A.Lanfranco & Associates Inc.
Environmental Consultants

Prepared for

METRO VANCOUVER

Metrotower III
4515 Central Boulevard
Burnaby, BC V5H 0C6

WASTE-TO-ENERGY FACILITY

Appendices of Emissions Testing Report

February 2025 Survey

First Quarter 2025

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APPENDIX – A

QUALITY ASSURANCE / QUALITY CONTROL RESULTS

Quality assurance / quality control (QA/QC) is divided into four categories: administration, preparation, testing, and analysis. The following sections detail results found for the above four categories.

Administration:

- All field, process, and analytical data was reviewed to ensure data integrity and accuracy.
- Duplicate proof of draft and final report, including data entry, conducted.

Preparation:

- All glassware cleaned
- Blank samples of reagents collected.

Testing:

- Stack diameter and absence of cyclonic flow confirmed
- Calibrated magnehelic used for all velocity measurements
- All trains past pre- and post- leak checks.
- Isokinetics all within 100% $\pm$ 10%.

Analysis:

- Trace Metals and Mercury analysis conducted at Element Labs, Surrey, B.C.
- Fluoride (HF) analysis conducted at Element Labs in Surrey, B.C.
- Nitrous Oxide (N_2O) analysis conducted at Bureau Veritas in Mississauga, ON.
- Volatile Organic Compounds (VOC) analysis conducted at ALS Environmental in Simi Valley, CA.
- Particulate analysis conducted at A. Lanfranco and Associates Inc., Surrey, BC.
- Chain of Custody protocols followed for all samples.
- Acceptable blank values for all sample types. All samples blank corrected.

Sample Type	**Blank Value**		
First Quarter 2025	**Unit 1**	**Unit 2**	**Unit 3**
Filter	0.4 mg	0.2 mg	0.3 mg
Front Half Washings	0.3 mg	-0.3 mg	-0.4 mg
Mercury Front	<0.02 ug	<0.02 ug	<0.02 ug
Mercury Back	<0.27 ug	<0.17 ug	<0.17 ug
Trace Metals Front *	<55.2 ug	<59.2 ug	<67.7 ug
Trace Metals Back*	<14.4 ug	<22.0 ug	<26.6 ug
Ammonia	<6 ug	<6 ug	<6 ug
Fluoride	<7 ug	<7 ug	<7 ug

Sum of all reported elements except Hg*

APPENDIX - B

CALCULATIONS

The following sections show the equations and define the variables that were used for this survey. The equations are organized in three sections. Equations 1-11 were used to calculate particulate concentration at standard conditions on a dry basis. Equations 12-26 were used to sample within the 100 ± 10% isokinetic variation and to confirm that sampling meets this isokinetic variation threshold. Equations 27-29 were used to calculate the volumetric flowrate of the stack flue gas.

App B.1 Contaminant Concentration Calculations

$$c = \frac{m}{V_{std}} \quad \textbf{Equation 1}$$

$$m_{part} = m_{filter} + m_{pw} \quad \textbf{Equation 2}$$

$$m_i = m_{ana,i} - m_{blank} \quad \textbf{Equation 3}$$

$$V_{std} = \frac{V_{std(imp)}}{35.315} \quad \textbf{Equation 4}$$

$$V_{std(imp)} = \frac{V_{samp} \times y \times P_m \times (T_{std} + 459.67)}{P_{std} \times (T_{m(ave)} + 459.67)} \quad \textbf{Equation 5}$$

$$V_{samp} = V_{final} - V_{init} \quad \textbf{Equation 6}$$

$$P_m = P_B + \frac{\Delta H_{ave}}{13.6} \quad \textbf{Equation 7}$$

$$\Delta H_{ave} = \frac{1}{n}\sum_{i=1}^{n} \Delta H_{i(act)}, where\ n = the\ number\ of\ points \quad \textbf{Equation 8}$$

$$OC = \frac{20.9 - \%O_{2c}}{20.9 - \%O_{2m}} \quad \textbf{Equation 9}$$

$$\%O_{2m} = \frac{1}{n}\sum_{i=1}^{n} \%O_{2i}, where\ n = the\ number\ of\ O_2\ measurements \quad \textbf{Equation 10}$$

$$\%CO_{2m} = \frac{1}{n}\sum_{i=1}^{n} \%CO_{2i}, where\ n = the\ number\ of\ CO_2\ measurements \quad \textbf{Equation 11}$$

