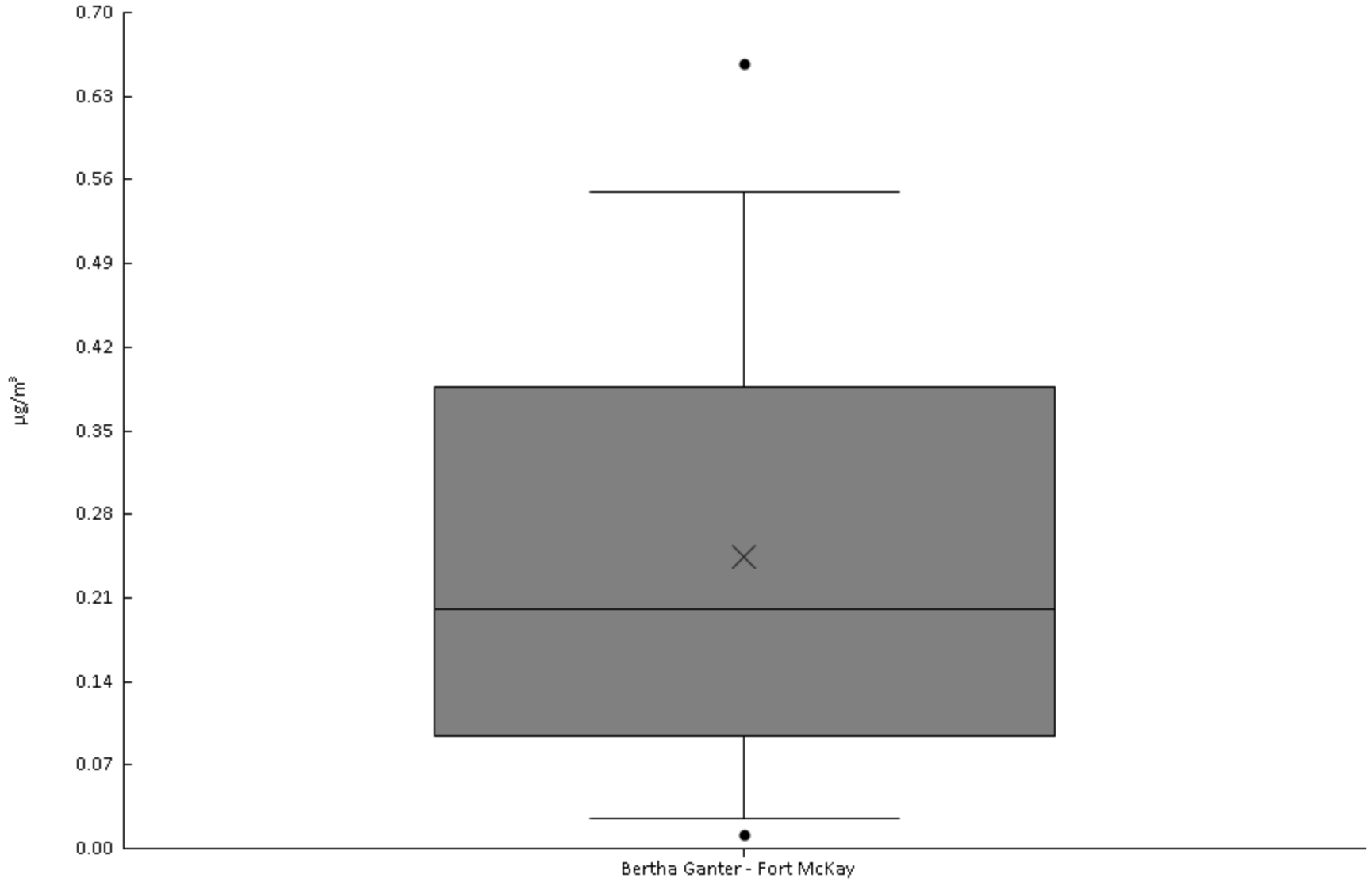
Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	3%	0	0	0	0	0	0	0	0	5.8E-3	1.2E-4	7.6E-4

ECOC - Elemental carbon,thermal method, reflectance concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	93%	0	0	0.039	0.15	0.31	0.54	0.79	0.93	1.1	0.35	0.28

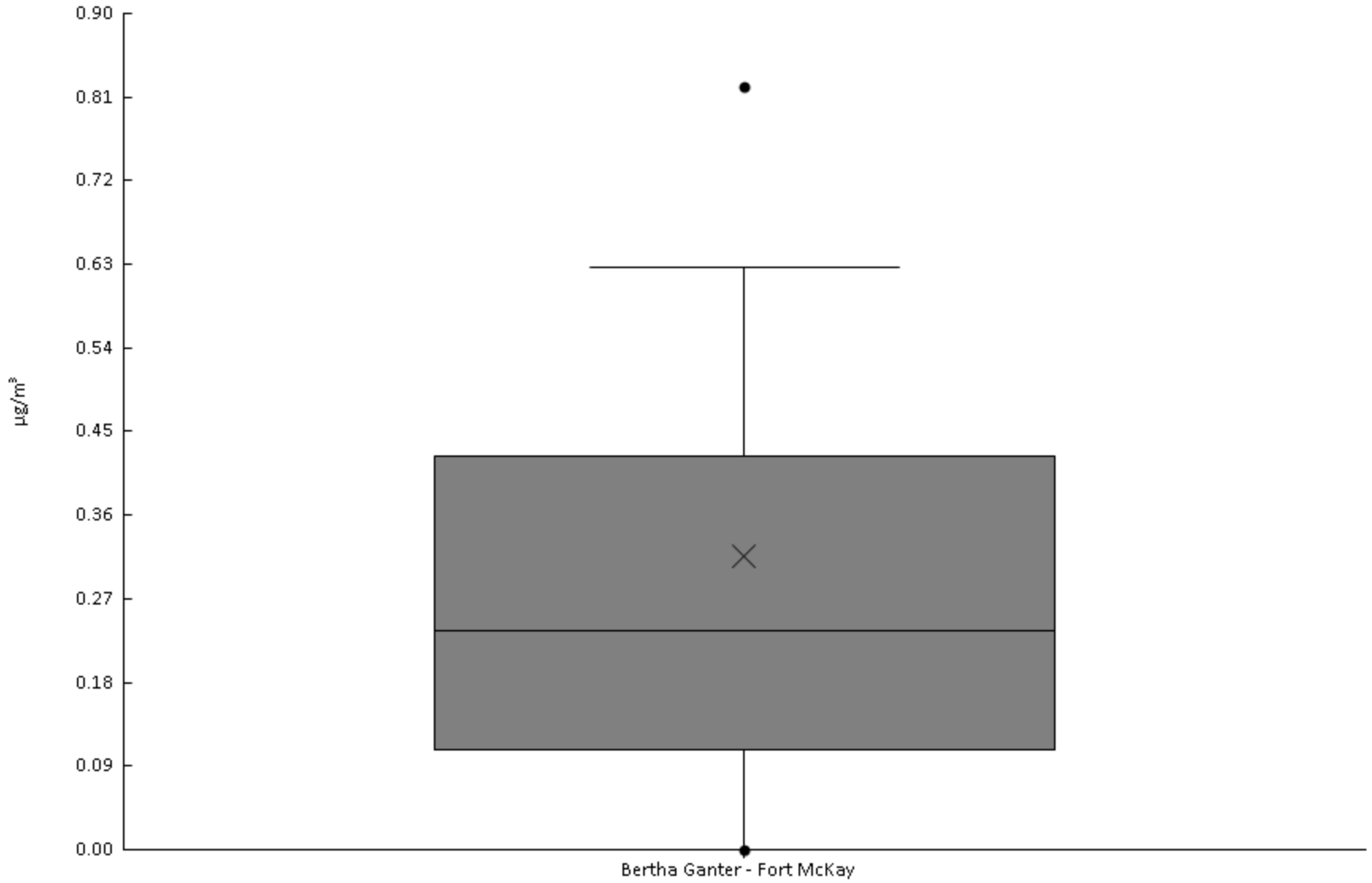
ECOC - Elemental carbon,thermal method, transmittance concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	95%	0	0.012	0.026	0.095	0.2	0.39	0.55	0.66	0.73	0.24	0.19



ECOC - Organic Carbon Fraction 1 concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	87%	0	0	0	0.11	0.24	0.42	0.63	0.82	2.6	0.32	0.37

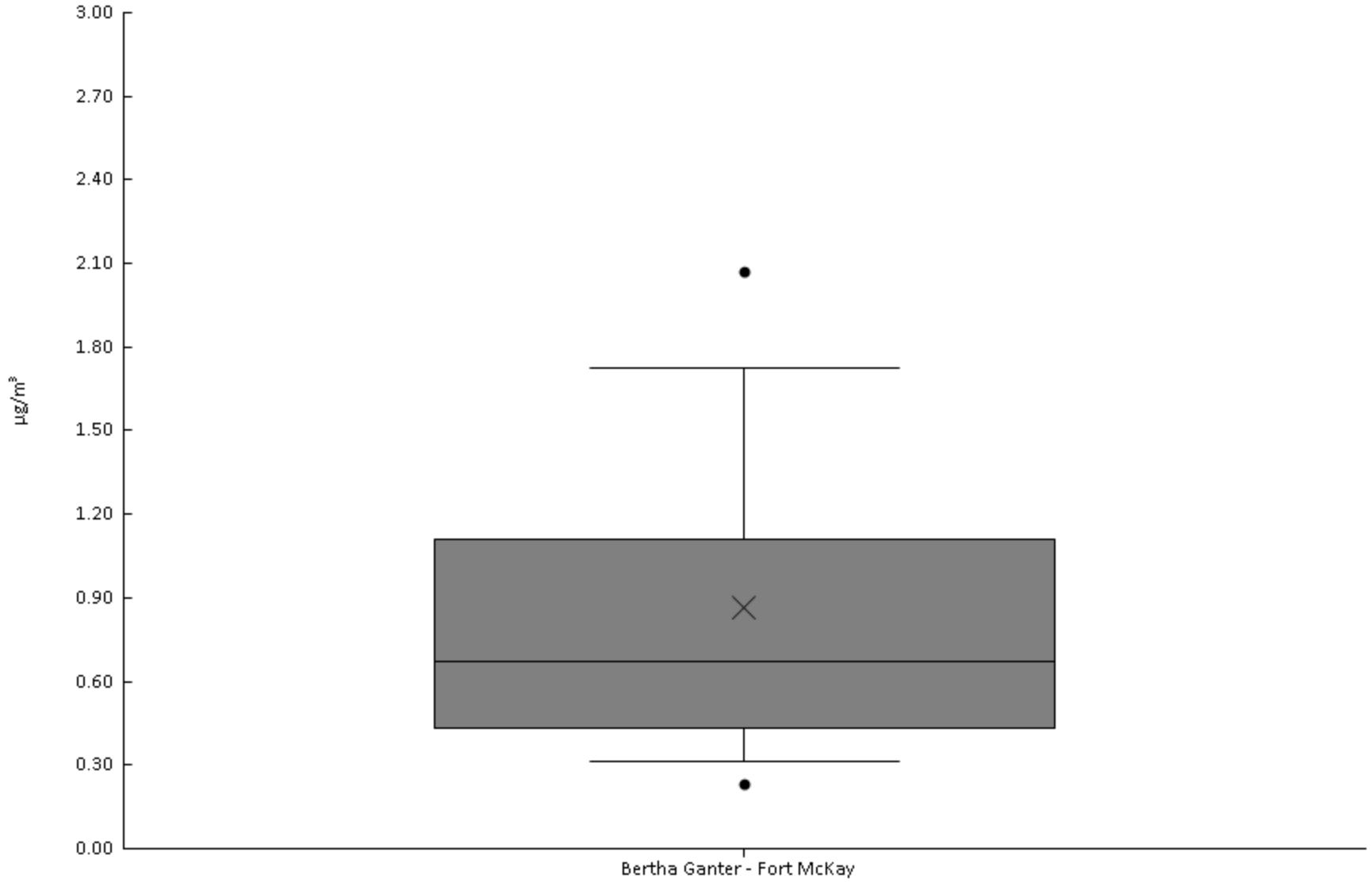


ECOC - Organic Carbon Fraction 2 concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	97%	4.5E-3	0.11	0.12	0.27	0.43	0.71	1.1	1.2	2.2	0.53	0.4

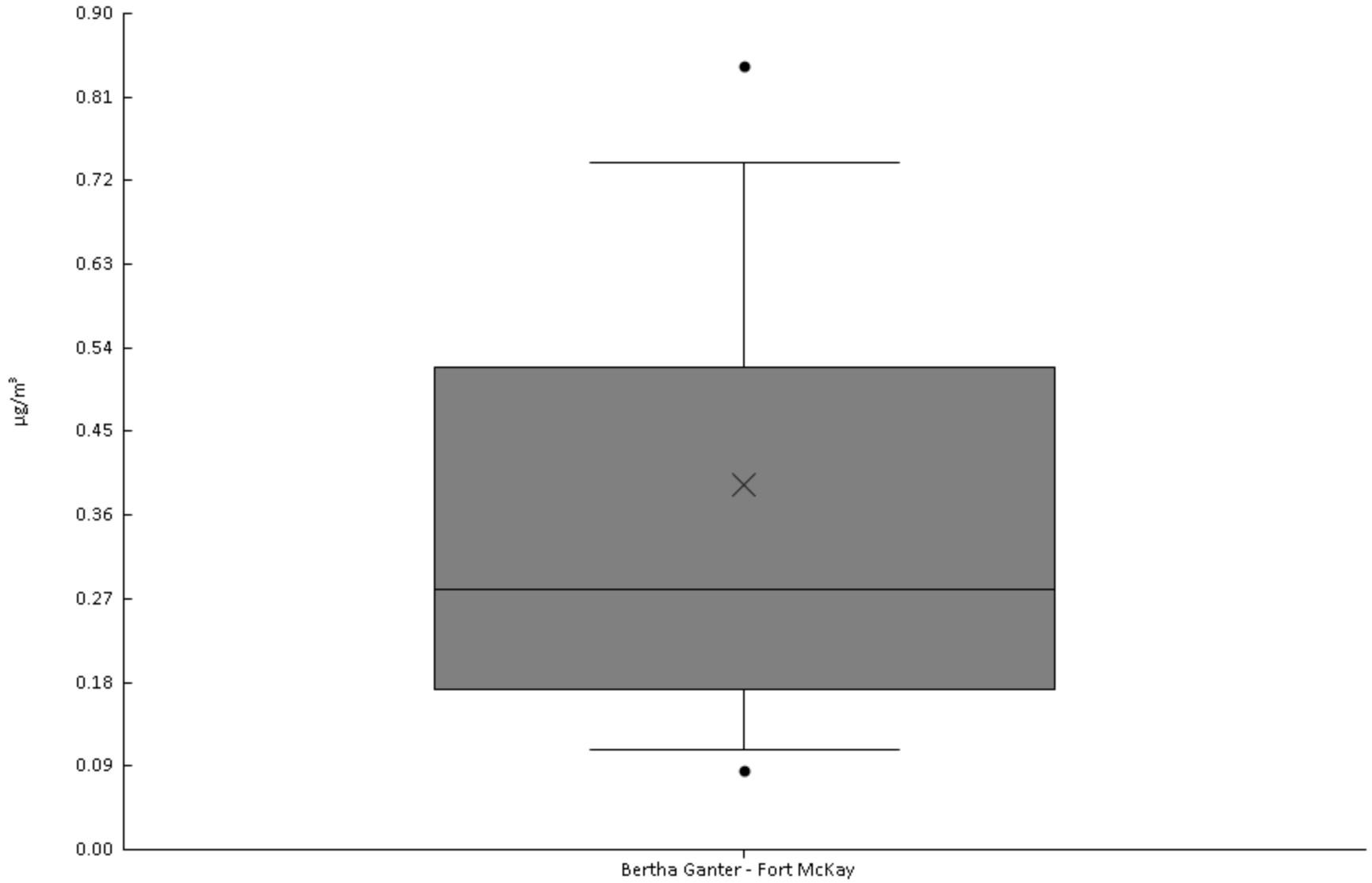
ECOC - Organic Carbon Fraction 3 concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.18	0.23	0.31	0.43	0.67	1.1	1.7	2.1	3.4	0.86	0.63



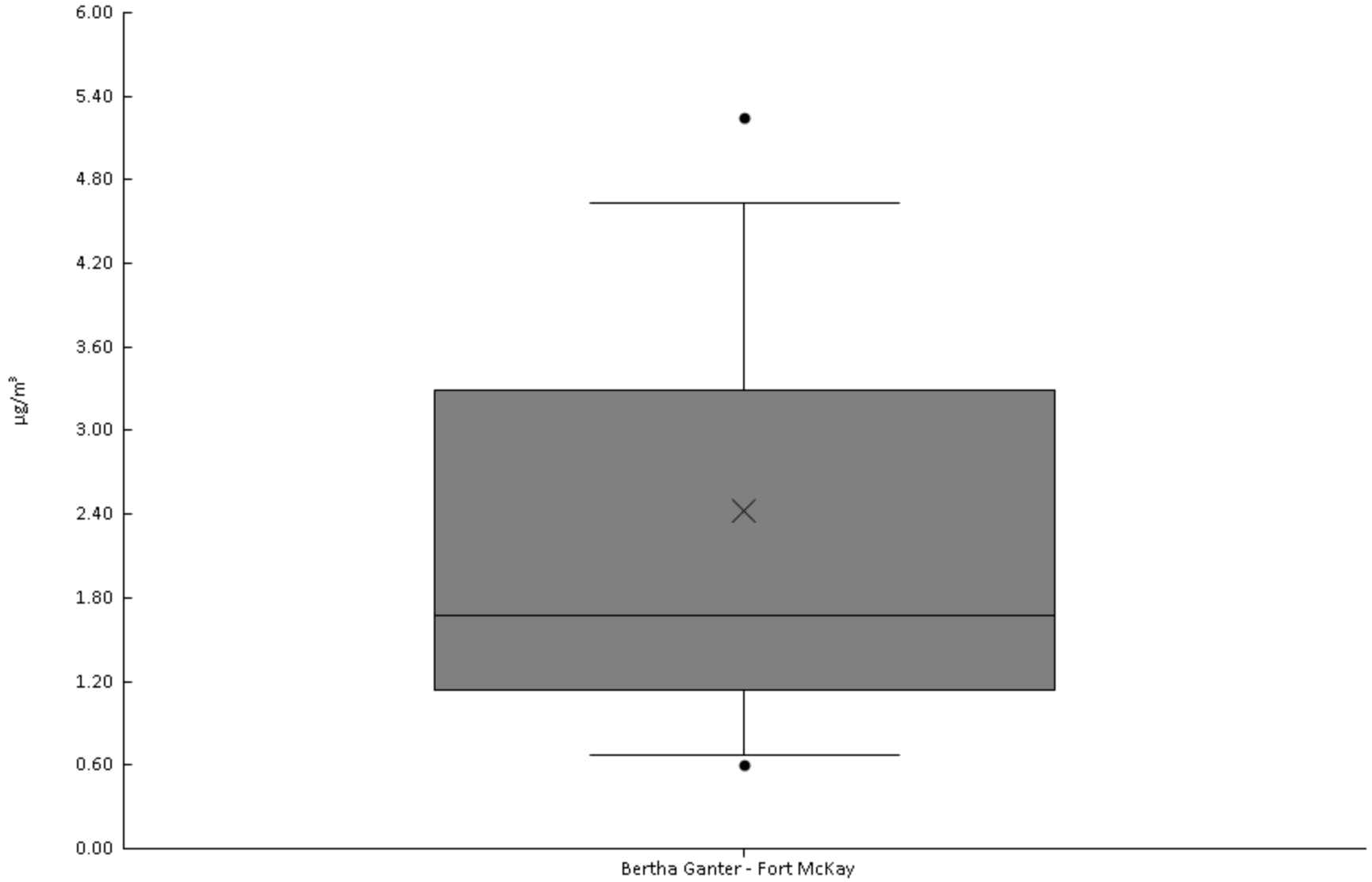
ECOC - Organic Carbon Fraction 4 concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	7.5E-3	0.086	0.11	0.17	0.28	0.52	0.74	0.84	1.9	0.39	0.34



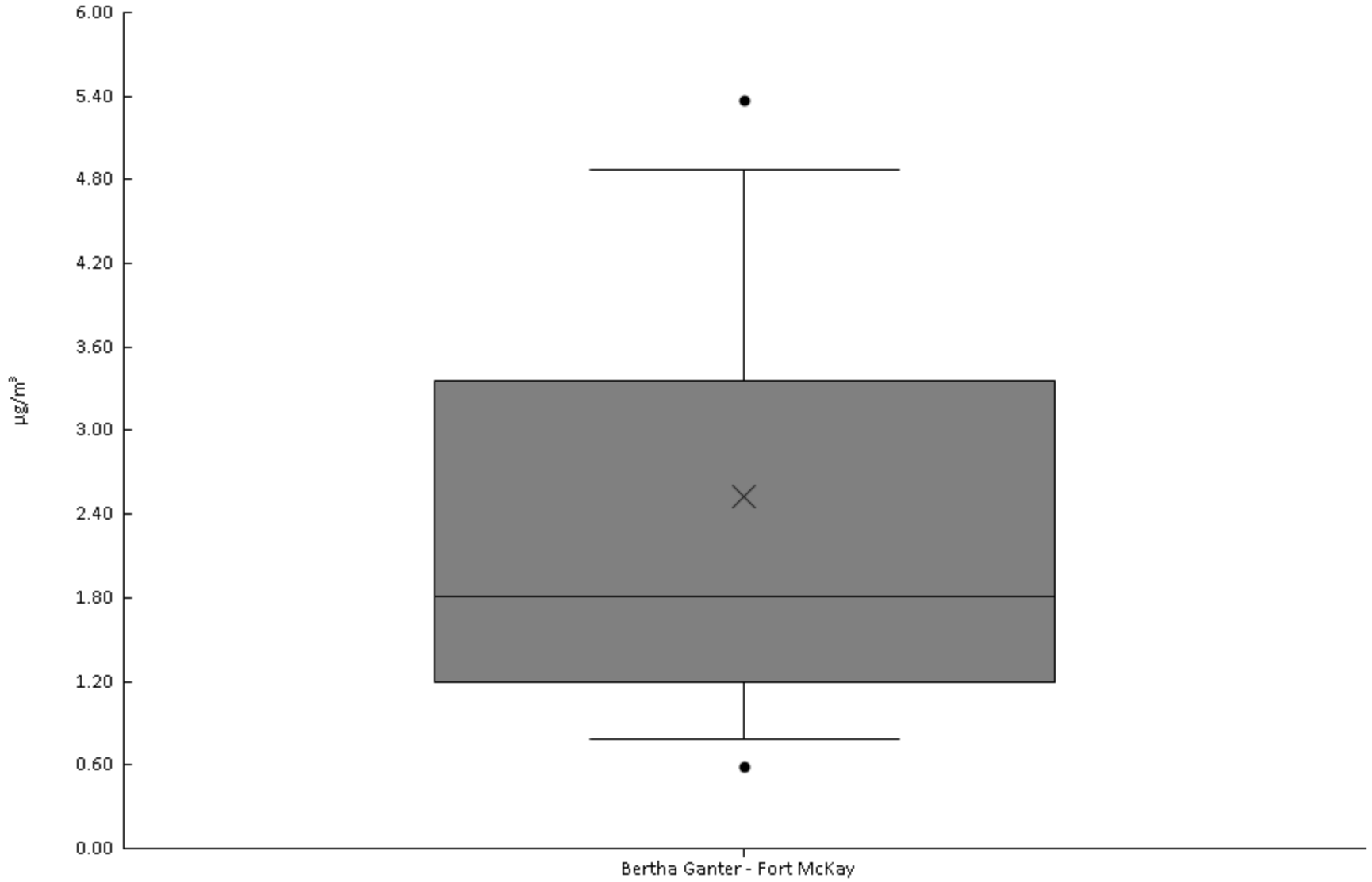
ECOC - Organic carbon,thermal method, reflectance concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.29	0.6	0.67	1.1	1.7	3.3	4.6	5.3	10	2.4	1.9