Where,

c	= Contaminant concentration
m	= Contaminant mass
m_i	= Net analytical mass (mg, ng, or µg)
$m_{ana,i}$	= Analytical mass (mg, ng, or µg)
m_{blank}	= Blank analytical mass (mg, ng, or µg)
m_{part}	= Total particulate mass (mg)
m_{filter}	= Net particulate gain from filter (mg)
m_{pw}	= Net particulate gain from probe wash (mg)
$V_{std(imp)}$	= Sample volume at standard conditions (ft^3)
V_{std}	= Sample volume at standard conditions (m^3)
V_{samp}	= Sample volume at actual conditions (ft^3)
V_{final}	= Final gas meter reading (ft^3)
V_{init}	= Initial gas meter reading (ft^3)
T_{std}	= Standard temperature (68 °F)
T_m	= Gas meter temperature (°F)
$T_{m(ave)}$	= Average gas meter temperature (°F)
P_m	= Absolute meter pressure (inches of Hg)
P_B	= Barometric pressure (inches of Hg)
ΔH_{ave}	= Average of individual point orifice pressures (inches of H_2O)
$\Delta H_{i(act)}$	= Individual recorded point orifice pressures (inches of H_2O)
OC	= Oxygen correction factor (dimensionless)
$\%O_{2c}$	= Oxygen concentration to correct to (% dry basis)
$\%O_{2m}$	= Average measured stack gas oxygen concentration (% dry basis)
$\%CO_{2m}$	= Average measured stack gas oxygen concentration (% dry basis)

Equation 1 is the general concentration calculation used for all contaminants. The contaminant mass, *m*, is the net analytic mass for the given contaminant. For particulate, *m* is the sum of the mass contributed from probe washing and filter particulate.

App B.2 Isokinetic Variation Calculations

$$\Delta H_i = \frac{2.62 \times 10^7 \times c_p \times A_n \times (1 - B_{wo}) \times M_D \times (T_m + 459.67) \times \Delta p_i}{k_o \times M_w \times (T_{Stk} + 459.67)}$$ **Equation 12**

$$R_m = 85.49 \times c_p \times \sqrt{\Delta p_i} \times \sqrt{\frac{(T_{stk_i} + 459.67)}{M_w \times P_B}} \times 60 \times A_n \times \frac{(T_{m_i} + 459.67) \times (1 - B_{wo})}{(T_{stk_i} + 459.67) \times y}$$ **Equation 13**

$$A_n = \pi \left(\frac{d_n}{24}\right)^2$$ **Equation 14**

$$M_w = M_D \times (1 - B_{wo}) + 18 \times B_{wo}$$ **Equation 15**

$$M_D = 0.44 \times \%CO_2 + 0.32 \times \%O_2 + 0.28 \times (100 - \%CO_2 - \%O_2)$$ **Equation 16**

$$T_{Stk} = \frac{1}{n}\sum_{i=1}^{n} T_{Stk_i}, where\ n = the\ number\ of\ points$$ **Equation 17**

$$B_{wo} = \frac{V_{cond}}{V_{cond} + V_{std(imp)}}$$ **Equation 18**

$$V_{cond} = 0.04707 \times V_{gain}$$ **Equation 19**

$$Iso = \frac{1}{n}\sum_{i=1}^{n} Iso_i, where\ n = the\ number\ of\ points$$ **Equation 20**

$$Iso_i = \frac{v_{nzi}}{v_i}$$ **Equation 21**

$$v_i = 85.49 \times c_p \times \sqrt{\Delta p_i} \times \sqrt{\frac{(T_{Stk_i} + 459.67)}{(P_{Stk} \times M_W)}}$$ **Equation 22**

$$v_{nzi} = \frac{(V_i - V_{i-1}) \times y \times (T_{Stk_i} + 459.67) \times (P_B + \frac{\Delta H_{i(act)}}{13.6})}{A_n \times t_i \times 60 \times (T_{m(i)} + 459.67) \times P_{stk} \times (1 - B_{wo})}$$ **Equation 23**

$$P_{stk} = P_B + \frac{P_g}{13.6}$$ **Equation 24**

$$v_{stk} = \frac{1}{n}\sum_{i=1}^{n} v_i \text{ , where } n = \text{the number of points}$$ **Equation 25**

$$v_{nz} = \frac{1}{n}\sum_{i=1}^{n} v_{nzi} \text{ , where } n = \text{the number of points}$$ **Equation 26**