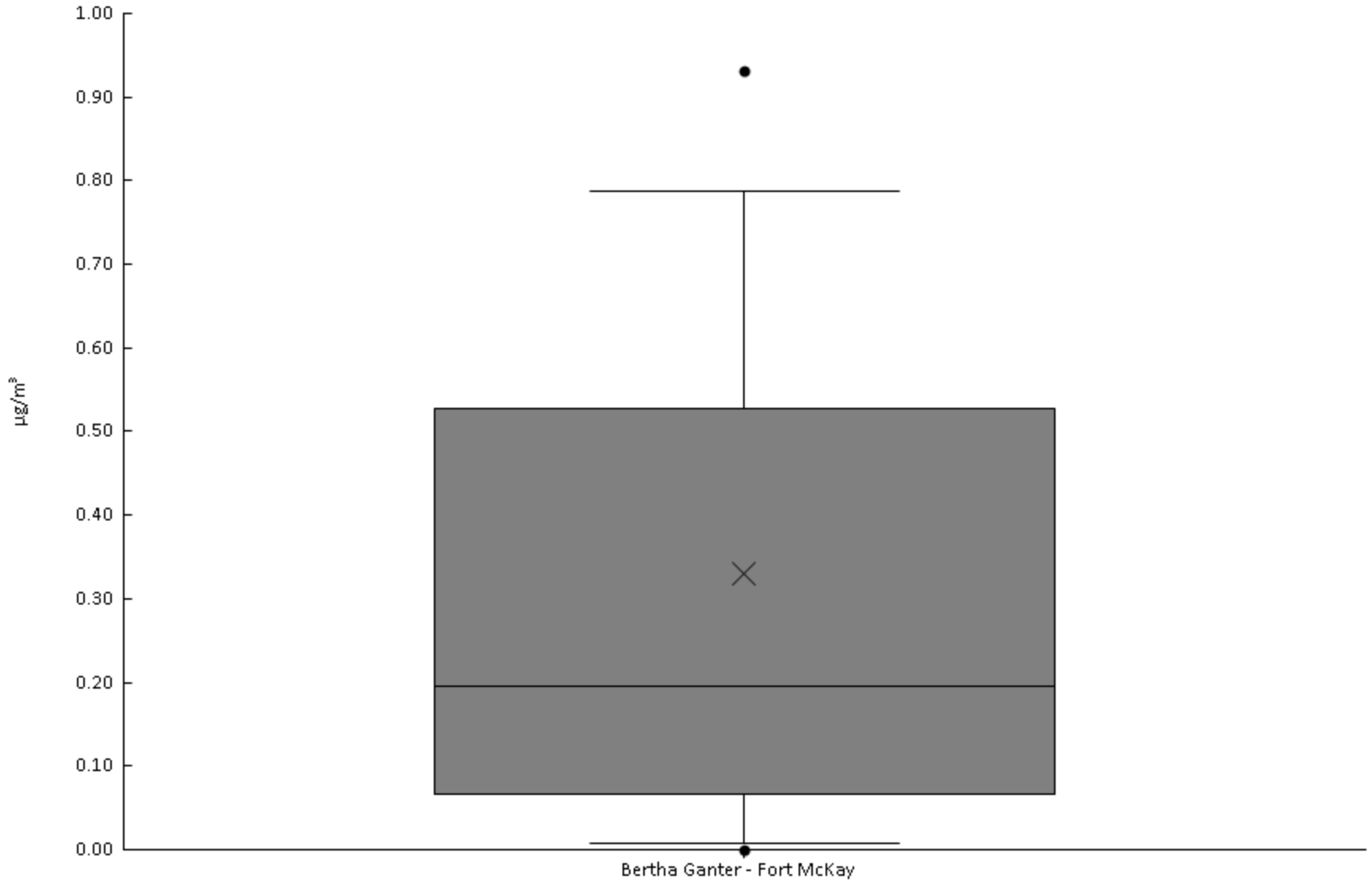
ECOC - Organic carbon,thermal method, transmittance concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.22	0.59	0.79	1.2	1.8	3.4	4.9	5.4	11	2.5	2



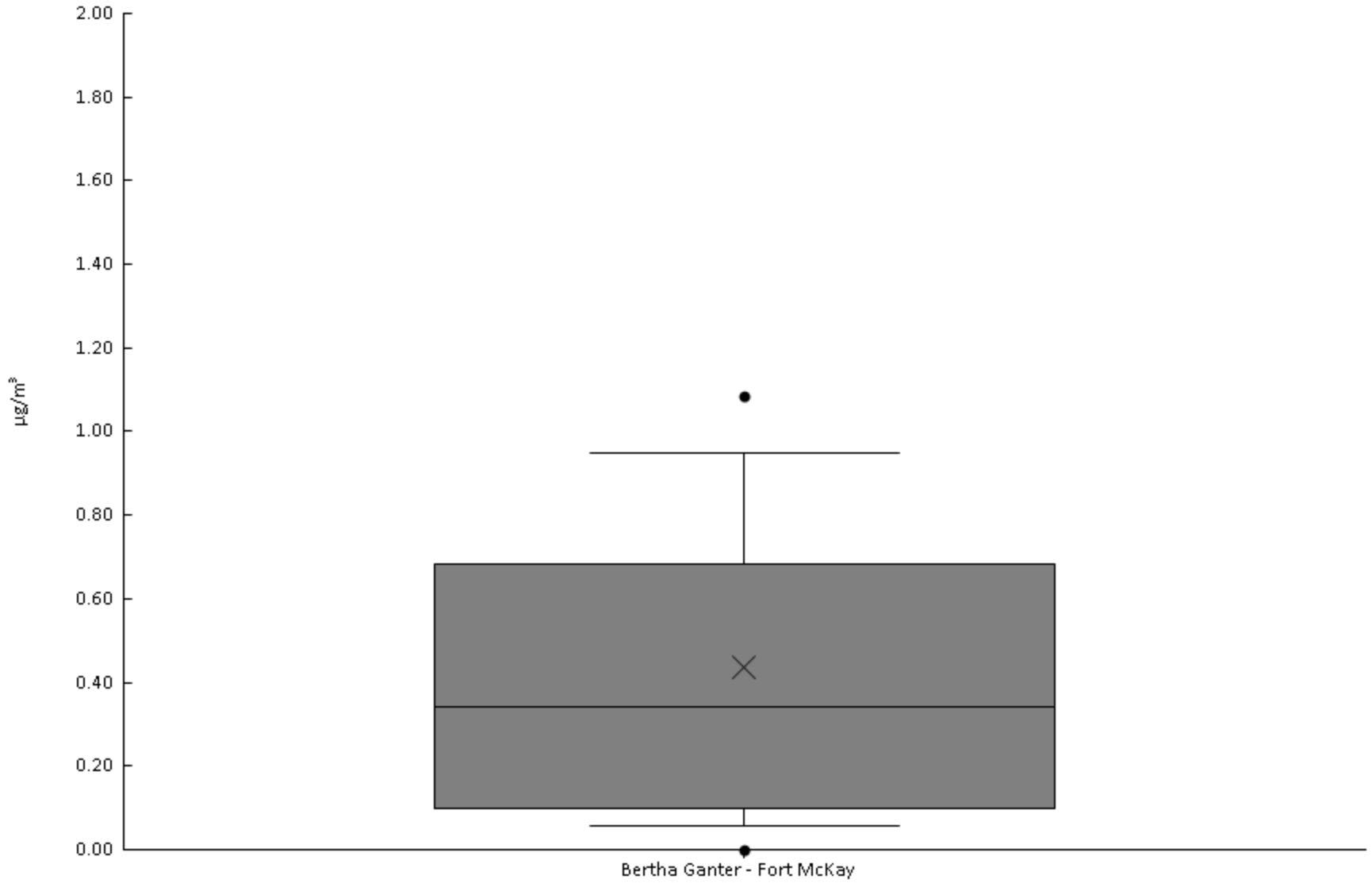
ECOC - Pyrolyzed organic carbon, thermal method,reflectance concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	92%	0	0	7.6E-3	0.067	0.19	0.53	0.79	0.93	2.4	0.33	0.39



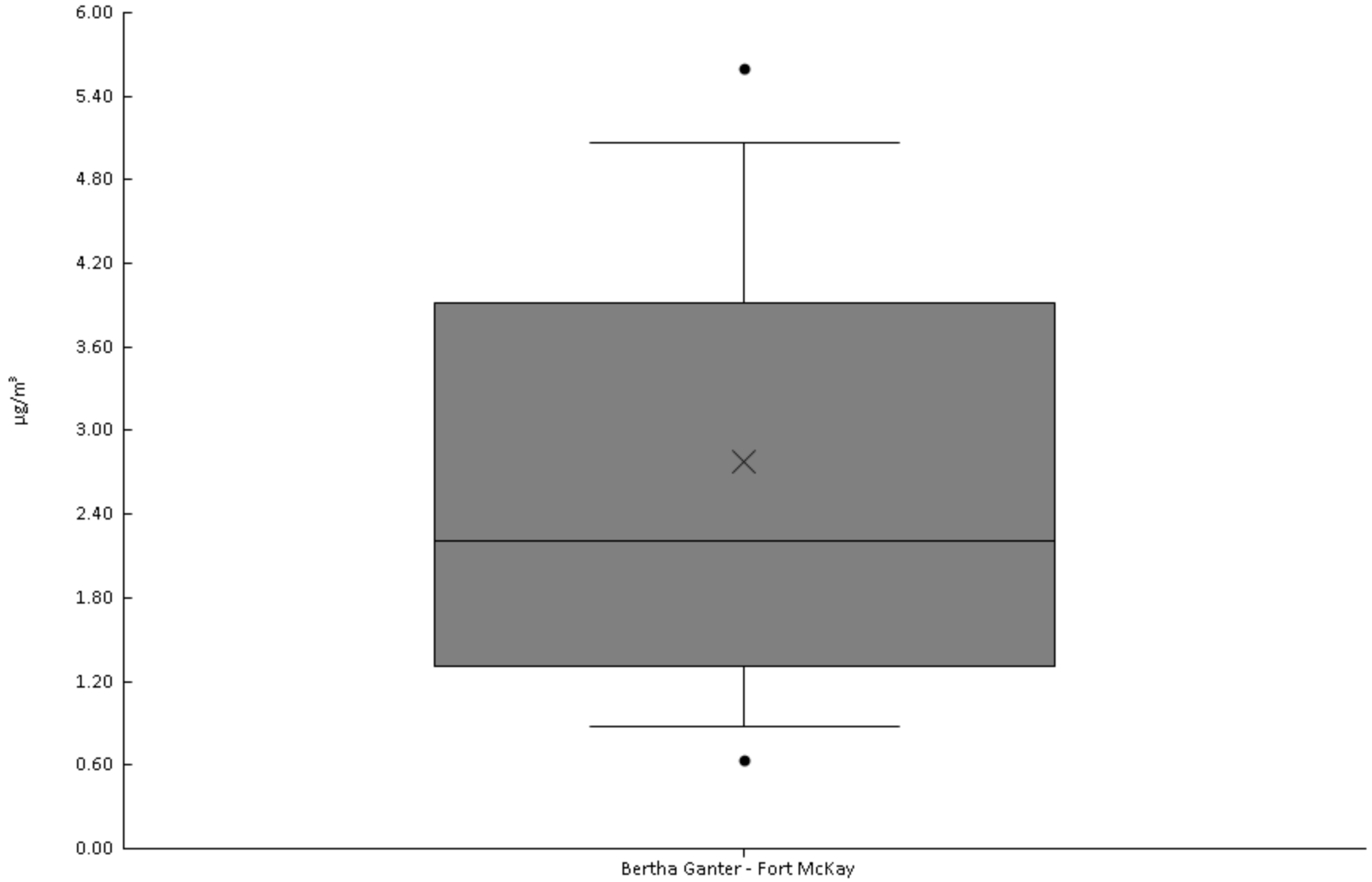
ECOC - Pyrolyzed organic carbon, thermal method, transmittance concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	93%	0	0	0.056	0.097	0.34	0.68	0.95	1.1	2.8	0.44	0.44



ECOC - Total Carbon concentration (µg/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.29	0.64	0.88	1.3	2.2	3.9	5.1	5.6	12	2.8	2.1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

POLYCYCLIC AROMATIC HYDROCARBONS
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

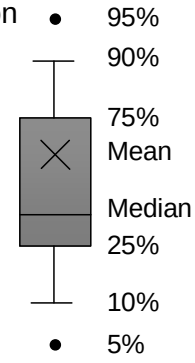
Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS BY:

PAHs: Air Zone One Incorporated
Mississauga, Ontario

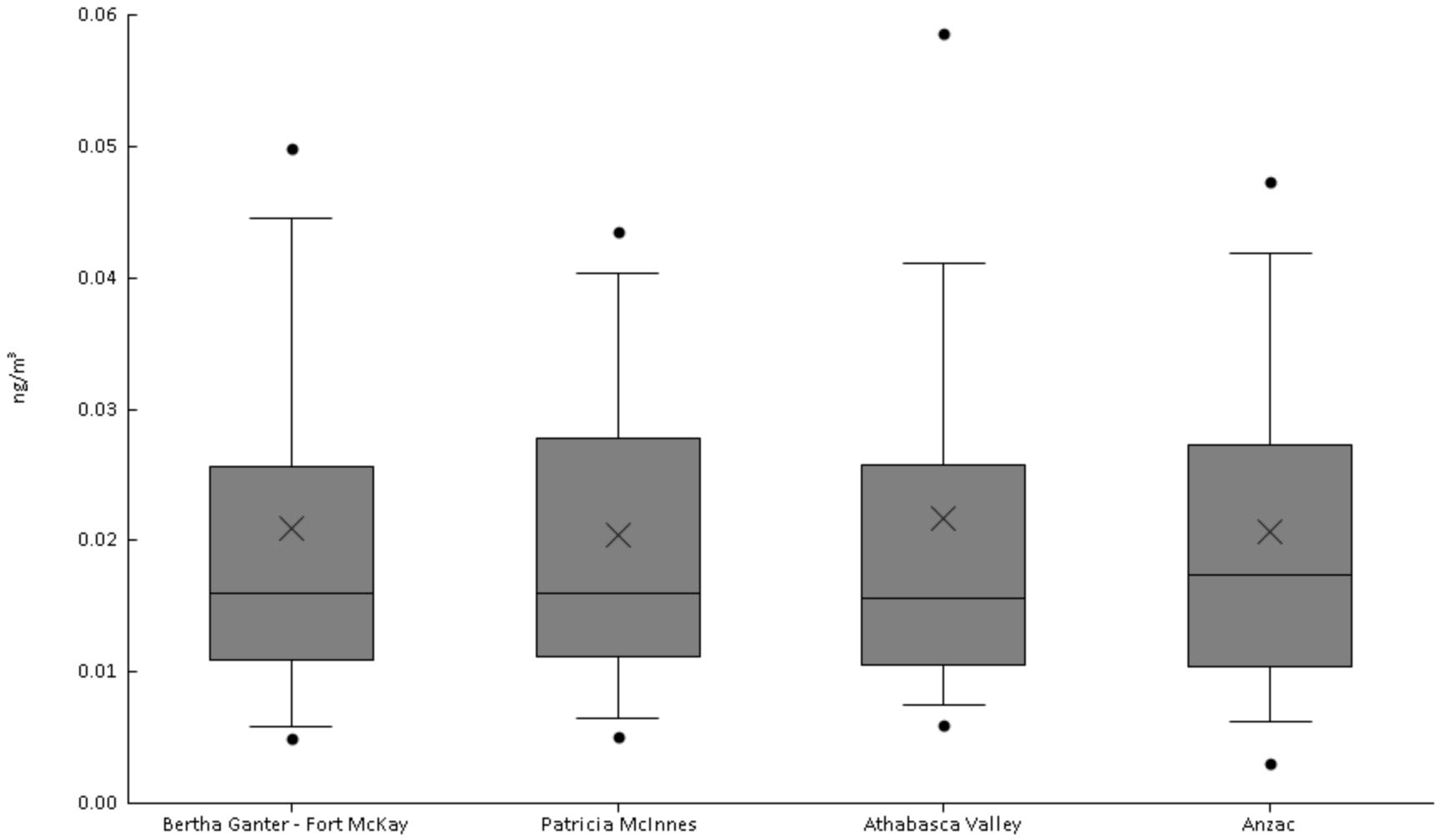
FILE CONTENTS DESCRIPTION	PAH - Speciated PAH Gas + Particle Phase Measurements
SAMPLING INTERVAL	24 hour
SAMPLING FREQUENCY OF DATA	Once every 6 days
UNITS	ng/m^3 (nanogram per cubic meter)
OBSERVATION TYPE	Particles + gas
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	filtration and adsorbent
PARTICLE DIAMETER	TSP (total suspended particle)
MEDIUM	a glass fiber filter + PUF/XAD-2/PUF
ANALYTICALMETHOD	Gas Chromatograph/Mass Spectrometer (GC/MS)
SAMPLE PREPARATION	Solvent Extraction
ANALYTICAL LABORATORY	AIRZONE One Inc.
USER NOTE 1	Data are recovery corrected
USER NOTE 2	Volume is given at actual conditions of temperature and pressure during sampling as measured by the sampler
USER NOTE 3	Blank sample concentration (ng/m^3) is calculated using expected actual volume of sampler
VOLUME STANDARDIZATION	Actual Volume at Ambient Conditions
SAMPLING INSTRUMENT TYPE	Tisch TE-1000 High-Volume Sampler
FLAGS USED	
V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

Legend description



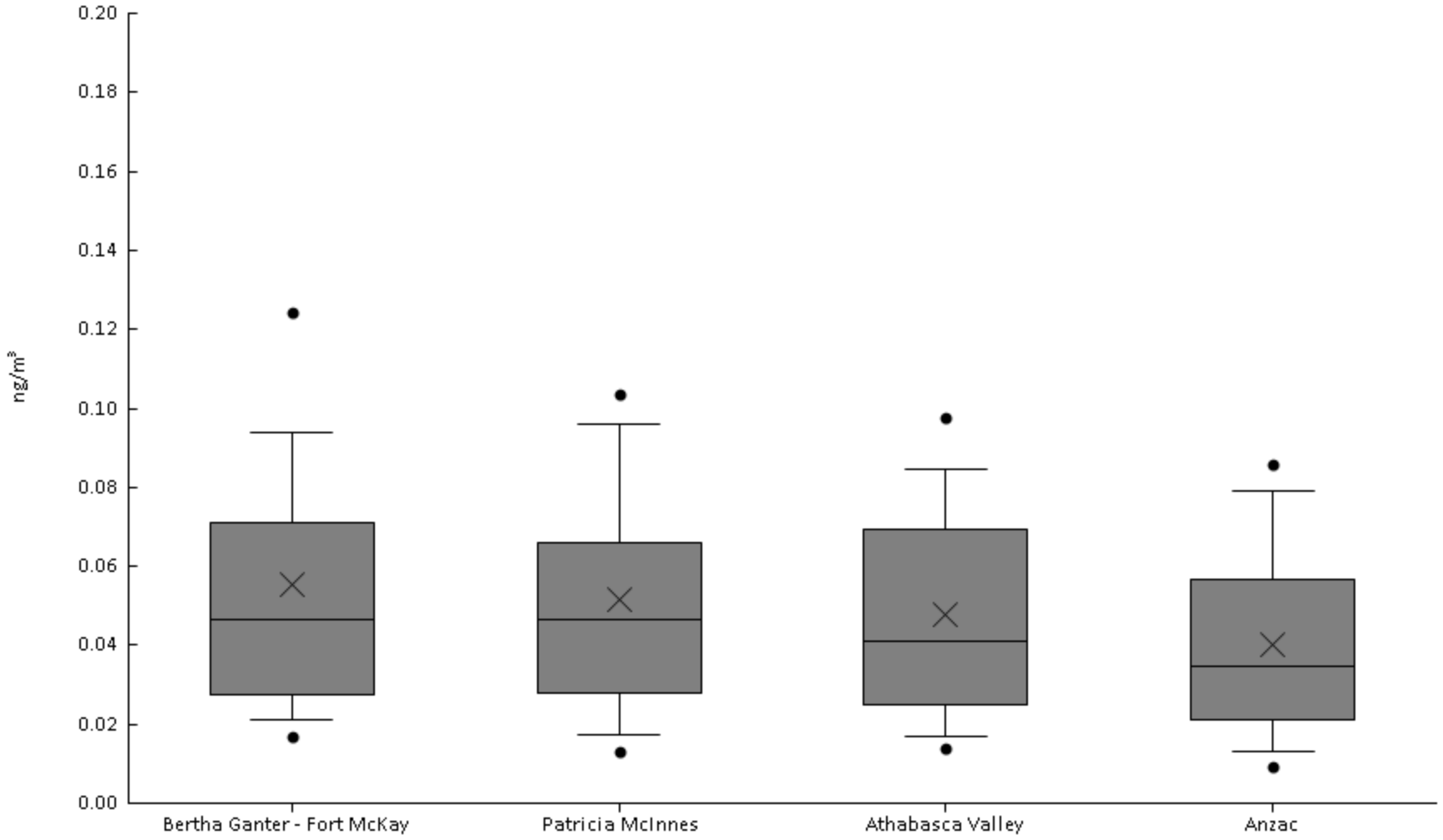
Polycyclic Aromatic Hydrocarbons - 3-Methylcholanthrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	31%	2.1E-3	5E-3	5.9E-3	0.011	0.016	0.026	0.045	0.05	0.075	0.021	0.015
AMS 6	Patricia McInnes	61	33%	1.6E-3	5.1E-3	6.5E-3	0.011	0.016	0.028	0.04	0.043	0.067	0.02	0.013
AMS 7	Athabasca Valley	59	39%	1.8E-3	5.9E-3	7.5E-3	0.011	0.016	0.026	0.041	0.059	0.099	0.022	0.017
AMS 14	Anzac	61	34%	1.1E-3	3E-3	6.3E-3	0.01	0.017	0.027	0.042	0.047	0.065	0.021	0.014



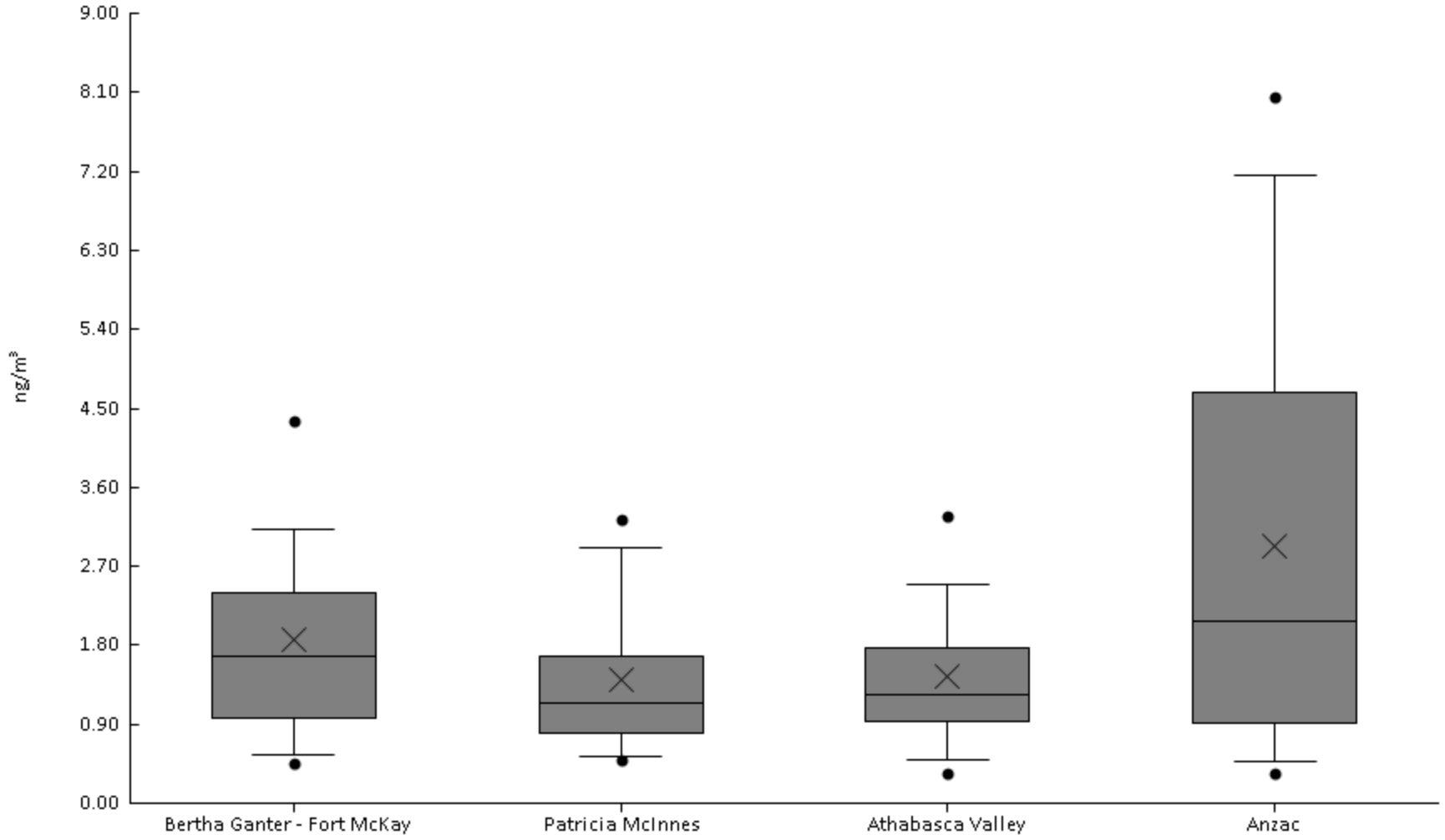
Polycyclic Aromatic Hydrocarbons - 7,12-Dimethylbenz(a)anthracene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	97%	1.6E-3	0.017	0.021	0.028	0.047	0.071	0.094	0.12	0.25	0.055	0.041
AMS 6	Patricia McInnes	61	95%	2.1E-3	0.013	0.017	0.028	0.047	0.066	0.096	0.1	0.16	0.051	0.031
AMS 7	Athabasca Valley	59	95%	7.2E-3	0.014	0.017	0.025	0.041	0.069	0.085	0.098	0.12	0.048	0.028
AMS 14	Anzac	61	90%	5.3E-3	9.5E-3	0.013	0.021	0.035	0.057	0.079	0.086	0.1	0.04	0.024



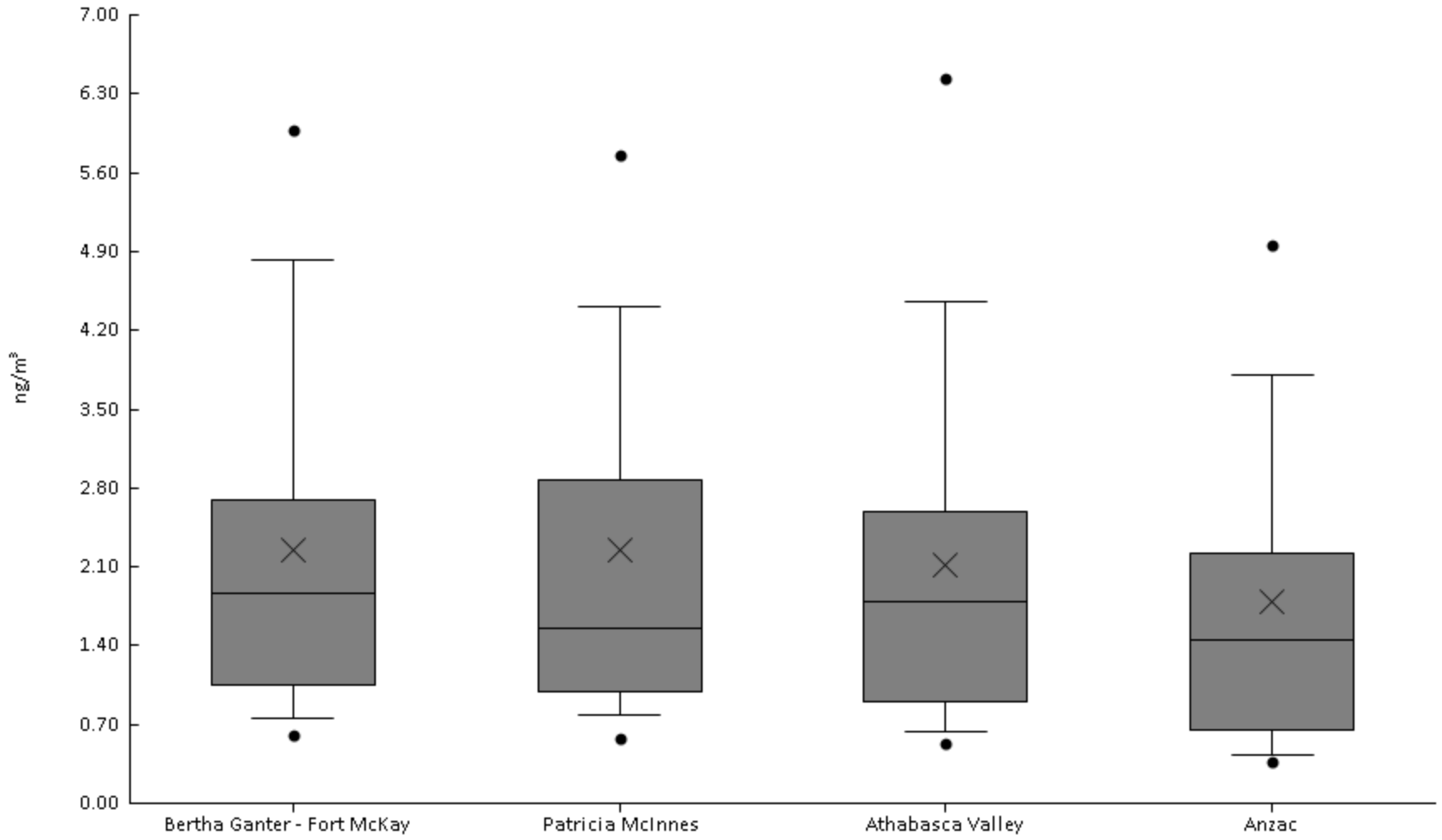
Polycyclic Aromatic Hydrocarbons - Acenaphthene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.1	0.46	0.55	0.97	1.7	2.4	3.1	4.4	6.3	1.9	1.2
AMS 6	Patricia McInnes	61	100%	0.07	0.49	0.54	0.8	1.1	1.7	2.9	3.2	4.4	1.4	0.9
AMS 7	Athabasca Valley	59	100%	0.3	0.35	0.49	0.93	1.2	1.8	2.5	3.3	3.8	1.4	0.81
AMS 14	Anzac	61	100%	0.19	0.35	0.48	0.91	2.1	4.7	7.2	8	8.9	2.9	2.5



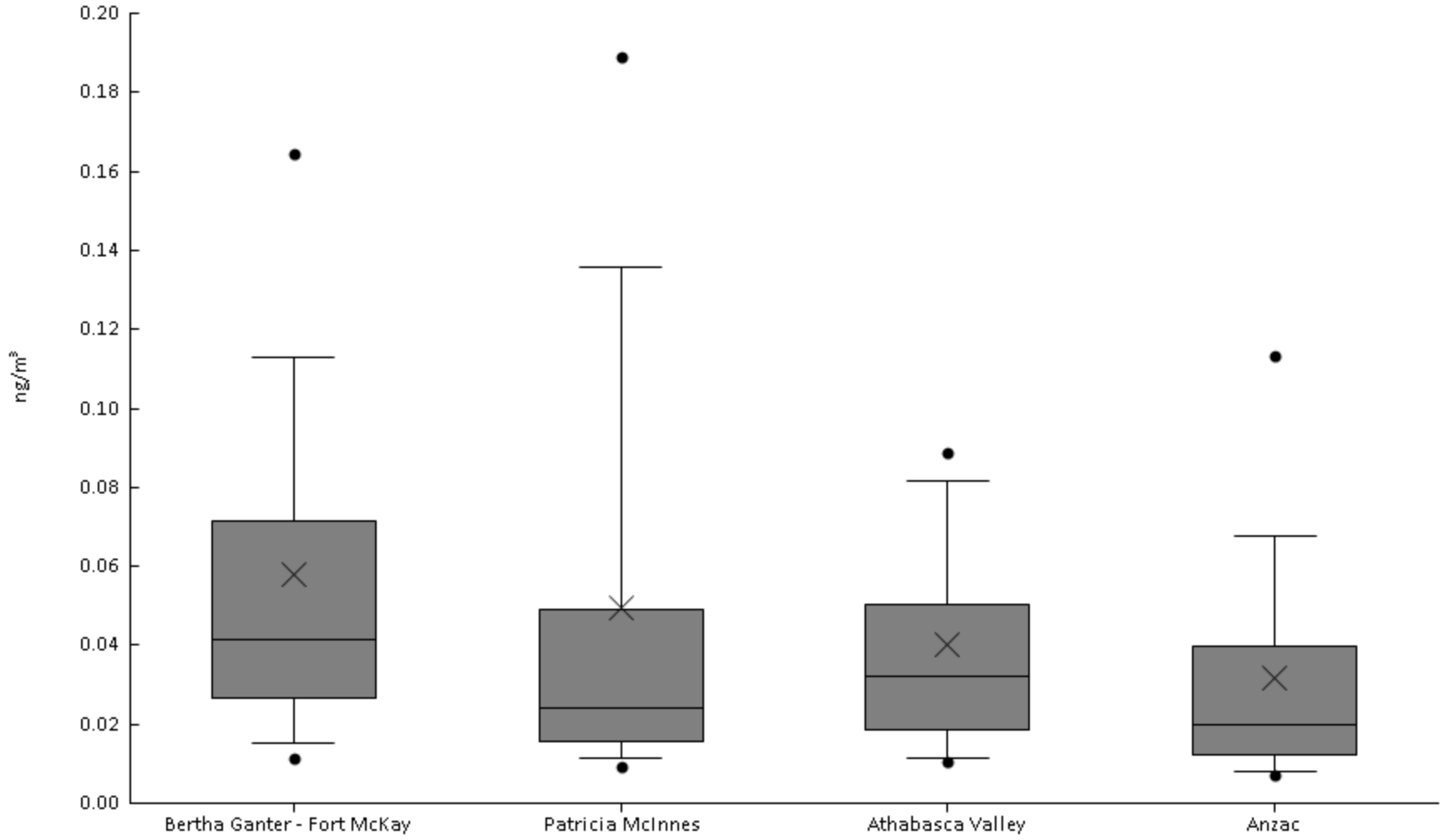
Polycyclic Aromatic Hydrocarbons - Acenaphthylene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.3	0.6	0.76	1.1	1.9	2.7	4.8	6	7.8	2.2	1.7
AMS 6	Patricia McInnes	61	100%	0.14	0.57	0.78	1	1.6	2.9	4.4	5.8	12	2.3	2.1
AMS 7	Athabasca Valley	59	100%	0.46	0.53	0.63	0.91	1.8	2.6	4.5	6.4	9.2	2.1	1.8
AMS 14	Anzac	61	100%	0.23	0.36	0.42	0.65	1.5	2.2	3.8	5	9.7	1.8	1.7



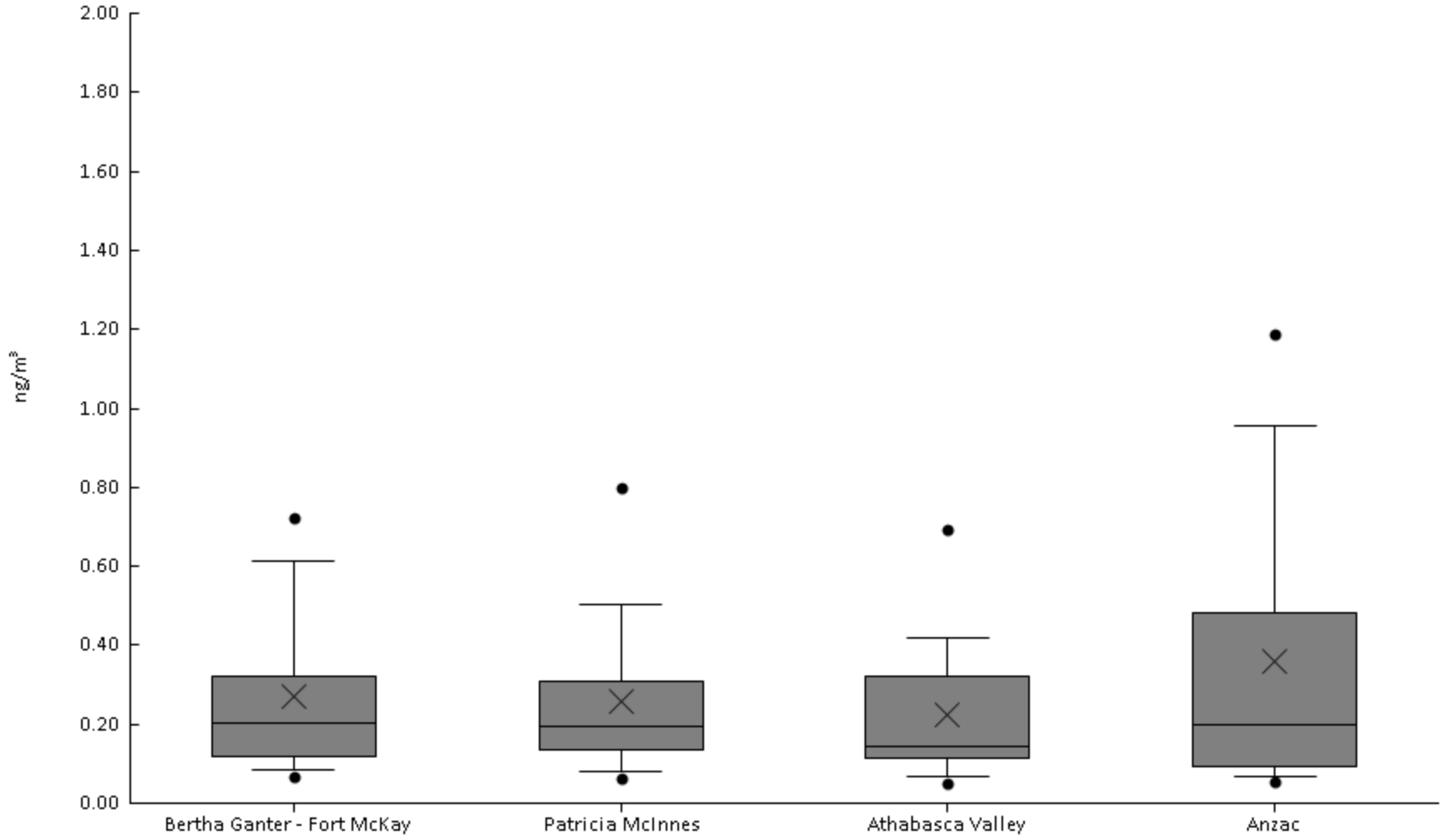
Polycyclic Aromatic Hydrocarbons - Acridine (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	84%	3.5E-3	0.011	0.015	0.026	0.042	0.071	0.11	0.16	0.31	0.058	0.052
AMS 6	Patricia McInnes	61	69%	6.6E-3	9.4E-3	0.011	0.015	0.024	0.049	0.14	0.19	0.33	0.05	0.064
AMS 7	Athabasca Valley	59	76%	7.7E-3	0.011	0.012	0.019	0.032	0.05	0.082	0.089	0.19	0.04	0.032
AMS 14	Anzac	61	59%	6.4E-3	7.1E-3	8E-3	0.012	0.02	0.04	0.068	0.11	0.15	0.032	0.03



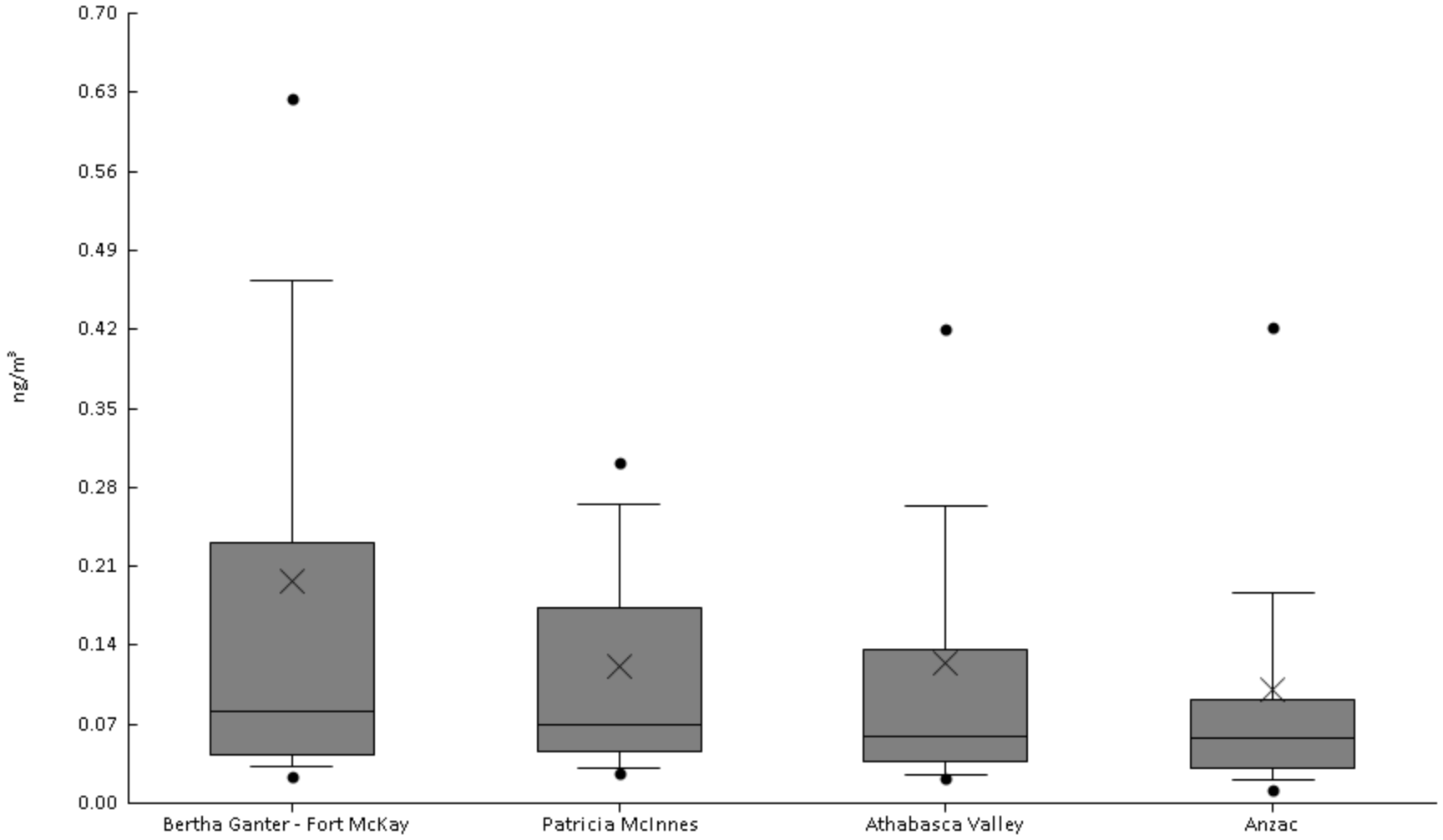
Polycyclic Aromatic Hydrocarbons - Anthracene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.052	0.068	0.085	0.12	0.2	0.32	0.61	0.72	1.1	0.27	0.21
AMS 6	Patricia McInnes	61	100%	0.023	0.062	0.08	0.14	0.19	0.31	0.5	0.8	0.92	0.26	0.2
AMS 7	Athabasca Valley	59	100%	0.031	0.05	0.067	0.12	0.14	0.32	0.42	0.69	0.8	0.23	0.18
AMS 14	Anzac	61	98%	0.016	0.056	0.066	0.093	0.2	0.48	0.96	1.2	2	0.36	0.4