Where,

A_n = *Nozzle area (ft^2)*
d_n = *Diameter of nozzle (inches)*
c_p = *Pitot coefficient (dimensionless)*
Δp_i = *Individual point differential pressures (inches of H_2O)*
T_{Stk} = *Average flue gas temperature (°F), second subscript i, indicates individual point measurements*
$\Delta H_{i(act)}$ = *Calculated individual point orifice pressures (inches of H_2O)*
P_g = *Stack Static pressure (inches of H_2O)*
P_{stk} = *Absolute stack pressure (inches of Hg)*
M_w = *Wet gas molecular weight (g/gmol)*
M_D = *Dry gas molecular weight (g/gmol)*
$\%CO_2$ = *Stack gas carbon dioxide concentration (% dry basis)*
$\%O_2$ = *Stack gas oxygen concentration (% dry basis)*
B_{wo} = *Stack gas water vapour, proportion by volume*
V_{cond} = *Total volume of water vapor collected, corrected to standard conditions (ft^3)*
V_{gain} = *Condensate gain of impinger contents (mL)*
P_{std} = *Standard pressure (29.92 inches of Hg)*
v_{stk} = *Average flue gas velocity (ft/sec)*
v_i = *Individual point flue gas velocity (ft/sec)*
v_{nz} = *Average velocity at nozzle(ft/sec)*
v_{nzi} = *Individual point velocity at nozzle(ft/sec)*
Iso_i = *Individual point isokinetic variation (%)*
Iso = *Average isokinetic variation (%)*
R_m = *Isokinetic sampling rate (ft^3/min)*

App B.3 Volumetric Flowrate Calculations

$$Q_S = Q_A \times \frac{(T_{Std} + 459.67)}{(T_{Stk} + 459.67)} \times \frac{P_{Stk}}{P_{Std}}$$ **Equation 27**

$$Q_A = \frac{v_{stk} \times 60 \times A_{stk}}{35.315}$$ **Equation 28**

$$A_{stk} = \pi \left(\frac{d}{24}\right)^2$$ **Equation 29**

Where,

Q_A = *Actual flowrate (Am³/min)*
Q_S = *Flowrate (m³/min) at standard conditions on a dry basis*
A_{stk} = *Area of stack (ft²)*
d = *Diameter of stack (inches)*

APPENDIX - C

LABORATORY RESULTS

Appendix C - Particulate Analysis

Client:	Metro Vancouver	**Sample Date:**	Feb 10-13, 2025
Source:	Units 1, 2, and 3	**Location:**	WTE (Burnaby, B.C)

A. Lanfranco & Associates Standard Operating Procedure:

SOP 1.2.1 Gravimetric determination of total particulate matter

Filter Collection:

Test #	Initial (grams)	Final (grams)	Net Diference (grams)	Blank Adjusted (grams)
Unit 1 Blank	0.4459	0.4463	0.0004	
Unit 1 Run 1	0.4447	0.4467	0.0020	0.0016
Unit 1 Run 2	0.4436	0.4450	0.0014	0.0010
Unit 1 Run 3	0.4455	0.4475	0.0020	0.0016
Unit 2 Blank	0.4471	0.4473	0.0002	
Unit 2 Run 1	0.4394	0.4433	0.0039	0.0037
Unit 2 Run 2	0.4472	0.4512	0.0040	0.0038
Unit 2 Run 3	0.4458	0.4500	0.0042	0.0040
Unit 3 Blank	0.4478	0.4481	0.0003	
Unit 3 Run 1	0.4465	0.4468	0.0003	ND
Unit 3 Run 2	0.4477	0.4484	0.0007	0.0004
Unit 3 Run 3	0.4498	0.4502	0.0004	0.0001

Front Half Washings:

Test #	Initial (grams)	Final (grams)	Net Diference (grams)	Blank Adjusted (grams)
Unit 1 Blank	85.6013	85.6016	0.0003	
Unit 1 Run 1	119.1835	119.1859	0.0024	0.0021
Unit 1 Run 2	122.6464	122.6482	0.0018	0.0015
Unit 1 Run 3	120.1321	120.1361	0.0040	0.0037
Unit 2 Blank	84.3994	84.3991	-0.0003	
Unit 2 Run 1	118.9950	118.9991	0.0041	0.0044
Unit 2 Run 2	83.9520	83.9580	0.0060	0.0063
Unit 2 Run 3	123.6080	123.6140	0.0060	0.0063
Unit 3 Blank	96.0003	95.9999	-0.0004	
Unit 3 Run 1	129.1980	129.1988	0.0008	0.0012
Unit 3 Run 2	126.9768	126.9789	0.0021	0.0025
Unit 3 Run 3	99.4972	99.4975	0.0003	0.0007

Task	**Unit**	**Personnel**	**Date**	**Quality Control**	**Y/N**
Filter Recovery:	Unit 1	J. Ching	13-Feb-25	Adequate PW volume:	Y
	Unit 2	J. Ching	11-12-Feb-25	No sample leakage:	Y
	Unit 3	J. Ching	11-12-Feb-25	Filter not compromised:	Y
PW Initial Analysis:	Unit 1	J. Ching	18-Feb-25		
	Unit 2	J. Ching	18-Feb-25		
	Unit 3	J. Ching	18-Feb-25		
PW, Filter Final Analysis:	Unit 1	S. Verby	20-Feb-25		
	Unit 2	S. Verby	20-Feb-25		
	Unit 3	S. Verby	20-Feb-25		
Data Entered to Computer:	All	D. Sampson	03-Mar-25		

Comments:

No problems encountered in sample analysis.

ALS Environmental
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LABORATORY REPORT

March 3, 2025

Mark Lanfranco
A. Lanfranco and Associates Inc.
Unit 101 - 9488 189 St.
Surrey, BC V4N 4W7

RE: Metro Vancouver WTE

Dear Mark:

Enclosed are the results of the samples submitted to our laboratory on February 17, 2025. For your reference, these analyses have been assigned our service request number P2500578.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

ALS | Environmental

By Sue Anderson at 4:39 pm, Mar 03, 2025

Sue Anderson
Project Manager

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Client: A. Lanfranco and Associates Inc. Service Request No: P2500578
Project: Metro Vancouver WTE

CASE NARRATIVE

The samples were received intact under chain of custody on February 17, 2025 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

C3 through C6 Hydrocarbons, Methane, Ethene and Ethane Analysis

The samples were analyzed per modified EPA Method TO-3 for C3 through >C6 hydrocarbons and methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

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CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	https://dec.alaska.gov/spar/csp/lab-approval/list-of-approved-labs	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	https://internet.deq.louisiana.gov/portal/divisions/lelap/accredited-laboratories	203013
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtm	CA012627
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	006-999-456
New Jersey DEP (NELAP)	https://dep.nj.gov/dsr/oqa/certified-laboratories/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oklahoma DEQ (NELAP)	labaccreditation.deq.ok.gov/labaccreditation/	2207
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068
Pennsylvania DEP	hhttp://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration only)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413
Utah DOH (NELAP)	https://uphl.utah.gov/certifications/environmental-laboratory-certification/	CA01627
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: A. Lanfranco and Associates Inc. Service Request: P2500578
Project ID: Metro Vancouver WTE

Date Received: 2/17/2025
Time Received: 09:07

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pfl (psig)	TO-3 Modified - C1C6+ Can	TO-3 Modified - MEEPP Can
Unit 1 Run1	P2500578-001	Air	2/13/2025	10:25	SC02326	-1.56	3.68	X	X
Unit 1 Run 2	P2500578-002	Air	2/13/2025	11:56	SC01486	-2.62	3.78	X	X
Unit 1 Run 3	P2500578-003	Air	2/13/2025	13:10	SC00826	-2.34	3.62	X	X
Unit 2 Run 1	P2500578-004	Air	2/12/2025	10:45	SC01028	-2.85	3.79	X	X
Unit 2 Run 2	P2500578-005	Air	2/12/2025	11:56	SC00778	-4.08	4.10	X	X
Unit 2 Run 3	P2500578-006	Air	2/12/2025	13:07	SC02299	-2.76	3.82	X	X
Unit 3 Run 1	P2500578-007	Air	2/11/2025	10:35	SC00235	-3.47	3.81	X	X
Unit 3 Run 2	P2500578-008	Air	2/11/2025	11:46	SC00134	-2.23	3.52	X	X
Unit 3 Run 3	P2500578-009	Air	2/11/2025	12:58	SC01509	-3.02	3.57	X	X

Columbia Analytical Services

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 1

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Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

P2500678

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

CAS Project No.