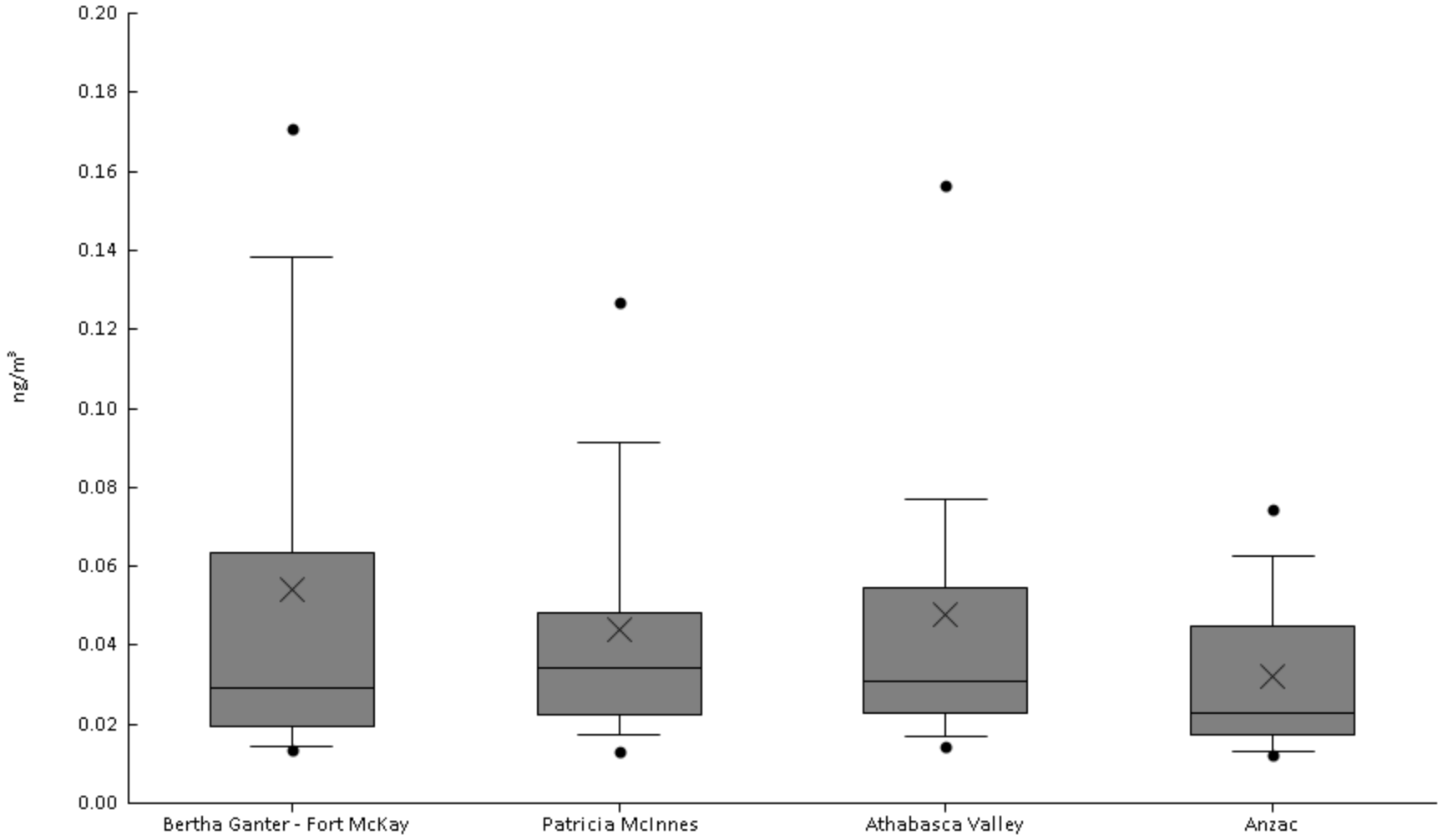
Polycyclic Aromatic Hydrocarbons - Benz(a)anthracene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.018	0.023	0.032	0.044	0.082	0.23	0.46	0.63	2.2	0.2	0.33
AMS 6	Patricia McInnes	61	98%	0.01	0.027	0.032	0.046	0.069	0.17	0.26	0.3	0.72	0.12	0.12
AMS 7	Athabasca Valley	59	100%	0.016	0.022	0.025	0.037	0.06	0.14	0.26	0.42	1.1	0.12	0.18
AMS 14	Anzac	61	93%	9.7E-3	0.012	0.021	0.031	0.057	0.092	0.19	0.42	1.1	0.1	0.16



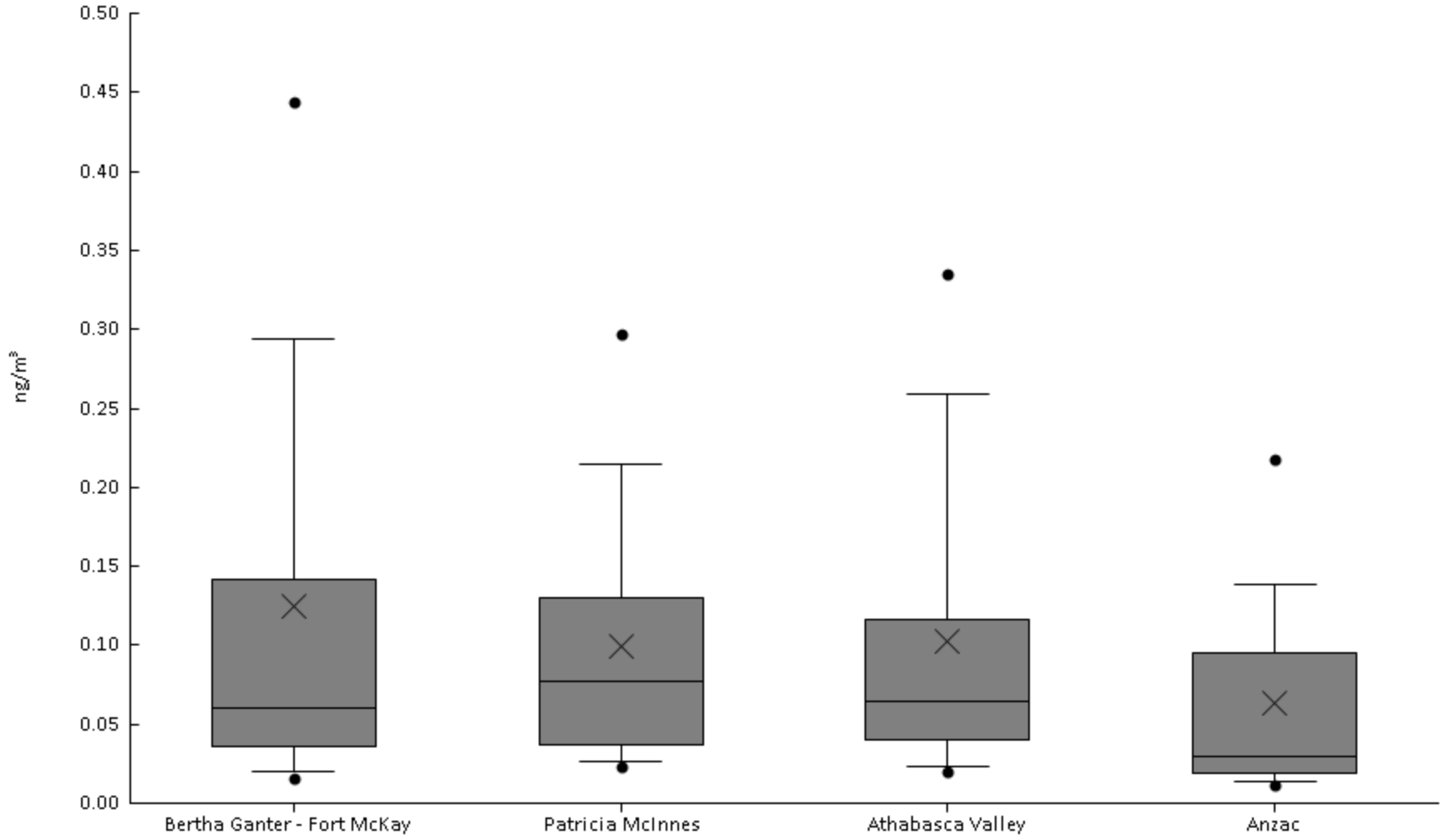
Polycyclic Aromatic Hydrocarbons - Benzo(a)pyrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	87%	4.2E-3	0.013	0.014	0.02	0.029	0.063	0.14	0.17	0.34	0.054	0.061
AMS 6	Patricia McInnes	61	92%	0.011	0.013	0.017	0.022	0.034	0.048	0.091	0.13	0.18	0.044	0.036
AMS 7	Athabasca Valley	59	93%	0.012	0.014	0.017	0.023	0.031	0.054	0.077	0.16	0.28	0.048	0.047
AMS 14	Anzac	61	79%	8.4E-3	0.012	0.013	0.017	0.023	0.045	0.063	0.074	0.12	0.032	0.022



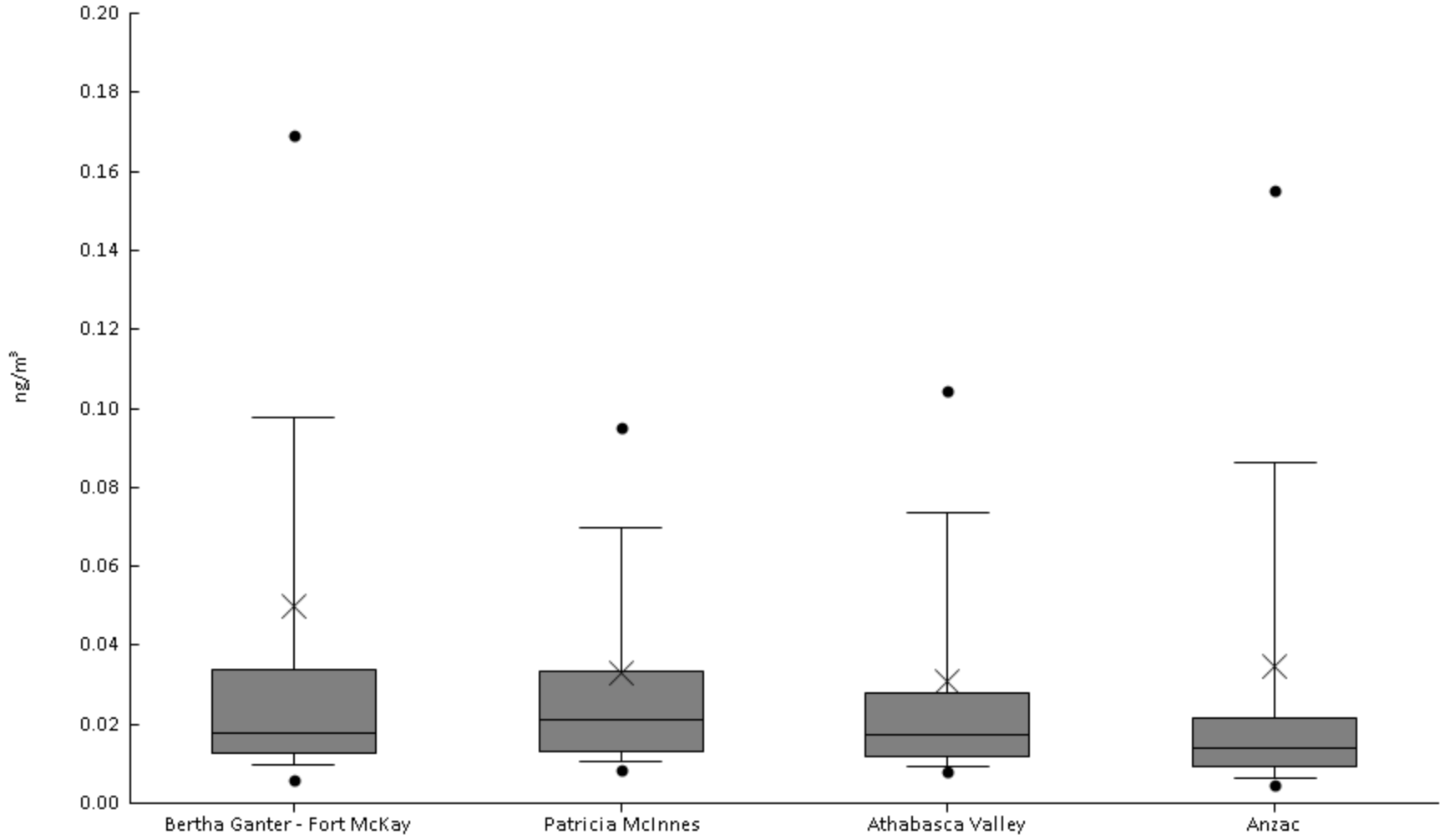
Polycyclic Aromatic Hydrocarbons - Benzo(b)fluoranthene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	93%	0.011	0.016	0.02	0.036	0.06	0.14	0.29	0.44	1.1	0.12	0.17
AMS 6	Patricia McInnes	61	98%	0.018	0.024	0.026	0.037	0.077	0.13	0.21	0.3	0.42	0.099	0.086
AMS 7	Athabasca Valley	59	95%	0.013	0.02	0.023	0.041	0.064	0.12	0.26	0.33	0.54	0.1	0.11
AMS 14	Anzac	61	74%	9.1E-3	0.011	0.014	0.019	0.029	0.095	0.14	0.22	0.29	0.063	0.065



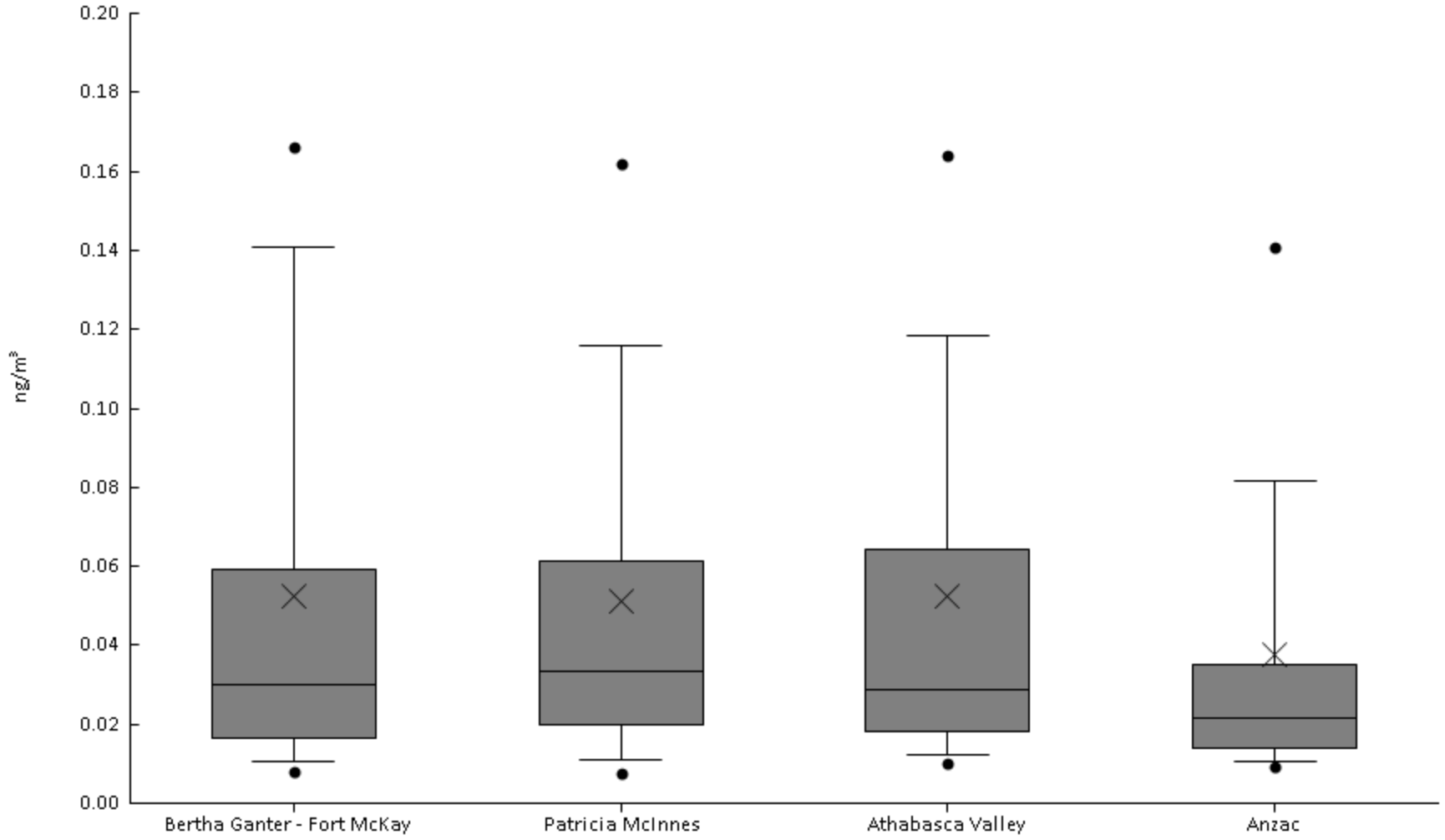
Polycyclic Aromatic Hydrocarbons - Benzo(c)phenanthrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	66%	2E-3	5.9E-3	9.8E-3	0.013	0.018	0.034	0.098	0.17	0.9	0.05	0.12
AMS 6	Patricia McInnes	61	72%	6.6E-3	8.5E-3	0.01	0.013	0.021	0.034	0.07	0.095	0.18	0.033	0.031
AMS 7	Athabasca Valley	59	66%	5.5E-3	7.9E-3	9.4E-3	0.012	0.017	0.028	0.074	0.1	0.25	0.031	0.039
AMS 14	Anzac	61	43%	1.5E-3	4.6E-3	6.4E-3	9.4E-3	0.014	0.022	0.086	0.15	0.33	0.035	0.063



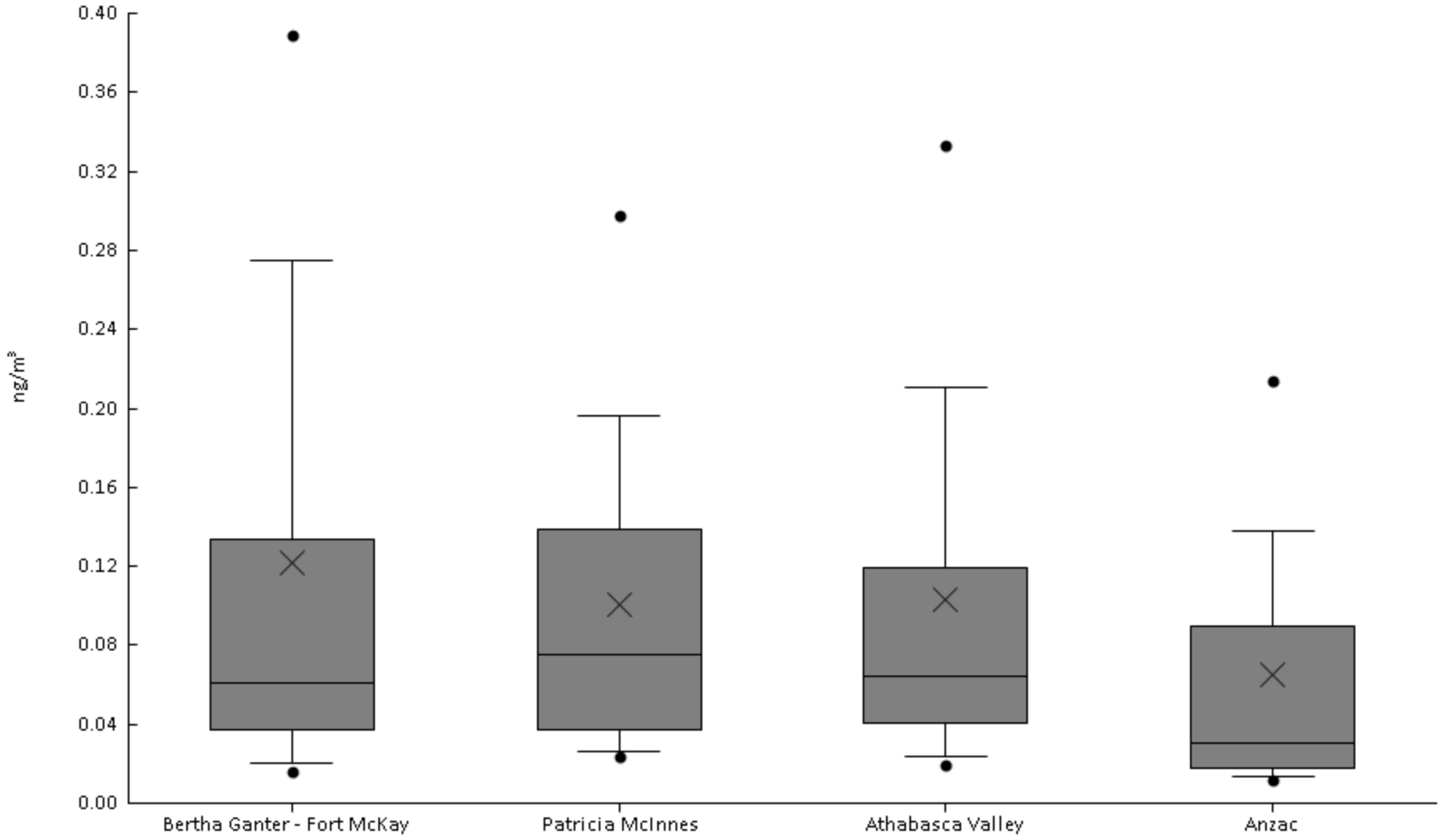
Polycyclic Aromatic Hydrocarbons - Benzo(ghi)perylene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	67%	6.8E-3	8.1E-3	0.011	0.016	0.03	0.059	0.14	0.17	0.32	0.053	0.059
AMS 6	Patricia McInnes	61	75%	6.3E-3	7.7E-3	0.011	0.02	0.033	0.061	0.12	0.16	0.29	0.051	0.054
AMS 7	Athabasca Valley	59	69%	8.3E-3	0.01	0.012	0.018	0.029	0.064	0.12	0.16	0.36	0.052	0.059
AMS 14	Anzac	61	56%	6.3E-3	9.2E-3	0.011	0.014	0.021	0.035	0.082	0.14	0.25	0.038	0.043



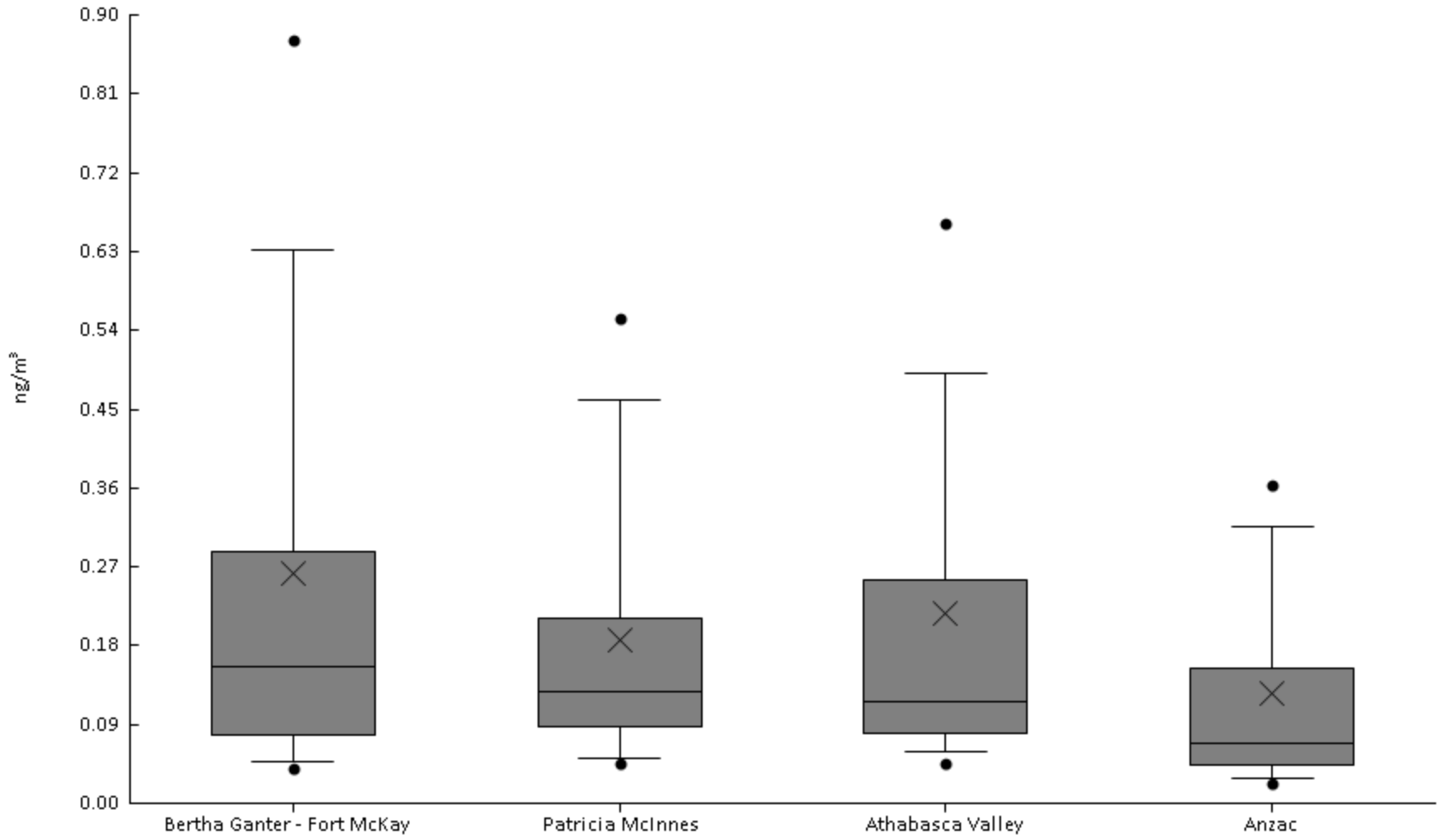
Polycyclic Aromatic Hydrocarbons - Benzo(k)fluoranthene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	97%	0.011	0.016	0.02	0.037	0.061	0.13	0.27	0.39	1.1	0.12	0.17
AMS 6	Patricia McInnes	61	100%	0.018	0.024	0.026	0.037	0.075	0.14	0.2	0.3	0.62	0.1	0.1
AMS 7	Athabasca Valley	59	98%	0.013	0.02	0.023	0.041	0.064	0.12	0.21	0.33	0.6	0.1	0.11
AMS 14	Anzac	61	93%	9.3E-3	0.012	0.014	0.018	0.03	0.09	0.14	0.21	0.42	0.065	0.075



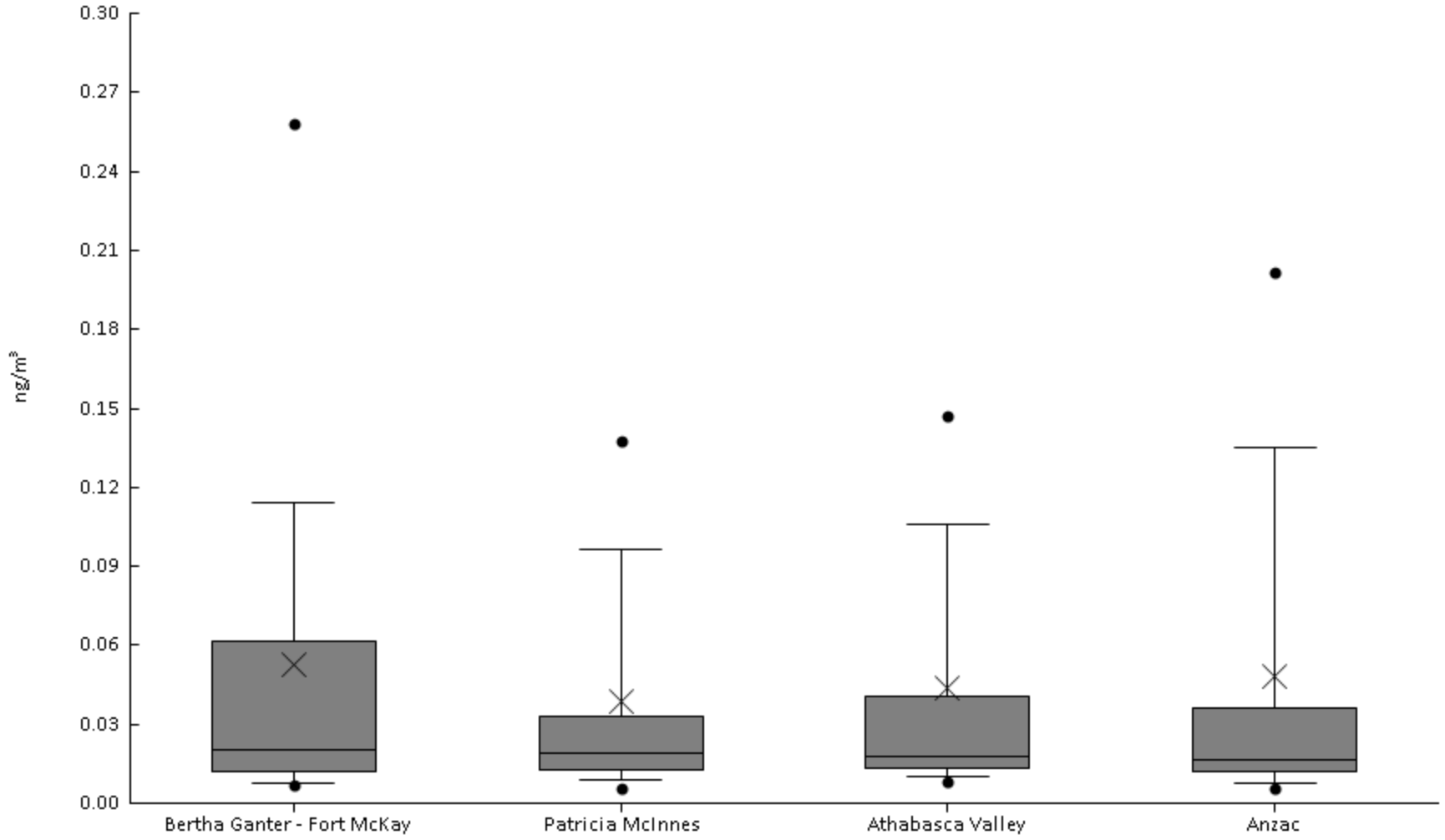
Polycyclic Aromatic Hydrocarbons - Chrysene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.015	0.04	0.047	0.078	0.16	0.29	0.63	0.87	2.2	0.26	0.34
AMS 6	Patricia McInnes	61	100%	0.038	0.046	0.051	0.088	0.13	0.21	0.46	0.55	0.64	0.19	0.15
AMS 7	Athabasca Valley	59	98%	0.013	0.045	0.059	0.08	0.12	0.26	0.49	0.66	1.9	0.22	0.29
AMS 14	Anzac	61	100%	0.02	0.023	0.029	0.043	0.068	0.15	0.32	0.36	0.68	0.12	0.13



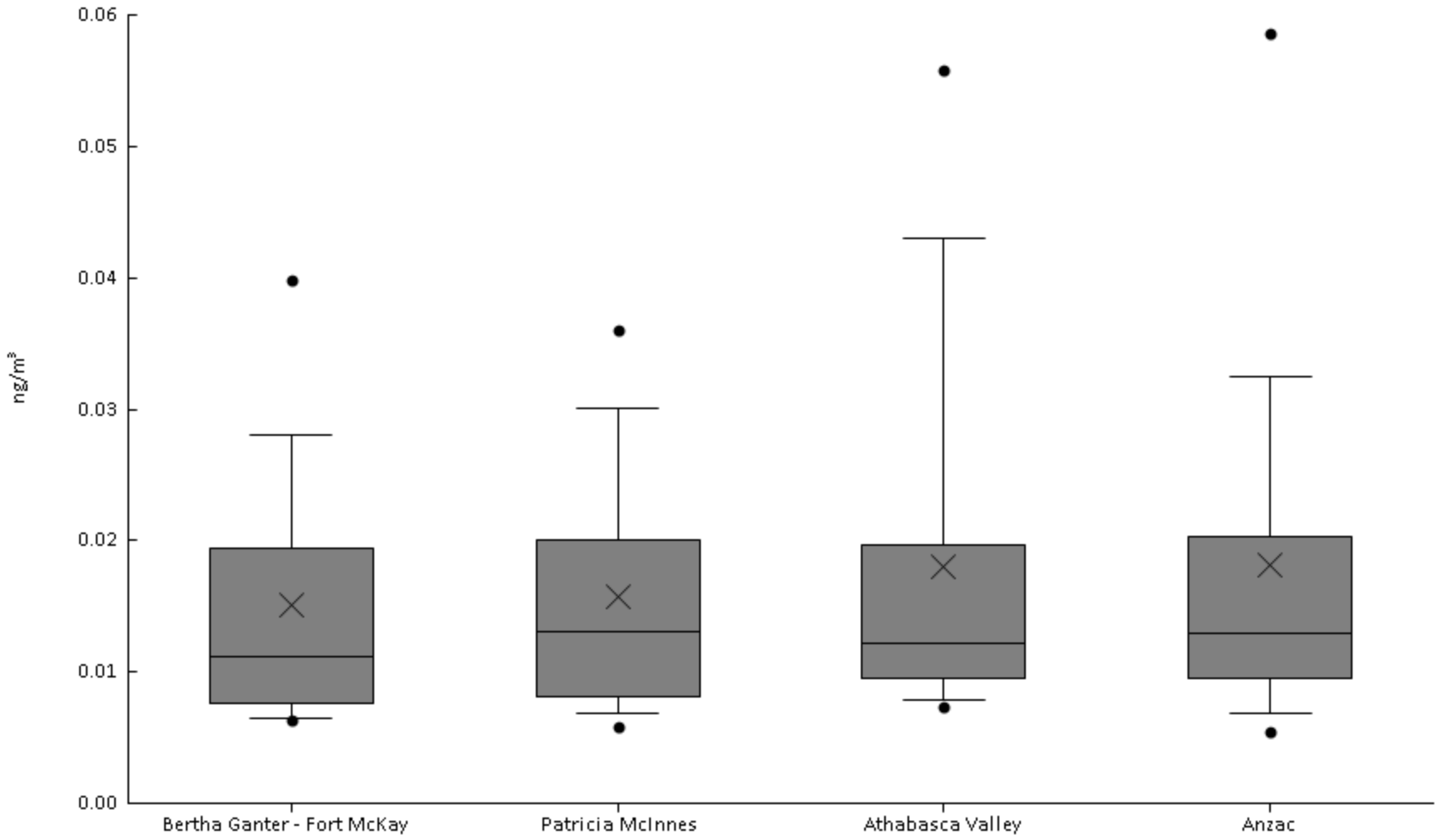
Polycyclic Aromatic Hydrocarbons - Dibenz(a,h)anthracene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	52%	5.3E-3	6.9E-3	7.9E-3	0.012	0.02	0.062	0.11	0.26	0.41	0.052	0.082
AMS 6	Patricia McInnes	61	46%	3.3E-3	5.9E-3	8.6E-3	0.012	0.019	0.033	0.096	0.14	0.28	0.039	0.054
AMS 7	Athabasca Valley	59	47%	6.1E-3	8.3E-3	9.9E-3	0.013	0.018	0.041	0.11	0.15	0.56	0.044	0.078
AMS 14	Anzac	61	39%	3.6E-3	6E-3	7.6E-3	0.012	0.017	0.036	0.13	0.2	0.58	0.048	0.087



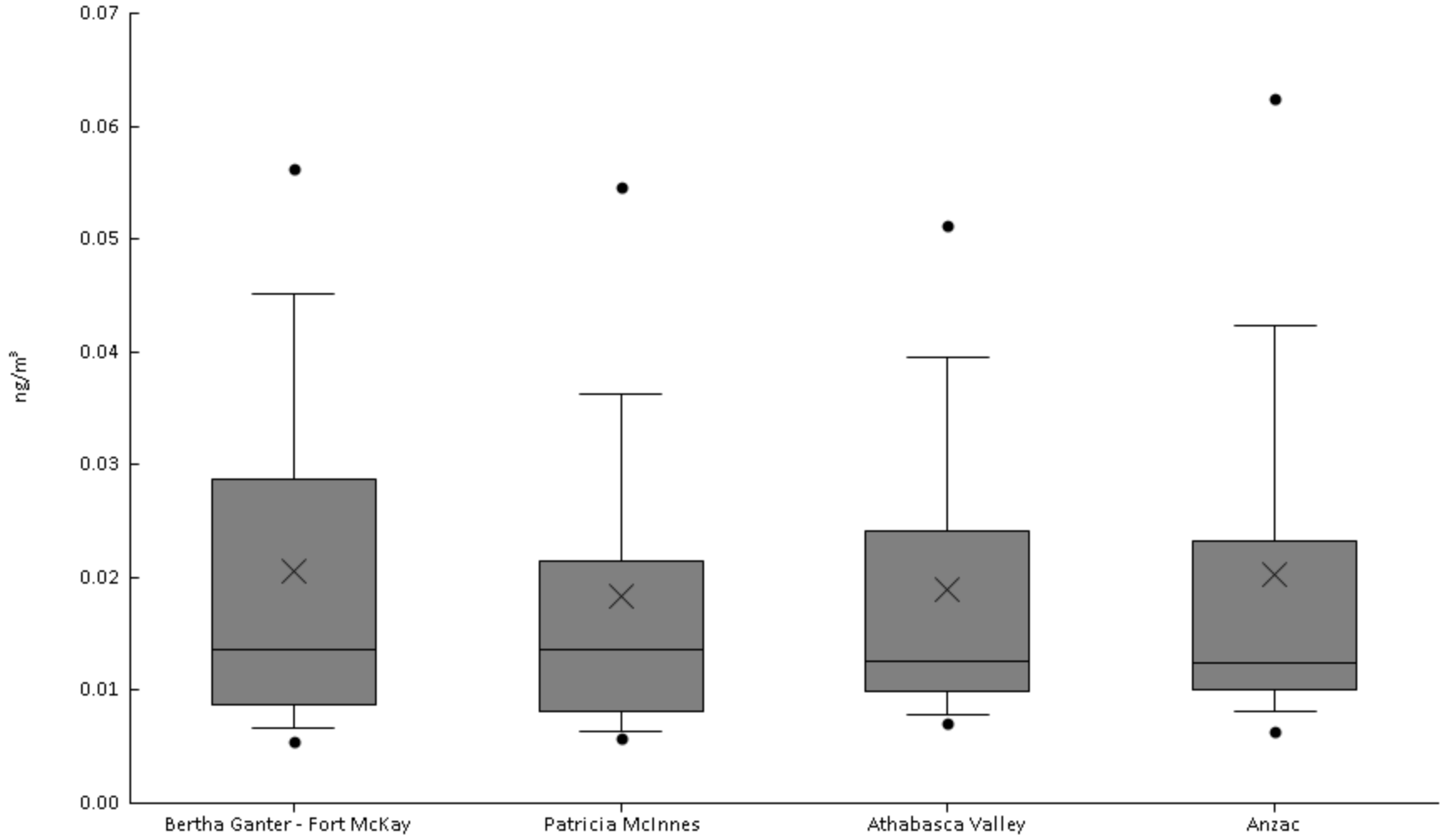
Polycyclic Aromatic Hydrocarbons - Dibenzo(a,h)pyrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	21%	5.2E-3	6.3E-3	6.5E-3	7.6E-3	0.011	0.019	0.028	0.04	0.052	0.015	1E-2
AMS 6	Patricia McInnes	61	25%	4.6E-3	5.9E-3	6.8E-3	8.2E-3	0.013	0.02	0.03	0.036	0.064	0.016	0.011
AMS 7	Athabasca Valley	59	24%	5.6E-3	7.4E-3	7.9E-3	9.5E-3	0.012	0.02	0.043	0.056	0.071	0.018	0.015
AMS 14	Anzac	61	26%	4.3E-3	5.5E-3	6.8E-3	9.5E-3	0.013	0.02	0.032	0.059	0.08	0.018	0.015



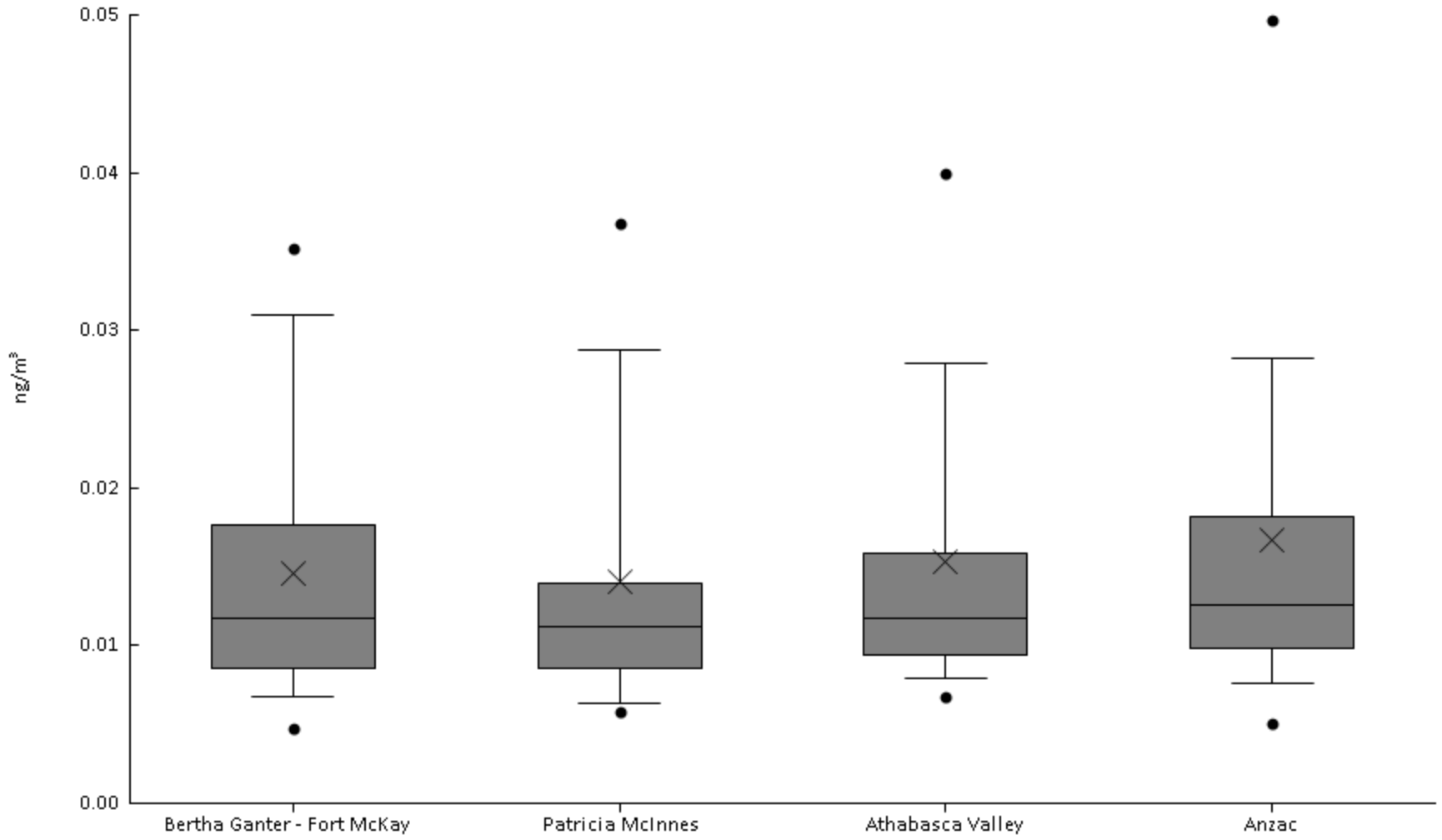
Polycyclic Aromatic Hydrocarbons - Dibenzo(a,i)pyrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	31%	4.4E-3	5.4E-3	6.6E-3	8.8E-3	0.014	0.029	0.045	0.056	0.088	0.021	0.018
AMS 6	Patricia McInnes	61	23%	3.8E-3	5.8E-3	6.3E-3	8.1E-3	0.014	0.021	0.036	0.055	0.082	0.018	0.016
AMS 7	Athabasca Valley	59	25%	5.2E-3	7E-3	7.9E-3	9.9E-3	0.013	0.024	0.04	0.051	0.071	0.019	0.015
AMS 14	Anzac	61	23%	5.1E-3	6.3E-3	8.2E-3	0.01	0.013	0.023	0.042	0.062	0.088	0.02	0.018