Company Name & Address (Reporting Information)
A. Lanfranco & Associates Inc

Project Name: Metro Vancouver WTE
Project Number:
P.O. # / Billing Information:

Project Manager: Mark Lanfranco
Phone: 604 881 2582
Fax:
Email Address for Result Reporting: mark.Lanfranco@alanfranco.com
Sampler (Print & Sign): Liam Forrer

CAS Contact:

Analysis Method/Analytes

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/ Solid)	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller (Bar code - FC #)	Sample Volume	EPA TO-3			Comments e.g. Actual Preservative or specific instructions
Unit 1 Run 1		Feb 13/25	9:25-10:25		003213	0A00102		✓			
Unit 1 Run 2		Feb 13/25	1056-1156		002588	0A00102		✓			
Unit 1 Run 3		Feb 13/25	1210-1310		02006	0A00102		✓			
Unit 2 Run 1		Feb 12/25	945-1045		02026	CA00696		✓			
Unit 2 Run 2		Feb 12/25	1056-1156		01119	CA00696		✓			
Unit 2 Run 3		Feb 12/25	1207-1307		002845	CA00696		✓			
Unit 3 Run 1		Feb 11/25	9:35-10:35		01193	881		✓			
Unit 3 Run 2		Feb 11/25	10:46-11:46		01185	881		✓			
Unit 3 Run 3		Feb 11/25	1158-1258		002747	881		✓			

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II (Results + QC) ____
Tier III (Data Validation Package) 10% Surcharge ____
Tier V (client specified) ____

EDD required Yes / No
Type: ____ EDD Units: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) FED EX	Date:	Time:	Received by: (Signature)	Date: 2-17-25	Time: 0907
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature ____ °C

ALS Environmental
Sample Acceptance Check Form

Client: A. Lanfranco and Associates Inc. Work order: P2500578

Project: Metro Vancouver WTE

Sample(s) received on: 2/17/2025 Date opened: 2/17/2025 by: ANTHONY.VASQUEZ

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒
12	Lab Notification: Analyst and PM were alerted of Short HT or RUSH samples?	☐	☐	☒
13	Client Notification: Client has been notified regarding HT exceedances and/or other CoC discrepancies?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2500578-001.01	6.0 L Source Can					
P2500578-002.01	6.0 L Source Can					
P2500578-003.01	6.0 L Source Can					
P2500578-004.01	6.0 L Source Can					
P2500578-005.01	6.0 L Source Can					
P2500578-006.01	6.0 L Source Can					
P2500578-007.01	6.0 L Source Can					
P2500578-008.01	6.0 L Source Can					
P2500578-009.01	6.0 L Source Can					

Explain any discrepancies: (include lab sample ID numbers): _____

Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 1 Run1** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-001

Test Code:	EPA TO-3 Modified	Date Collected:	2/13/25
Instrument ID:	HP5890 II/GC8/FID	Date Received:	2/17/25
Analyst:	Stephanie Reynoso	Date Analyzed:	2/28/25
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	SC02326		

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.68

Container Dilution Factor: 1.40

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.70	
C_4 as n-Butane	ND	0.70	
C_5 as n-Pentane	**0.75**	0.70	
C_6 as n-Hexane	ND	0.70	
C_6+ as n-Hexane	ND	4.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 1 Run 2** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-002

Test Code: EPA TO-3 Modified Date Collected: 2/13/25
Instrument ID: HP5890 II/GC8/FID Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/28/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: SC01486

Initial Pressure (psig): -2.62 Final Pressure (psig): 3.78

Container Dilution Factor: 1.53

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.77	
C_4 as n-Butane	ND	0.77	
C_5 as n-Pentane	**1.0**	0.77	
C_6 as n-Hexane	ND	0.77	
C_6+ as n-Hexane	ND	4.6	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 1 Run 3** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-003

Test Code:	EPA TO-3 Modified	Date Collected:	2/13/25
Instrument ID:	HP5890 II/GC8/FID	Date Received:	2/17/25
Analyst:	Stephanie Reynoso	Date Analyzed:	2/28/25
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	SC00826		

Initial Pressure (psig): -2.34 Final Pressure (psig): 3.62

Container Dilution Factor: 1.48

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.74	
C_4 as n-Butane	ND	0.74	
C_5 as n-Pentane	**1.3**	0.74	
C_6 as n-Hexane	ND	0.74	
C_6+ as n-Hexane	ND	4.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 2 Run 1** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-004

Test Code: EPA TO-3 Modified Date Collected: 2/12/25
Instrument ID: HP5890 II/GC8/FID Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/28/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: SC01028

Initial Pressure (psig): -2.85 Final Pressure (psig): 3.79

Container Dilution Factor: 1.56

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.78	
C_4 as n-Butane	**0.85**	0.78	
C_5 as n-Pentane	**1.4**	0.78	
C_6 as n-Hexane	ND	0.78	
C_6+ as n-Hexane	ND	4.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 2 Run 2** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-005

Test Code:	EPA TO-3 Modified	Date Collected:	2/12/25
Instrument ID:	HP5890 II/GC8/FID	Date Received:	2/17/25
Analyst:	Stephanie Reynoso	Date Analyzed:	2/28/25
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	SC00778		

Initial Pressure (psig): -4.08 Final Pressure (psig): 4.10

Container Dilution Factor: 1.77

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.89	
C_4 as n-Butane	**1.1**	0.89	
C_5 as n-Pentane	**1.6**	0.89	
C_6 as n-Hexane	ND	0.89	
C_6+ as n-Hexane	ND	5.3	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 2 Run 3** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-006

Test Code:	EPA TO-3 Modified	Date Collected:	2/12/25
Instrument ID:	HP5890 II/GC8/FID	Date Received:	2/17/25
Analyst:	Stephanie Reynoso	Date Analyzed:	2/28/25
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	SC02299		

Initial Pressure (psig): -2.76 Final Pressure (psig): 3.82

Container Dilution Factor: 1.55

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.78	
C_4 as n-Butane	ND	0.78	
C_5 as n-Pentane	**1.1**	0.78	
C_6 as n-Hexane	ND	0.78	
C_6+ as n-Hexane	ND	4.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 3 Run 1** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-007

Test Code: EPA TO-3 Modified Date Collected: 2/11/25
Instrument ID: HP5890 II/GC8/FID Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/28/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: SC00235

Initial Pressure (psig): -3.47 Final Pressure (psig): 3.81

Container Dilution Factor: 1.65

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.83	
C_4 as n-Butane	ND	0.83	
C_5 as n-Pentane	**1.3**	0.83	
C_6 as n-Hexane	ND	0.83	
C_6+ as n-Hexane	ND	5.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 3 Run 2** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-008

Test Code:	EPA TO-3 Modified	Date Collected:	2/11/25
Instrument ID:	HP5890 II/GC8/FID	Date Received:	2/17/25
Analyst:	Stephanie Reynoso	Date Analyzed:	2/28/25
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	SC00134		

Initial Pressure (psig): -2.23 Final Pressure (psig): 3.52

Container Dilution Factor: 1.46

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.73	
C_4 as n-Butane	**0.76**	0.73	
C_5 as n-Pentane	**1.3**	0.73	
C_6 as n-Hexane	ND	0.73	
C_6+ as n-Hexane	ND	4.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 3 Run 3** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-009

Test Code:	EPA TO-3 Modified	Date Collected:	2/11/25
Instrument ID:	HP5890 II/GC8/FID	Date Received:	2/17/25
Analyst:	Stephanie Reynoso	Date Analyzed:	2/28/25
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	SC01509		

Initial Pressure (psig): -3.02 Final Pressure (psig): 3.57

Container Dilution Factor: 1.56

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.78	
C_4 as n-Butane	ND	0.78	
C_5 as n-Pentane	**1.1**	0.78	
C_6 as n-Hexane	ND	0.78	
C_6+ as n-Hexane	ND	4.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P250228-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Stephanie Reynoso Date Analyzed: 2/28/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	Data Qualifier
C_3 as Propane	ND	0.50	
C_4 as n-Butane	ND	0.50	
C_5 as n-Pentane	ND	0.50	
C_6 as n-Hexane	ND	0.50	
C_6+ as n-Hexane	ND	3.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P250228-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Stephanie Reynoso Date Analyzed: 2/28/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
Propane	1,000	1,100	1,100	**110**	**110**	92-120	0	6	
n-Butane	1,000	1,090	1,100	**109**	**110**	91-121	0.9	6	
n-Pentane	1,000	1,040	1,040	**104**	**104**	89-118	0	6	
n-Hexane	1,000	1,020	1,030	**102**	**103**	92-125	1	6	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 1 Run1** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-001