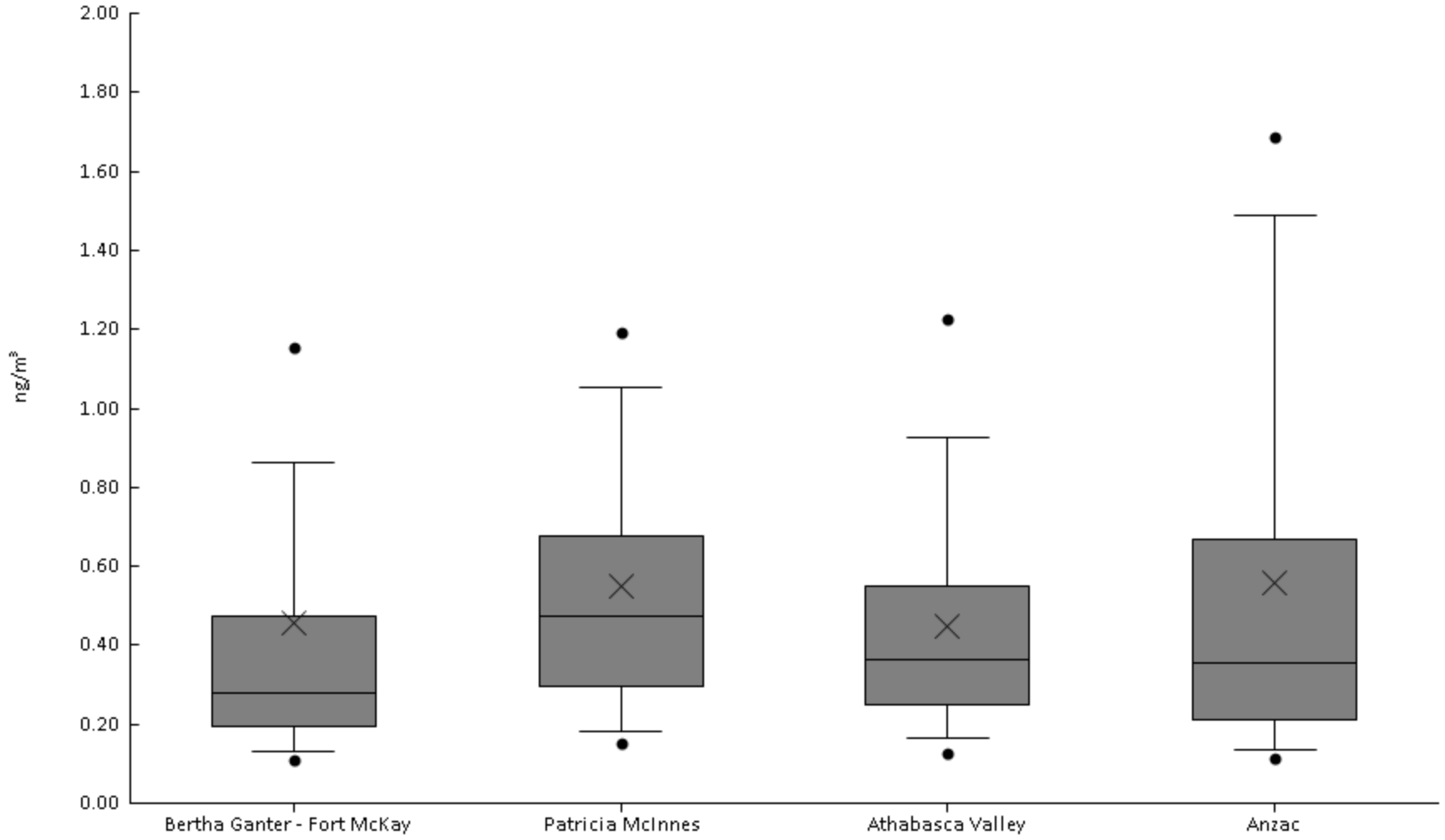
Polycyclic Aromatic Hydrocarbons - Dibenzo(a,l)pyrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	15%	4E-3	4.8E-3	6.7E-3	8.5E-3	0.012	0.018	0.031	0.035	0.048	0.015	9.6E-3
AMS 6	Patricia McInnes	61	13%	3.6E-3	5.9E-3	6.4E-3	8.6E-3	0.011	0.014	0.029	0.037	0.059	0.014	0.01
AMS 7	Athabasca Valley	59	14%	4.1E-3	6.8E-3	7.9E-3	9.4E-3	0.012	0.016	0.028	0.04	0.056	0.015	0.01
AMS 14	Anzac	61	11%	3.5E-3	5.1E-3	7.6E-3	9.8E-3	0.013	0.018	0.028	0.05	0.079	0.017	0.014



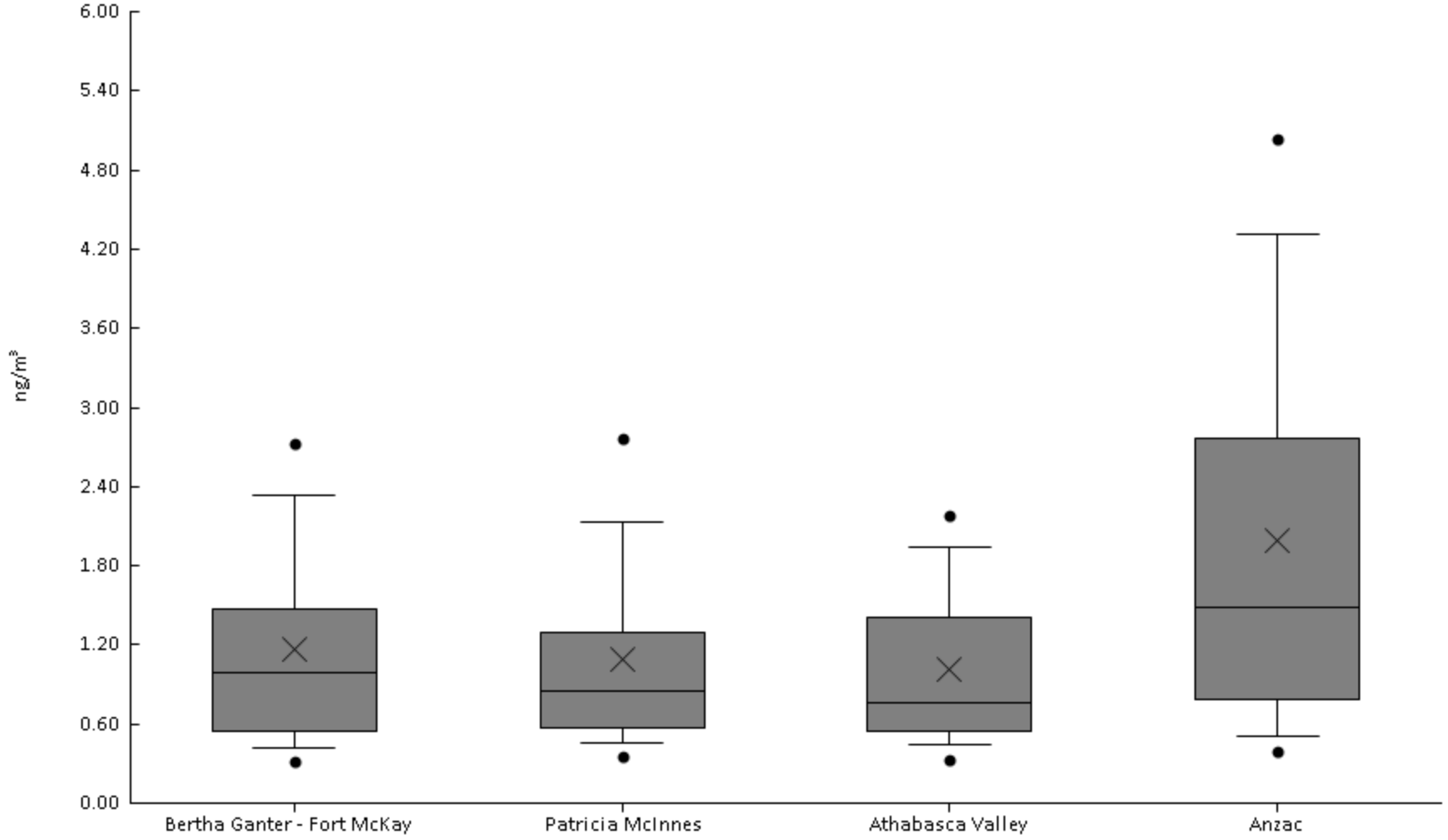
Polycyclic Aromatic Hydrocarbons - Fluoranthene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.074	0.11	0.13	0.2	0.28	0.47	0.86	1.2	4.3	0.46	0.6
AMS 6	Patricia McInnes	61	100%	0.075	0.15	0.18	0.3	0.47	0.68	1.1	1.2	2.1	0.55	0.37
AMS 7	Athabasca Valley	59	100%	0.1	0.13	0.16	0.25	0.36	0.55	0.93	1.2	1.5	0.45	0.31
AMS 14	Anzac	61	100%	0.07	0.11	0.14	0.21	0.36	0.67	1.5	1.7	2	0.56	0.5



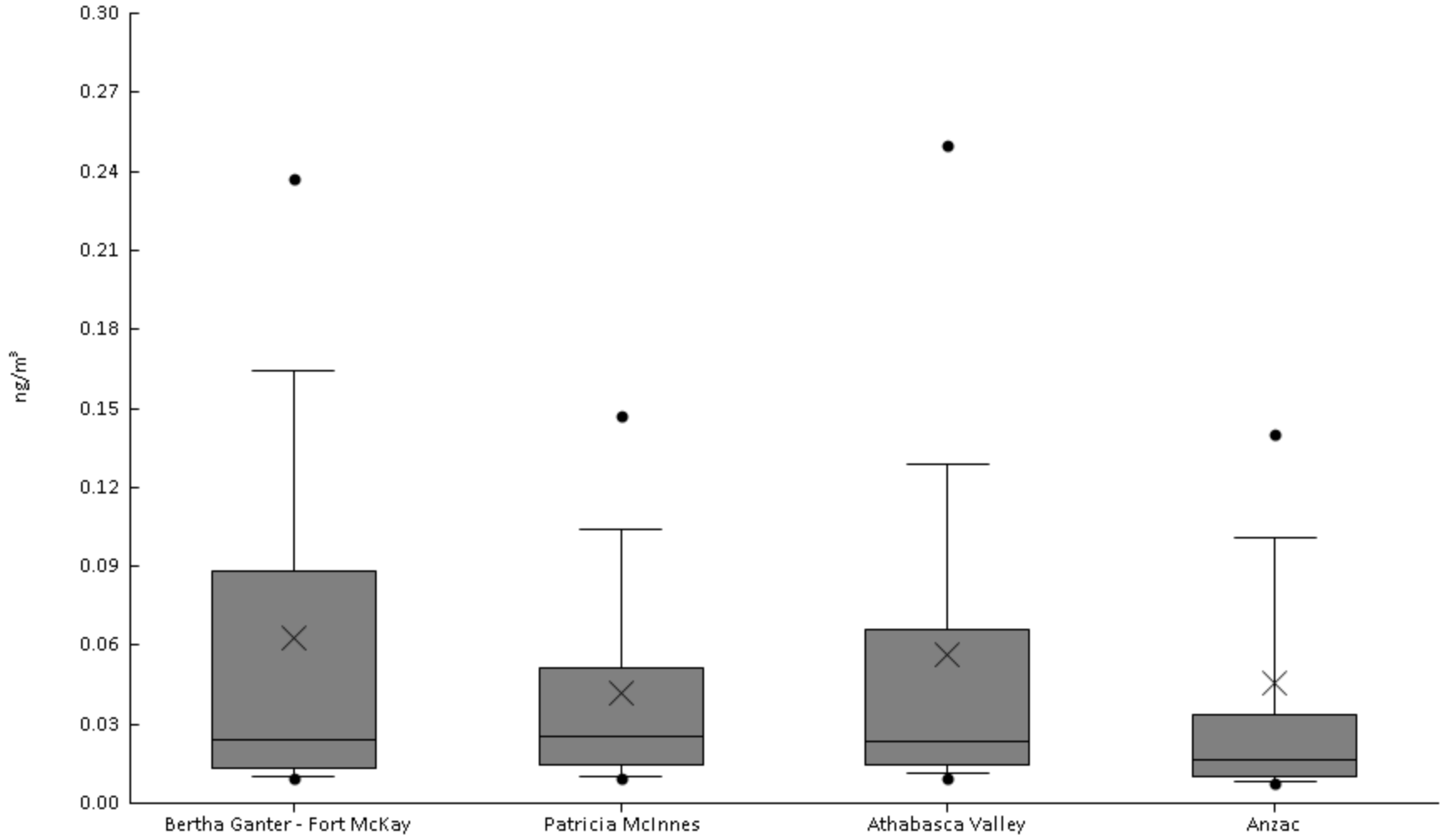
Polycyclic Aromatic Hydrocarbons - Fluorene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.26	0.32	0.42	0.55	0.99	1.5	2.3	2.7	4.1	1.2	0.78
AMS 6	Patricia McInnes	61	100%	0.11	0.36	0.45	0.57	0.84	1.3	2.1	2.8	4.5	1.1	0.8
AMS 7	Athabasca Valley	59	100%	0.19	0.33	0.44	0.55	0.76	1.4	1.9	2.2	3.1	1	0.63
AMS 14	Anzac	61	100%	0.31	0.4	0.51	0.78	1.5	2.8	4.3	5	9.6	2	1.7



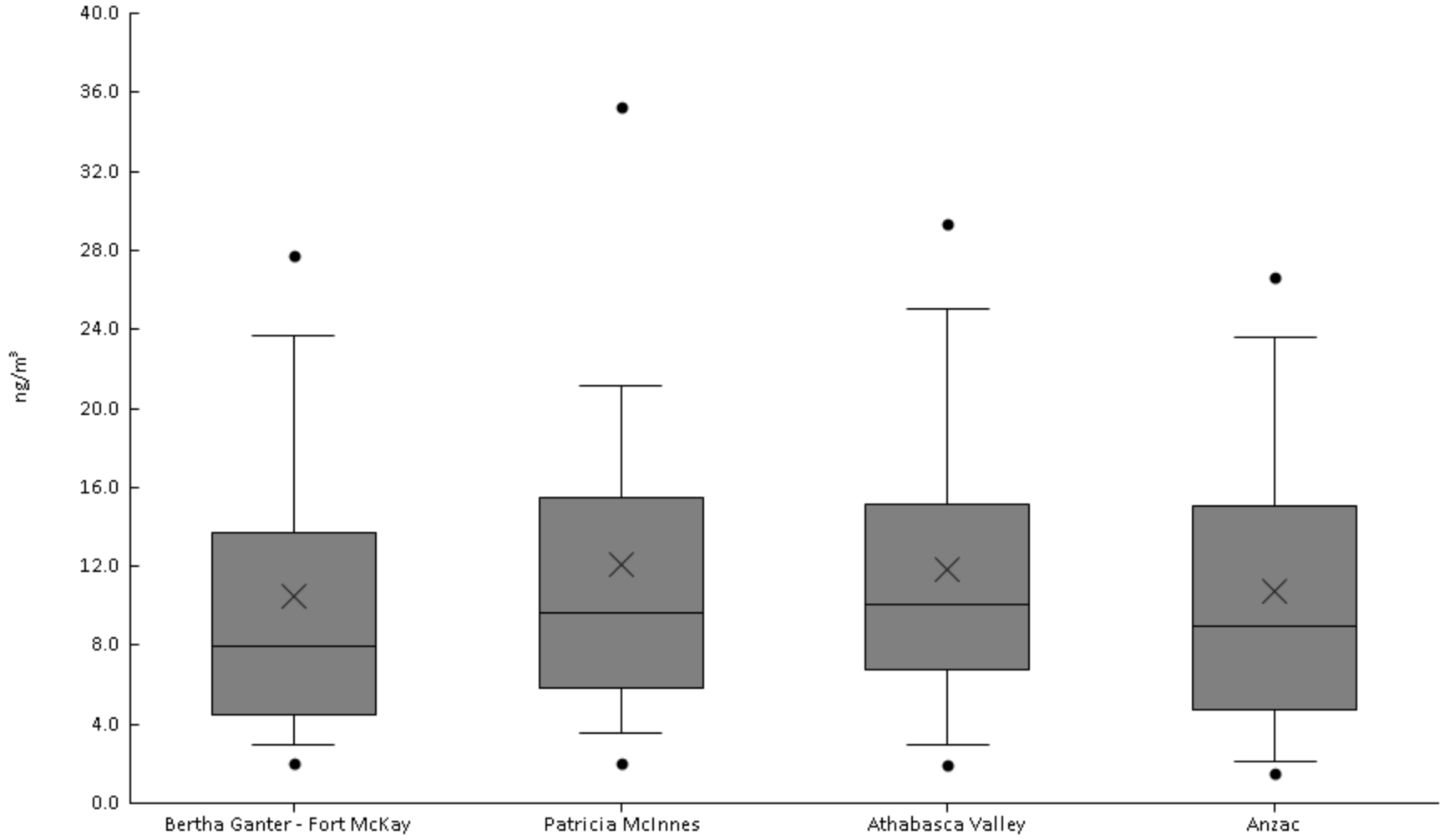
Polycyclic Aromatic Hydrocarbons - Indeno(123-cd)pyrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	67%	7.2E-3	9.4E-3	0.01	0.013	0.024	0.088	0.16	0.24	0.44	0.063	0.087
AMS 6	Patricia McInnes	61	66%	7.3E-3	9.4E-3	0.01	0.015	0.025	0.052	0.1	0.15	0.21	0.042	0.042
AMS 7	Athabasca Valley	59	66%	7.8E-3	9.8E-3	0.011	0.014	0.023	0.066	0.13	0.25	0.42	0.056	0.08
AMS 14	Anzac	61	51%	4.7E-3	7.6E-3	8.5E-3	0.01	0.017	0.034	0.1	0.14	0.6	0.046	0.09



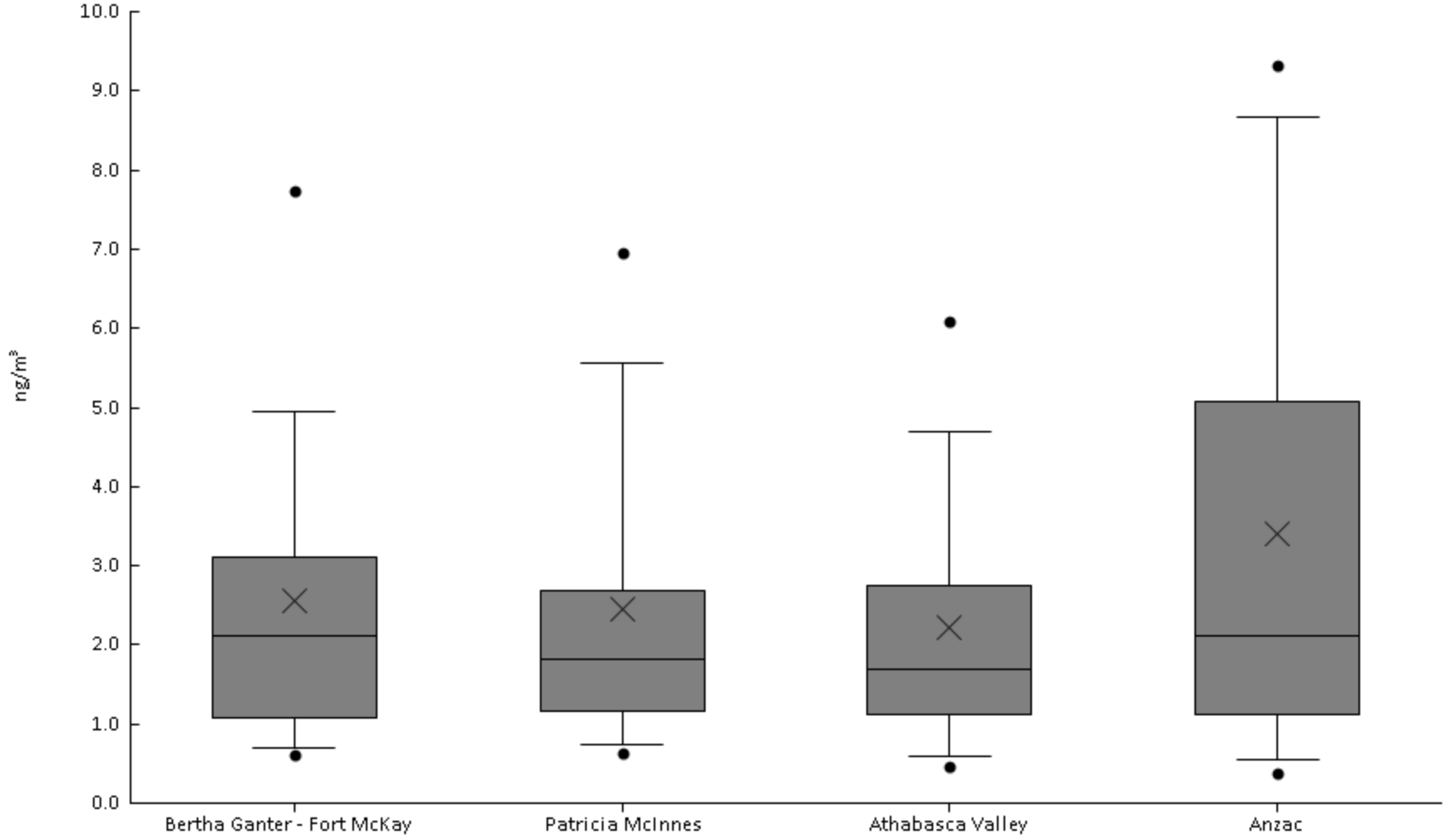
Polycyclic Aromatic Hydrocarbons - Naphthalene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	1.1	2	2.9	4.5	8	14	24	28	29	11	7.9
AMS 6	Patricia McInnes	61	100%	0.25	2	3.5	5.8	9.6	15	21	35	44	12	9.3
AMS 7	Athabasca Valley	59	100%	1	1.9	3	6.8	10	15	25	29	39	12	8.2
AMS 14	Anzac	61	100%	1	1.5	2.1	4.8	9	15	24	27	29	11	7.8



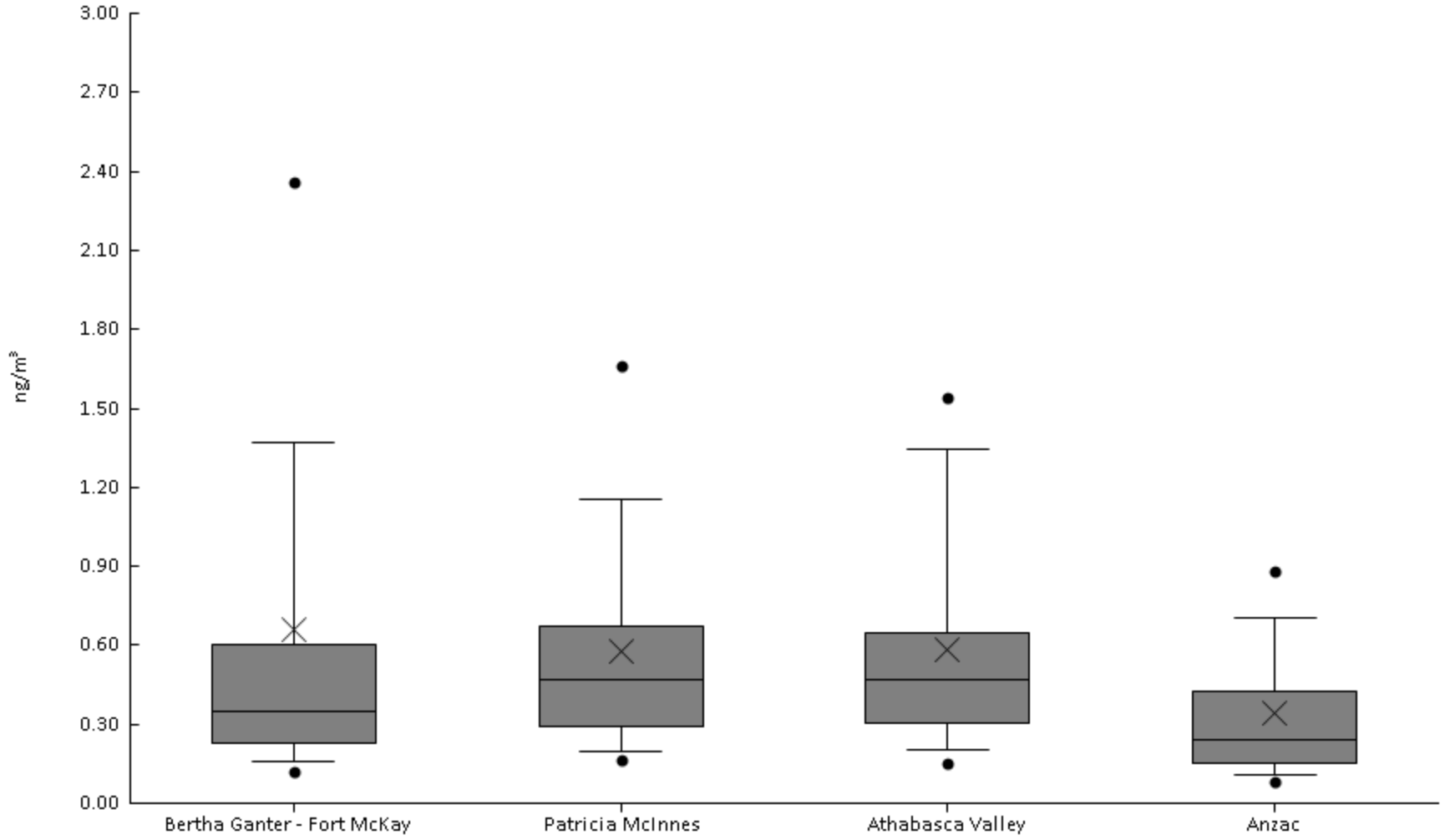
Polycyclic Aromatic Hydrocarbons - Phenanthrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.34	0.61	0.69	1.1	2.1	3.1	4.9	7.7	8.4	2.6	2
AMS 6	Patricia McInnes	61	100%	0.092	0.64	0.74	1.2	1.8	2.7	5.6	7	11	2.5	2.1
AMS 7	Athabasca Valley	59	100%	0.41	0.47	0.6	1.1	1.7	2.7	4.7	6.1	9.1	2.2	1.8
AMS 14	Anzac	61	100%	0.16	0.39	0.54	1.1	2.1	5.1	8.7	9.3	14	3.4	3.2



Polycyclic Aromatic Hydrocarbons - Pyrene (ng/m³) - 2017

Station #	Station	#	% ≥ MDL	Min	5%	10%	25%	Med	75%	90%	95%	Max	Ave	Std Dev
AMS 1	Bertha Ganter - Fort McKay	61	100%	0.083	0.12	0.16	0.23	0.35	0.6	1.4	2.4	6	0.66	0.96
AMS 6	Patricia McInnes	61	100%	0.054	0.17	0.2	0.29	0.47	0.67	1.2	1.7	2.1	0.58	0.43
AMS 7	Athabasca Valley	59	100%	0.13	0.15	0.2	0.3	0.47	0.65	1.3	1.5	2	0.58	0.43
AMS 14	Anzac	61	100%	0.058	0.085	0.11	0.15	0.24	0.42	0.7	0.88	1.7	0.34	0.31



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
ANNUAL REPORT

PRECIPITATION
DATA SUMMARY
2017

Prepared
March 28, 2018

SAMPLE COLLECTION AND DATA COMPILATION BY:

Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS BY:

Precipitation:
InnoTech Alberta, Inc.
Vegreville, Alberta

Central Analytical Laboratory
Champaign, IL

FILE CONTENTS DESCRIPTION	Precipitation Measurement of ions, pH and conductivity
SAMPLING INTERVAL	A week
SAMPLING FREQUENCY OF DATA	A week
EXPLANATION OF ZERO VALUES	Zero values are contained in this file and should be treated as values below detection - Method Detection values (MDL.) are provided with each observation
UNITS	mg/L (milligram per liter)
OBSERVATION TYPE	Wet Precipitation
FIELD SAMPLING OR MEASUREMENT PRINCIPLE	moveable cover with precipitation sensors
MEDIUM	Polyethylene Collection bucket
ANALYTICALMETHODS	pH by pH meter
	Conductivity by Conductivity meter
InnoTech Alberta Inc	Ions by Ion Chromatography (IC)
Central Analytical Lab	Anions by Ion Chromatography (IC)
	Cations by Inductively Coupled Plasma (ICP)
	Ammonium and phosphate by Flow Injection Analysis (FIA)
ANALYTICAL LABORATORY	InnoTech Alberta Inc
	Central Analytical Lab
USER NOTE 1	Data are not blank corrected
SAMPLING INSTRUMENT TYPE	Total Precipitation Collector (TPC-3000)
	N-CON Precipitation Collector

FLAGS USED

V0	Valid value
V1	Valid value but comprised wholly or partially of below detection limit data
V4	Valid value despite failing to meet some QC or statistical criteria
V5	Valid value but qualified because of possible contamination
V6	Valid value but qualified due to non-standard sampling conditions
V8	Dry Week
V9	Insufficient sample collected for analyzes
V10	Insufficient data to conduct all quality control checks
M1	Missing value because no value is available
M2	Missing value because invalidated by Data Originator

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **January 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	3-Jan-17			9-Jan-17			17-Jan-17			24-Jan-17		
	End Date	9-Jan-17			17-Jan-17			24-Jan-17			30-Jan-17		
	Dry Week												
	Precip	X			X			X			X		
	Volume(mL)	50.7			40			33			0.2		
	Total Precip(mm)	0.36			0.46			0.49			0		
	Collect Eff (%)	>100%			>100%			>100%					
		Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag
Ammonium	mg/L	0.160	0.018	V0	0.005	0.018	V1	0.274	0.018	V0	-9999	0.018	V9
Bicarbonate (calc)	µeq/L	16.5											
Calcium	mg/L	0.888	0.006	V0	2.874	0.006	V0	2.487	0.006	V0	-9999	0.006	V9
Chloride	mg/L	0.585	0.003	V0	0.480	0.003	V0	0.727	0.003	V0	-9999	0.003	V9
Conductivity (25°C)	µS/cm	10.6	1	V0	-9999	1	V9	-9999	1	V9	-9999	1	V9
Conductivity (calc)	µS/cm	8.7											
Conductivity Difference	%	-18.1		V0	-9999		V10	-9999		V10	-9999		V10
Magnesium	mg/L	0.151	0.002	V0	0.407	0.002	V0	0.453	0.002	V0	-9999	0.002	V9
Nitrate	mg/L	0.994	0.005	V0	1.348	0.005	V0	2.357	0.005	V0	-9999	0.005	V9
pH		6.51		V0	-9999		V9	-9999		V9	-9999		V9
Phosphate	mg/L	0.018	0.006	V0	0.018	0.006	V0	0.068	0.006	V0	-9999	0.006	V9
Potassium	mg/L	0.038	0.002	V0	0.179	0.002	V0	0.339	0.002	V0	-9999	0.002	V9
Sodium	mg/L	0.282	0.002	V0	0.309	0.002	V0	0.582	0.002	V0	-9999	0.002	V9
Sulfate	mg/L	0.471	0.005	V0	1.387	0.005	V0	1.547	0.005	V0	-9999	0.005	V9
Sum Anions	µeq/L	59											
Sum Cations	µeq/L	79											
Total Ions	µeq/L	138											
Ion Balance	%	14.6		V0	-9999		V10	-9999		V10	-9999		V10
Ion Difference	µeq/L	20			-9999		V10	-9999		V10	-9999		V10

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **February 2017**

Fort McKay-Bertha Ganter AMS 1	**Start Date**	**30-Jan-17**			**6-Feb-17**			**14-Feb-17**			**22-Feb-17**		
	End Date	**6-Feb-17**			**14-Feb-17**			**22-Feb-17**			**28-Feb-17**		
	Dry Week												
	Precip	**X**			**X**			**X**			**X**		
	Volume(mL)	**102.3**			**0.7**			**446.5**			**60.6**		
	Total Precip(mm)	**0.83**			**0.05**			**0**			**0**		
	Collect Eff (%)	**>100%**			**22%**								
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.085	0.018	V0	-9999	0.018	V9	0.157	0.018	V0	0.160	0.018	V0
Bicarbonate (calc)	µeq/L	30.0						6.6			73.7		
Calcium	mg/L	1.766	0.006	V0	-9999	0.006	V9	0.477	0.006	V0	4.989	0.006	V0
Chloride	mg/L	0.228	0.003	V0	-9999	0.003	V9	0.059	0.003	V0	0.605	0.003	V0
Conductivity (25°C)	µS/cm	13.9	1	V0	-9999	1	V9	5.4	1	V0	35.7	1	V0
Conductivity (calc)	µS/cm	11.6						4.6			30.5		
Conductivity Difference	%	-16.3		V0	-9999		V10	-16.2		V0	-14.7		V0
Magnesium	mg/L	0.216	0.002	V0	-9999	0.002	V9	0.053	0.002	V0	0.471	0.002	V0
Nitrate	mg/L	1.677	0.005	V0	-9999	0.005	V9	0.768	0.005	V0	3.596	0.005	V0
pH		6.77		V0	-9999		V9	6.11		V0	7.16		V0
Phosphate	mg/L	0.008	0.006	V0	-9999	0.006	V9	0.005	0.006	V1	0.000	0.006	V1
Potassium	mg/L	0.058	0.002	V0	-9999	0.002	V9	0.009	0.002	V0	0.131	0.002	V0
Sodium	mg/L	0.147	0.002	V0	-9999	0.002	V9	0.035	0.002	V0	0.549	0.002	V0
Sulfate	mg/L	0.518	0.005	V0	-9999	0.005	V9	0.362	0.005	V0	1.650	0.005	V0
Sum Anions	µeq/L	74						28			183		
Sum Cations	µeq/L	119						39			324		
Total Ions	µeq/L	193						68			507		
Ion Balance	%	22.9		V4	-9999		V10	16.5			27.8		V4
Ion Difference	µeq/L	44			-9999		V10	11		V0	141		

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **March 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	28-Feb-17			6-Mar-17			13-Mar-17			21-Mar-17			28-Mar-17		
	End Date	6-Mar-17			13-Mar-17			21-Mar-17			28-Mar-17			3-Apr-17		
	Dry Week													X		
	Precip	X			X			X			X					
	Volume(mL)	32.9			17.6			87.9			178.2			0.2		
	Total Precip(mm)	0			0.51			1.98			2.94			0		
	Collect Eff (%)				54%			69%			95%			V8		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.731	0.018	V0	0.093	0.018	V0	0.123	0.018	V0	1.289	0.018	V0	-9999	0.018	V8
Bicarbonate (calc)	µeq/L	244.1						119.6			95.0					
Calcium	mg/L	10.261	0.006	V0	18.297	0.006	V0	7.316	0.006	V0	6.432	0.006	V0	-9999	0.006	V8
Chloride	mg/L	0.798	0.003	V0	2.065	0.003	V0	0.732	0.003	V0	0.654	0.003	V0	-9999	0.003	V8
Conductivity (25°C)	µS/cm	67.6	1	V0	-9999	1	V9	46.4	1	V0	52.0	1	V0	-9999	1	V8
Conductivity (calc)	µS/cm	61.6						38.8			49.7					
Conductivity Difference	%	-8.8		V0	-9999		V10	-16.4		V0	-4.3		V0	-9999		V10
Magnesium	mg/L	0.802	0.002	V0	1.258	0.002	V0	0.433	0.002	V0	0.400	0.002	V0	-9999	0.002	V8
Nitrate	mg/L	3.465	0.005	V0	1.965	0.005	V0	1.797	0.005	V0	4.940	0.005	V0	-9999	0.005	V8
pH		7.68		V0	-9999		V9	7.37		V0	7.27		V0	-9999		V8
Phosphate	mg/L	0.201	0.006	V0	0.052	0.006	V0	0.000	0.006	V1	0.004	0.006	V1	-9999	0.006	V8
Potassium	mg/L	0.611	0.002	V0	0.526	0.002	V0	0.110	0.002	V0	0.131	0.002	V0	-9999	0.002	V8
Sodium	mg/L	0.856	0.002	V0	1.882	0.002	V0	0.591	0.002	V0	0.445	0.002	V0	-9999	0.002	V8
Sulfate	mg/L	2.969	0.005	V0	4.794	0.005	V0	2.521	0.005	V0	6.650	0.005	V0	-9999	0.005	V8
Sum Anions	µeq/L	386						222			332					
Sum Cations	µeq/L	671						436			448					
Total Ions	µeq/L	1058						658			780					
Ion Balance	%	26.9		V4	-9999		V10	32.6		V4	14.9		V0	-9999		V10
Ion Difference	µeq/L	285			-9999		V10	214			116			-9999		V10

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **April 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	3-Apr-17			11-Apr-17			18-Apr-17			24-Apr-17		
	End Date	11-Apr-17			18-Apr-17			24-Apr-17			2-May-17		
	Dry Week	X									X		
	Precip				X			X					
	Volume(mL)	0.2			156.2			44.7			0.9		
	Total Precip(mm)	0			4.91			2.33			0		
	Collect Eff (%)	V8			50%			30%			V8		
		Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag
Ammonium	mg/L	-9999	0.018	V8	0.452	0.018	V0	0.047	0.018	V0	-9999	0.018	V8
Bicarbonate (calc)	µeq/L				0.9			329.3					
Calcium	mg/L	-9999	0.006	V8	0.358	0.006	V0	14.993	0.006	V0	-9999	0.006	V8
Chloride	mg/L	-9999	0.003	V8	1.063	0.003	V0	0.797	0.003	V0	-9999	0.003	V8
Conductivity (25°C)	µS/cm	-9999	1	V8	18.5	1	V0	88.3	1	V0	-9999	1	V8
Conductivity (calc)	µS/cm				12.9			77.9					
Conductivity Difference	%	-9999		V10	-30.2		V4	-11.8		V0	-9999		V10
Magnesium	mg/L	-9999	0.002	V8	0.101	0.002	V0	0.670	0.002	V0	-9999	0.002	V8
Nitrate	mg/L	-9999	0.005	V8	2.267	0.005	V0	2.974	0.005	V0	-9999	0.005	V8
pH		-9999		V8	5.23		V0	7.81		V0	-9999		V8
Phosphate	mg/L	-9999	0.006	V8	0.002	0.006	V1	0.006	0.006	V1	-9999	0.006	V8
Potassium	mg/L	-9999	0.002	V8	0.061	0.002	V0	0.348	0.002	V0	-9999	0.002	V8
Sodium	mg/L	-9999	0.002	V8	0.626	0.002	V0	1.019	0.002	V0	-9999	0.002	V8
Sulfate	mg/L	-9999	0.005	V8	0.673	0.005	V0	4.573	0.005	V0	-9999	0.005	V8
Sum Anions	µeq/L				81			495					
Sum Cations	µeq/L				86			859					
Total Ions	µeq/L				167			1354					
Ion Balance	%	-9999		V10	2.7		V0	26.9		V4	-9999		V10
Ion Difference	µeq/L	-9999		V10	4			364			-9999		V10

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **May 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	2-May-17			10-May-17			17-May-17			24-May-17		
	End Date	10-May-17			17-May-17			24-May-17			5-Jun-17		
	Dry Week	X						X					
	Precip				X						X		
	Volume(mL)	0.4			2768.8			0			0		
	Total Precip(mm)	2.69			42.42			3.9			32.6		
	Collect Eff (%)	0%			>100%			0%			0%		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	-9999	0.018	V8	0.158	0.018	V0	-9999	0.018	M1	0.158	0.018	M1
Bicarbonate (calc)	µeq/L				18.1						18.1		
Calcium	mg/L	-9999	0.006	V8	0.943	0.006	V0	-9999	0.006	M1	-9999	0.006	M1
Chloride	mg/L	-9999	0.003	V8	0.129	0.003	V0	-9999	0.003	M1	-9999	0.003	M1
Conductivity (25°C)	µS/cm	-9999	1	V8	7.3	1	V0	-9999	1	M1	-9999	1	M1
Conductivity (calc)	µS/cm				6.0								
Conductivity Difference	%	-9999		V10	-17.9		V0	-9999		M1	-9999		M1
Magnesium	mg/L	-9999	0.002	V8	0.050	0.002	V0	-9999	0.002	M1	-9999	0.002	M1
Nitrate	mg/L	-9999	0.005	V8	0.242	0.005	V0	-9999	0.005	M1	-9999	0.005	M1
pH		-9999		V8	6.55		V0	-9999		M1	-9999		M1
Phosphate	mg/L	-9999	0.006	V8	0.003	0.006	V1	-9999	0.006	M1	-9999	0.006	M1
Potassium	mg/L	-9999	0.002	V8	0.028	0.002	V0	-9999	0.002	M1	-9999	0.002	M1
Sodium	mg/L	-9999	0.002	V8	0.088	0.002	V0	-9999	0.002	M1	-9999	0.002	M1
Sulfate	mg/L	-9999	0.005	V8	0.352	0.005	V0	-9999	0.005	M1	-9999	0.005	M1
Sum Anions	µeq/L				33								
Sum Cations	µeq/L				65								
Total Ions	µeq/L				98								
Ion Balance	%	-9999		V10	32.4			-9999		M1	-9999		M1
Ion Difference	µeq/L	-9999		V10	32		V4	-9999		M1	-9999		M1

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **June 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	5-Jun-17			13-Jun-17			20-Jun-17			26-Jun-17		
	End Date	13-Jun-17			20-Jun-17			26-Jun-17			4-Jul-17		
	Dry Week												
	Precip	X			X			X			X		
	Volume(mL)	430.8			498.1			766.3			233		
	Total Precip(mm)	7.54			12.81			15.24			11.24		
	Collect Eff (%)	89%			61%			78%			32%		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.015	0.018	V1	0.291	0.018	V0	0.061	0.018	V0	0.370	0.018	V0
Bicarbonate (calc)	µeq/L	39.6			7.9			6.9			38.7		
Calcium	mg/L	4.285	0.006	V0	2.425	0.006	V0	0.816	0.006	V0	5.508	0.006	V0
Chloride	mg/L	0.135	0.003	V0	0.144	0.003	V0	0.048	0.003	V0	0.371	0.003	V0
Conductivity (25°C)	µS/cm	26.2	1	V0	21.6	1	V0	6.6	1	V0	41.5	1	V0
Conductivity (calc)	µS/cm	20.0			19.8			5.8			38.8		
Conductivity Difference	%	-23.4		V0	-8.2		V0	-11.2		V0	-6.4		V0
Magnesium	mg/L	0.281	0.002	V0	0.291	0.002	V0	0.054	0.002	V0	0.591	0.002	V0
Nitrate	mg/L	0.453	0.005	V0	1.623	0.005	V0	0.379	0.005	V0	3.504	0.005	V0
pH		6.89		V0	6.19		V0	6.13		V0	6.88		V0
Phosphate	mg/L	0.003	0.006	V1	0.001	0.006	V1	0.001	0.006	V1	0.001	0.006	V1
Potassium	mg/L	0.118	0.002	V0	0.077	0.002	V0	0.016	0.002	V0	0.146	0.002	V0
Sodium	mg/L	0.176	0.002	V0	0.123	0.002	V0	0.035	0.002	V0	0.349	0.002	V0
Sulfate	mg/L	1.691	0.005	V0	4.187	0.005	V0	1.030	0.005	V0	6.454	0.005	V0
Sum Anions	µeq/L	86			125			36			240		
Sum Cations	µeq/L	249			169			51			363		
Total Ions	µeq/L	334			294			87			603		
Ion Balance	%	48.6		V4	14.8		V0	17.7			20.4		V4
Ion Difference	µeq/L	163			44			15		V0	123		

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **July 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	4-Jul-17			11-Jul-17			17-Jul-17			25-Jul-17		
	End Date	11-Jul-17			17-Jul-17			25-Jul-17			1-Aug-17		
	Dry Week							X					
	Precip	X			X						X		
	Volume(mL)	114			309.7						126.4		
	Total Precip(mm)	1.61			6.82			1.47			6		
	Collect Eff (%)	>100%			71%			0%			33%		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.259	0.018	V0	0.114	0.018	V0	-9999	0.018	V8	0.336	0.018	V0
Bicarbonate (calc)	µeq/L	62.7			52.2						49.8		
Calcium	mg/L	4.848	0.006	V0	4.148	0.006	V0	-9999	0.006	V8	4.213	0.006	V0
Chloride	mg/L	0.200	0.003	V0	0.151	0.003	V0	-9999	0.003	V8	0.529	0.003	V0
Conductivity (25°C)	µS/cm	31.7	1	V0	26.5	1	V0	-9999	1	V8	33.3	1	V0
Conductivity (calc)	µS/cm	26.9			23.2						28.9		
Conductivity Difference	%	-15.1		V0	-12.5		V0	-9999		V10	-13.3		V0
Magnesium	mg/L	0.246	0.002	V0	0.350	0.002	V0	-9999	0.002	V8	0.537	0.002	V0
Nitrate	mg/L	2.337	0.005	V0	1.463	0.005	V0	-9999	0.005	V8	2.495	0.005	V0
pH		7.09		V0	7.01		V0	-9999		V8	6.99		V0
Phosphate	mg/L	0.002	0.006	V1	0.004	0.006	V1	-9999	0.006	V8	0.003	0.006	V1
Potassium	mg/L	0.090	0.002	V0	0.121	0.002	V0	-9999	0.002	V8	0.142	0.002	V0
Sodium	mg/L	0.158	0.002	V0	0.184	0.002	V0	-9999	0.002	V8	0.550	0.002	V0
Sulfate	mg/L	2.363	0.005	V0	2.312	0.005	V0	-9999	0.005	V8	2.969	0.005	V0
Sum Anions	µeq/L	155			128						167		
Sum Cations	µeq/L	286			253						301		
Total Ions	µeq/L	441			382						468		
Ion Balance	%	29.6		V4	32.8		V4	-9999		V10	28.6		V4
Ion Difference	µeq/L	130			125			-9999		V10	134		

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **August 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	1-Aug-17			9-Aug-17			15-Aug-17			22-Aug-17		
	End Date	9-Aug-17			15-Aug-17			22-Aug-17			28-Aug-17		
	Dry Week												
	Precip	X			X			X			X		
	Volume(mL)	73.1			36.7			78.8			243.4		
	Total Precip(mm)	6.64			0.73			8.46			7.48		
	Collect Eff (%)	17%			78%			15%			51%		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.288	0.018	V0	0.131	0.018	V0	2.337	0.018	V0	0.642	0.018	V0
Bicarbonate (calc)	µeq/L	189.5			293.5			1.5			33.7		
Calcium	mg/L	15.205	0.006	V0	13.808	0.006	V0	4.920	0.006	V0	3.452	0.006	V0
Chloride	mg/L	1.207	0.003	V0	1.362	0.003	V0	0.516	0.003	V0	0.380	0.003	V0
Conductivity (25°C)	µS/cm	-9999	1	V9	84.9	1	V0	56.0	1	V0	26.9	1	V0
Conductivity (calc)	µS/cm	107.3			82.1			52.7			23.8		
Conductivity Difference	%				-3.3		V0	-5.8		V0	-11.5		V0
Magnesium	mg/L	1.599	0.002	V0	0.650	0.002	V0	0.463	0.002	V0	0.296	0.002	V0
Nitrate	mg/L	6.356	0.005	V0	2.841	0.005	V0	4.762	0.005	V0	1.447	0.005	V0
pH		7.57		V0	7.76		V0	5.48		V0	6.82		V0
Phosphate	mg/L	0.007	0.006	V0	0.015	0.006	V0	0.000	0.006	V1	0.001	0.006	V1
Potassium	mg/L	0.227	0.002	V0	0.362	0.002	V0	0.264	0.002	V0	0.146	0.002	V0
Sodium	mg/L	1.263	0.002	V0	1.561	0.002	V0	0.389	0.002	V0	0.239	0.002	V0
Sulfate	mg/L	19.516	0.005	V0	8.603	0.005	V0	10.456	0.005	V0	2.897	0.005	V0
Sum Anions	µeq/L	732			557			311			128		
Sum Cations	µeq/L	967			827			440			246		
Total Ions	µeq/L	1700			1384			751			375		
Ion Balance	%	13.8		V0	19.5		V0	17.3		V4	31.6		V4
Ion Difference	µeq/L	235			270			130			118		

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analtic Lab** **September 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	28-Aug-17			5-Sep-17			11-Sep-17			18-Sep-17			26-Sep-17		
	End Date	5-Sep-17			11-Sep-17			18-Sep-17			26-Sep-17			3-Oct-17		
	Dry Week	X						X								
	Precip				X						X			X		
	Volume(mL)	0			328.4			40.5			1460.2			4.2		
	Total Precip(mm)	0.15			5.45			4.77			21.46			0.16		
	Collect Eff (%)	0%			94%			13%			>100%			41%		
		Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag
Ammonium	mg/L	-9999	0.018	V8	0.405	0.018	V0	0.190	0.018	V0	0.145	0.018	V0	-9999	0.018	V9
Bicarbonate (calc)	µeq/L				14.0			203.0			3.8					
Calcium	mg/L	-9999	0.006	V8	2.318	0.006	V0	17.303	0.006	V0	0.295	0.006	V0	-9999	0.006	V9
Chloride	mg/L	-9999	0.003	V8	0.147	0.003	V0	1.290	0.003	V0	0.020	0.003	V0	-9999	0.003	V9
Conductivity (25°C)	µS/cm	-9999	1	V8	19.3	1	V0	115.7	1	V0	3.7	1	V0	-9999	1	V9
Conductivity (calc)	µS/cm				14.5			101.9			3.1					
Conductivity Difference	%	-9999		V10	-24.8		V0	-11.9		V0	-14.5		V0	-9999		V10
Magnesium	mg/L	-9999	0.002	V8	0.211	0.002	V0	1.353	0.002	V0	0.025	0.002	V0	-9999	0.002	V9
Nitrate	mg/L	-9999	0.005	V8	0.956	0.005	V0	3.040	0.005	V0	0.202	0.005	V0	-9999	0.005	V9
pH		-9999		V8	6.44		V0	7.60		V0	5.87		V0	-9999		V9
Phosphate	mg/L	-9999	0.006	V8	0.002	0.006	V1	0.009	0.006	V0	0.001	0.006	V1	-9999	0.006	V9
Potassium	mg/L	-9999	0.002	V8	0.070	0.002	V0	0.655	0.002	V0	0.010	0.002	V0	-9999	0.002	V9
Sodium	mg/L	-9999	0.002	V8	0.132	0.002	V0	1.529	0.002	V0	0.015	0.002	V0	-9999	0.002	V9
Sulfate	mg/L	-9999	0.005	V8	1.482	0.005	V0	14.366	0.005	V0	0.354	0.005	V0	-9999	0.005	V9
Sum Anions	µeq/L				64			588			15					
Sum Cations	µeq/L				163			1069			27					
Total Ions	µeq/L				228			1656			42					
Ion Balance	%	-9999		V10	43.4		V4	29.0		V4	28.7			-9999		V10
Ion Difference	µeq/L	-9999		V10	99			481			12		V0	-9999		V10

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **October 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	3-Oct-17			10-Oct-17			17-Oct-17			24-Oct-17		
	End Date	10-Oct-17			17-Oct-17			24-Oct-17			1-Nov-17		
	Dry Week												
	Precip	X			X			X			X		
	Volume(mL)	89.2			176.6			945.2			338.2		
	Total Precip(mm)	1.6			3			13.82			5.64		
	Collect Eff (%)	87%			92%			>100%			94%		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.197	0.018	V0	0.206	0.018	V0	0.064	0.018	V0	0.085	0.018	V0
Bicarbonate (calc)	µeq/L	57.2			15.8			0.6			5.6		
Calcium	mg/L	2.380	0.006	V0	1.334	0.006	V0	0.112	0.006	V0	0.636	0.006	V0
Chloride	mg/L	0.195	0.003	V0	0.051	0.003	V0	0.011	0.003	V0	0.046	0.003	V0
Conductivity (25°C)	µS/cm	17.6	1	V0	10.9	1	V0	5.0	1	V0	5.7	1	V0
Conductivity (calc)	µS/cm	15.6			9.7			4.8			5.3		
Conductivity Difference	%	-11.3		V0	-10.6		V0	-4.5		V0	-8.4		V0
Magnesium	mg/L	0.199	0.002	V0	0.121	0.002	V0	0.013	0.002	V0	0.062	0.002	V0
Nitrate	mg/L	0.646	0.005	V0	0.534	0.005	V0	0.228	0.005	V0	1.109	0.005	V0
pH		7.05		V0	6.49		V0	5.08		V0	6.04		V0
Phosphate	mg/L	0.009	0.006	V0	0.000	0.006	V1	0.002	0.006	V1	0.003	0.006	V1
Potassium	mg/L	0.122	0.002	V0	0.015	0.002	V0	0.008	0.002	V0	0.019	0.002	V0
Sodium	mg/L	0.253	0.002	V0	0.041	0.002	V0	0.006	0.002	V0	0.032	0.002	V0
Sulfate	mg/L	1.431	0.005	V0	1.631	0.005	V0	0.527	0.005	V0	0.418	0.005	V0
Sum Anions	µeq/L	103			60			16			34		
Sum Cations	µeq/L	160			90			19			44		
Total Ions	µeq/L	263			150			35			78		
Ion Balance	%	21.7		V4	20.4		V4	9.7			13.9		
Ion Difference	µeq/L	57			31			3		V0	11		V0

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary **Central Analytic Lab** **November 2017**

Fort McKay-Bertha Ganter AMS 1	Start Date	1-Nov-17			7-Nov-17			14-Nov-17			20-Nov-17		
	End Date	7-Nov-17			14-Nov-17			20-Nov-17			28-Nov-17		
	Dry Week												
	Precip	X			X			X			X		
	Volume(mL)	42.3			18.7			516.9			1738.9		
	Total Precip(mm)	0.65			0.36			8.8			30.09		
	Collect Eff (%)	>100%			81%			92%			90%		
		Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag	Results	MDL	Flag
Ammonium	mg/L	0.184	0.018	V0	0.090	0.018	V0	0.088	0.018	V0	0.057	0.018	V0
Bicarbonate (calc)	µeq/L							18.9			4.5		
Calcium	mg/L	-9999	0.006	V9	-9999	0.006	V9	0.904	0.006	V0	0.310	0.006	V0
Chloride	mg/L	0.634	0.003	V0	2.128	0.003	V0	0.121	0.003	V0	0.018	0.003	V0
Conductivity (25°C)	µS/cm	-9999	1	V9	-9999	1	V9	7.3	1	V0	3.4	1	V0
Conductivity (calc)	µS/cm							6.5			2.9		
Conductivity Difference	%	-9999		V10	-9999		V10	-11.5		V0	-15.6		V0
Magnesium	mg/L	-9999	0.002	V9	-9999	0.002	V9	0.112	0.002	V0	0.030	0.002	V0
Nitrate	mg/L	1.129	0.005	V0	3.992	0.005	V0	0.892	0.005	V0	0.444	0.005	V0
pH		-9999		V9	-9999		V9	6.57		V0	5.95		V0
Phosphate	mg/L	0.075	0.006	V0	0.249	0.006	V0	0.001	0.006	V1	0.001	0.006	V1
Potassium	mg/L	-9999	0.002	V9	-9999	0.002	V9	0.028	0.002	V0	0.009	0.002	V0
Sodium	mg/L	-9999	0.002	V9	-9999	0.002	V9	0.073	0.002	V0	0.016	0.002	V0
Sulfate	mg/L	1.389	0.005	V0	7.187	0.005	V0	0.305	0.005	V0	0.230	0.005	V0
Sum Anions	µeq/L							43			17		
Sum Cations	µeq/L							63			23		
Total Ions	µeq/L							106			40		
Ion Balance	%	-9999		V10	-9999		V10	19.0		V0	15.3		
Ion Difference	µeq/L	-9999		V10	-9999		V10	20			6		V0

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Precipitation summary

Central Analytic Lab **December 2017**

Fort McKay-Bertha Ganter AMS 1	**Start Date**		**28-Nov-17**			**5-Dec-17**			**13-Dec-17**			**20-Dec-17**			**28-Dec-17**		
	End Date		**5-Dec-17**			**13-Dec-17**			**20-Dec-17**			**28-Dec-17**			**3-Jan-18**		
	Dry Week														**X**		
	Precip		**X**			**X**			**X**			**X**					
	Volume(mL)		**262.8**			**839.2**			**602.5**			**95.7**			**4.1**		
	Total Precip(mm)		**3.02**			**12.68**			**9.26**			**0.69**			**0**		
	Collect Eff (%)		**>100%**			**>100%**			**>100%**			**>100%**			**V8**		
		Results	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**	**Results**	**MDL**	**Flag**
Ammonium	mg/L	0.075	0.018	V0	0.077	0.018	V0	0.087	0.018	V0	0.101	0.018	V0	-9999	0.018	V9
Bicarbonate (calc)	µeq/L	4.3			1.2			2.4			6.6					
Calcium	mg/L	0.339	0.006	V0	0.046	0.006	V0	0.184	0.006	V0	0.733	0.006	V0	-9999	0.006	V9
Chloride	mg/L	0.088	0.003	V0	0.043	0.003	V0	0.052	0.003	V0	0.669	0.003	V0	-9999	0.003	V9
Conductivity (25°C)	µS/cm	4.0	1	V0	3.1	1	V0	3.1	1	V0	9.6	1	V0	-9999	1	V9
Conductivity (calc)	µS/cm	3.4			2.8			2.8			8.6					
Conductivity Difference	%	-14.6		V0	-11.4		V0	-8.3		V0	-10.5		V0			
Magnesium	mg/L	0.048	0.002	V0	0.007	0.002	V0	0.025	0.002	V0	0.097	0.002	V0	-9999	0.002	V9
Nitrate	mg/L	0.591	0.005	V0	0.227	0.005	V0	0.345	0.005	V0	1.524	0.005	V0	-9999	0.005	V9
pH		5.93		V0	5.36		V0	5.68		V0	6.11		V0	-9999		V9
Phosphate	mg/L	0.000	0.006	V1	0.002	0.006	V1	0.008	0.006	V0	0.000	0.006	V1	-9999	0.006	V9
Potassium	mg/L	0.009	0.002	V0	0.024	0.002	V0	0.015	0.002	V0	0.056	0.002	V0	-9999	0.002	V9
Sodium	mg/L	0.057	0.002	V0	0.028	0.002	V0	0.034	0.002	V0	0.445	0.002	V0	-9999	0.002	V9
Sulfate	mg/L	0.182	0.005	V0	0.160	0.005	V0	0.197	0.005	V0	0.469	0.005	V0	-9999	0.005	V9
Sum Anions	µeq/L	20			9			14			60					
Sum Cations	µeq/L	29			13			20			72					
Total Ions	µeq/L	49			23			34			131					
Ion Balance	%	17.9			17.4			18.9			9.1		V0			
Ion Difference	µeq/L	9		V0	4		V0	6		V0	12					

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2017**

Precipitation Volume Weighted Averages

Fort McKay Bertha Ganter

											Innotech Alberta	TPC-3000
Month	Start Date	End Date	Total Precip (mm)	Volume Collected (mL)	Sulfate (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Ammonium (mg/L)
January	Jan-03	Feb-02	1.5	158.2	1.40	1.59	0.94	0.16	0.62	1.84	0.26	0.08
February	Feb-02	Feb-28	0.8	154.2	1.17	3.21	1.11	0.19	0.78	3.26	0.28	0.06
March	Feb-28	Apr-03	5.5	389.9	3.34	3.12	0.96	0.23	0.69	3.68	0.30	0.76
April	Apr-03	May-02	7.2	395.0	3.53	2.35	0.44	0.16	0.52	6.29	0.51	0.41
May	May-02	Jun-05	82.9	4412.2	0.72	0.66	0.13	0.13	0.06	0.42	0.08	0.34
June	Jun-05	Jun-28	40.1	2686.2	1.36	0.64	0.12	0.08	0.07	0.60	0.11	0.14
July	Jun-28	Aug-02	22.7	1251.0	1.35	1.03	0.25	0.13	0.16	1.37	0.18	0.22
August	Aug-02	Aug-28	23.3	1425.9	1.78	0.80	0.27	0.17	0.16	0.88	0.13	0.36
September	Aug-28	Oct-03	32.0	2209.5	0.63	0.32	0.12	0.08	0.08	0.44	0.08	0.19
October	Oct-03	Oct-31	23.2	1652.4	0.64	0.45	0.13	0.07	0.08	0.37	0.07	0.04
November	Oct-31	Nov-28	40.8	2556.7	0.25	0.50	0.11	0.06	0.08	0.50	0.09	0.03
December	Nov-28	Jan-03	25.7	1812.4	0.34	0.42	0.62	0.06	0.41	0.44	0.08	0.03
Annual VWA	**Jan-03-2017**	**Jan-03-2018**	**305.6**	**19103.6**	**0.93**	**0.70**	**0.23**	**0.10**	**0.15**	**0.77**	**0.11**	**0.20**

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2017**

Precipitation Sample Collection Efficiencies

Fort McKay Bertha Ganter

			Innotech Alberta		TPC-3000
Start Date	End Date	Total Precip (mm)	Volume Collected (mL)	Volume Flag	Collection Efficiency (%)
Jan-03-2017	Jan-12-2017	0.8	94.9		>100%
Jan-12-2017	Jan-17-2017	0.1	5.4		>100%
Jan-17-2017	Jan-24-2017	0.5	30.1		96%
Jan-24-2017	Feb-02-2017	0.1	27.8		>100%
Feb-02-2017	Feb-09-2017	0.8	85.7		>100%
Feb-09-2017	Feb-15-2017	0.1		V8	-
Feb-15-2017	Feb-22-2017	0.0	6.7		-
Feb-22-2017	Feb-28-2017	0.0	61.8		-
Feb-28-2017	Mar-06-2017	0.0	35.0		-
Mar-06-2017	Mar-13-2017	0.6	18.0		47%
Mar-13-2017	Mar-21-2017	2.0	130.5		>100%
Mar-21-2017	Mar-28-2017	2.9	206.4		>100%
Mar-28-2017	Apr-03-2017	0.0		V8	-
Apr-03-2017	Apr-11-2017	0.0		V8	-
Apr-11-2017	Apr-18-2017	4.9	305.7		97%
Apr-18-2017	May-02-2017	2.3	89.3		60%
May-02-2017	May-10-2017	4.1	256.8		99%
May-10-2017	May-17-2017	42.4	1979.8		73%
May-17-2017	May-24-2017	3.9	184.0		74%
May-24-2017	Jun-05-2017	32.6	1991.6		95%
Jun-05-2017	Jun-13-2017	7.5	497.0		>100%
Jun-13-2017	Jun-20-2017	12.8	886.9		>100%
Jun-20-2017	Jun-28-2017	19.7	1302.3		>100%
Jun-28-2017	Jul-05-2017	6.8	412.0		95%
Jul-05-2017	Jul-11-2017	1.6	110.3		>100%
Jul-11-2017	Jul-17-2017	6.8	461.1		>100%
Jul-17-2017	Jul-25-2017	1.5		V8	-
Jul-25-2017	Aug-02-2017	6.0	267.6		70%
Aug-02-2017	Aug-09-2017	6.6	373.1		88%
Aug-09-2017	Aug-15-2017	0.7	22.3		48%
Aug-15-2017	Aug-22-2017	8.5	535.2		99%
Aug-22-2017	Aug-28-2017	7.5	495.3		>100%
Aug-28-2017	Sep-05-2017	0.2	8.0		83%
Sep-05-2017	Sep-11-2017	5.5	398.8		>100%
Sep-11-2017	Sep-18-2017	4.8	309.3		>100%
Sep-18-2017	Sep-26-2017	21.5	1493.4		>100%
Sep-26-2017	Oct-03-2017	0.2		V8	-
Oct-03-2017	Oct-10-2017	1.6	92.5		90%
Oct-10-2017	Oct-17-2017	3.0	167.7		87%
Oct-17-2017	Oct-25-2017	15.9	1154.6		>100%
Oct-25-2017	Oct-31-2017	2.7	237.7		>100%
Oct-31-2017	Nov-07-2017	1.5	52.7		54%
Nov-07-2017	Nov-14-2017	0.4	642.0		>100%
Nov-14-2017	Nov-20-2017	8.8	2.0		0%
Nov-20-2017	Nov-28-2017	30.1	1860.0		96%
Nov-28-2017	Dec-05-2017	3.0	231.0		>100%
Dec-05-2017	Dec-13-2017	12.7	844.0		>100%
Dec-13-2017	Dec-20-2017	9.3	640.0		>100%
Dec-20-2017	Dec-28-2017	0.7	97.4		>100%
Dec-28-2017	Jan-03-2018	0.0	0.0	V8	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2017**

Precipitation Volume Weighted Averages

Fort McKay Bertha Ganter

										Central Analytic Lab		N-CON
Month	Start Date	End Date	Total Precip (mm)	Volume Collected (mL)	Sulfate (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Ammonium (mg/L)
January	Jan-03	Jan-30	1.4	123.9	1.05	1.47	0.59	0.16	0.37	1.96	0.31	0.14
February	Jan-30	Feb-28	0.9	610.1	0.52	1.20	0.14	0.03	0.10	1.14	0.12	0.15
March	Feb-28	Apr-03	5.5	316.8	5.02	3.75	0.77	0.20	0.61	7.73	0.50	0.84
April	Apr-03	May-02	7.2	202.0	1.54	2.42	1.00	0.13	0.71	3.61	0.23	0.36
May	May-02	May-17	46.5	2769.2	0.35	0.24	0.13	0.03	0.09	0.94	0.05	0.16
June	Jun-05	Jul-04	46.8	1928.2	2.65	1.09	0.13	0.07	0.13	2.57	0.23	0.15
July	Jul-04	Aug-01	15.9	550.1	2.47	1.88	0.25	0.12	0.26	4.31	0.37	0.20
August	Aug-01	Aug-28	23.3	432.0	7.57	3.00	0.63	0.20	0.55	6.59	0.58	0.85
September	Aug-28	Oct-03	32.0	1833.3	0.87	0.40	0.07	0.04	0.07	1.03	0.09	0.19
October	Oct-03	Nov-01	24.1	1549.2	0.68	0.48	0.03	0.02	0.03	0.50	0.05	0.09
November	Nov-01	Nov-28	39.9	2316.8	0.32	0.59	0.07	0.01	0.03	0.45	0.05	0.07
December	Nov-28	Jan-03	25.7	1804.3	0.19	0.39	0.09	0.02	0.06	0.17	0.02	0.08
Annual VWA	**Jan-03-2017**	**Jan-03-2018**	**269.2**	**14435.9**	**1.16**	**0.78**	**0.15**	**0.05**	**0.12**	**1.45**	**0.12**	**0.17**

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2017**

Precipitation Sample Collection Efficiencies

Fort McKay Bertha Ganter

			Central Analytic Lab		N-CON
Start Date	End Date	Total Precip (mm)	Volume Collected (mL)	Volume Flag	Collection Efficiency (%)
Jan-03-2017	Jan-09-2017	0.4	50.7		>100%
Jan-09-2017	Jan-17-2017	0.6	40.0		>100%
Jan-17-2017	Jan-24-2017	0.5	33.0		>100%
Jan-24-2017	Jan-30-2017	0.0	0.2		-
Jan-30-2017	Feb-06-2017	0.8	102.3		>100%
Feb-06-2017	Feb-14-2017	0.1	0.7		22%
Feb-14-2017	Feb-22-2017	0.0	446.5		-
Feb-22-2017	Feb-28-2017	0.0	60.6		-
Feb-28-2017	Mar-06-2017	0.0	32.9		-
Mar-06-2017	Mar-13-2017	0.6	17.6		46%
Mar-13-2017	Mar-21-2017	2.0	87.9		69%
Mar-21-2017	Mar-28-2017	2.9	178.2		95%
Mar-28-2017	Apr-03-2017	0.0	0.2	V8	-
Apr-03-2017	Apr-11-2017	0.0	0.2	V8	-
Apr-11-2017	Apr-18-2017	4.9	156.2		50%
Apr-18-2017	Apr-24-2017	2.3	44.7		30%
Apr-24-2017	May-02-2017	0.0	0.9	V8	-
May-02-2017	May-10-2017	4.1	0.4	V8	-
May-10-2017	May-17-2017	42.4	2768.8		>100%
May-17-2017	May-24-2017		-9999	M1	
May-24-2017	Jun-05-2017		-9999	M1	
Jun-05-2017	Jun-13-2017	7.5	430.8		89%
Jun-13-2017	Jun-20-2017	12.8	498.1		61%
Jun-20-2017	Jun-26-2017	15.2	766.3		78%
Jun-26-2017	Jul-04-2017	11.2	233.0		32%
Jul-04-2017	Jul-11-2017	1.6	114.0		>100%
Jul-11-2017	Jul-17-2017	6.8	309.7		71%
Jul-17-2017	Jul-25-2017	1.5		V8	-
Jul-25-2017	Aug-01-2017	6.0	126.4		33%
Aug-01-2017	Aug-09-2017	6.6	73.1		17%
Aug-09-2017	Aug-15-2017	0.7	36.7		78%
Aug-15-2017	Aug-22-2017	8.5	78.8		15%
Aug-22-2017	Aug-28-2017	7.5	243.4		51%
Aug-28-2017	Sep-05-2017	0.2	0.0	V8	-
Sep-05-2017	Sep-11-2017	5.5	328.4		94%
Sep-11-2017	Sep-18-2017	4.8	40.5	V8	-
Sep-18-2017	Sep-26-2017	21.5	1460.2		>100%
Sep-26-2017	Oct-03-2017	0.2	4.2		41%
Oct-03-2017	Oct-10-2017	1.6	89.2		87%
Oct-10-2017	Oct-17-2017	3.0	176.6		92%
Oct-17-2017	Oct-24-2017	13.8	945.2		>100%
Oct-24-2017	Nov-01-2017	5.6	338.2		94%
Nov-01-2017	Nov-07-2017	0.7	42.3		>100%
Nov-07-2017	Nov-14-2017	0.4	18.7		81%
Nov-14-2017	Nov-20-2017	8.8	516.9		92%
Nov-20-2017	Nov-28-2017	30.1	1738.9		90%
Nov-28-2017	Dec-05-2017	3.0	262.8		>100%
Dec-05-2017	Dec-13-2017	12.7	839.2		>100%
Dec-13-2017	Dec-20-2017	9.3	602.5		>100%
Dec-20-2017	Dec-28-2017	0.7	95.7		>100%
Dec-28-2017	Jan-03-2018	0.0	4.1	V8	-