Test Code: EPA TO-3 Modified Date Collected: 2/13/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC02326

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.68

Container Dilution Factor: 1.40

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	ND	1.8	ND	2.8	
74-85-1	Ethene	ND	0.96	ND	0.84	
74-84-0	Ethane	ND	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 1 Run 2** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-002

Test Code: EPA TO-3 Modified Date Collected: 2/13/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC01486

Initial Pressure (psig): -2.62 Final Pressure (psig): 3.78

Container Dilution Factor: 1.53

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**2.2**	2.0	**3.3**	3.1	
74-85-1	Ethene	ND	1.1	ND	0.92	
74-84-0	Ethane	ND	1.1	ND	0.92	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 1 Run 3** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-003

Test Code: EPA TO-3 Modified Date Collected: 2/13/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC00826

Initial Pressure (psig): -2.34 Final Pressure (psig): 3.62

Container Dilution Factor: 1.48

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**2.0**	1.9	**3.0**	3.0	
74-85-1	Ethene	ND	1.0	ND	0.89	
74-84-0	Ethane	ND	1.1	ND	0.89	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 2 Run 1** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-004

Test Code: EPA TO-3 Modified Date Collected: 2/12/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC01028

Initial Pressure (psig): -2.85 Final Pressure (psig): 3.79

Container Dilution Factor: 1.56

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**2.7**	2.0	**4.1**	3.1	
74-85-1	Ethene	ND	1.1	ND	0.94	
74-84-0	Ethane	ND	1.2	ND	0.94	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 2 Run 2** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-005

Test Code: EPA TO-3 Modified Date Collected: 2/12/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC00778

Initial Pressure (psig): -4.08 Final Pressure (psig): 4.10

Container Dilution Factor: 1.77

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**5.4**	2.3	**8.2**	3.5	
74-85-1	Ethene	ND	1.2	ND	1.1	
74-84-0	Ethane	ND	1.3	ND	1.1	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 2 Run 3** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-006

Test Code: EPA TO-3 Modified Date Collected: 2/12/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC02299

Initial Pressure (psig): -2.76 Final Pressure (psig): 3.82

Container Dilution Factor: 1.55

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**2.1**	2.0	**3.2**	3.1	
74-85-1	Ethene	ND	1.1	ND	0.93	
74-84-0	Ethane	ND	1.1	ND	0.93	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 3 Run 1** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-007

Test Code: EPA TO-3 Modified Date Collected: 2/11/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC00235

Initial Pressure (psig): -3.47 Final Pressure (psig): 3.81

Container Dilution Factor: 1.65

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	ND	2.2	ND	3.3	
74-85-1	Ethene	ND	1.1	ND	0.99	
74-84-0	Ethane	ND	1.2	ND	0.99	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 3 Run 2** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-008

Test Code: EPA TO-3 Modified Date Collected: 2/11/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC00134

Initial Pressure (psig): -2.23 Final Pressure (psig): 3.52

Container Dilution Factor: 1.46

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**2.3**	1.9	**3.4**	2.9	
74-85-1	Ethene	ND	1.0	ND	0.88	
74-84-0	Ethane	ND	1.1	ND	0.88	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Unit 3 Run 3** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P2500578-009

Test Code: EPA TO-3 Modified Date Collected: 2/11/25
Instrument ID: HP5890A/GC10/FID/TCD Date Received: 2/17/25
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: SC01509

Initial Pressure (psig): -3.02 Final Pressure (psig): 3.57

Container Dilution Factor: 1.56

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	**2.2**	2.0	**3.4**	3.1	
74-85-1	Ethene	ND	1.1	ND	0.94	
74-84-0	Ethane	ND	1.2	ND	0.94	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P250227-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID/TCD Date Received: NA
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	Result ppmV	MRL ppmV	Data Qualifier
74-82-8	Methane	ND	1.3	ND	2.0	
74-85-1	Ethene	ND	0.69	ND	0.60	
74-84-0	Ethane	ND	0.74	ND	0.60	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **A. Lanfranco and Associates Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2500578
Client Project ID: **Metro Vancouver WTE** ALS Sample ID: P250227-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID/TCD Date Received: NA
Analyst: Stephanie Reynoso Date Analyzed: 2/27/25
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	7.60	7.79	7.45	**103**	**98**	70-130	5	15	
74-85-1	Ethene	7.53	7.41	7.12	**98**	**95**	70-130	3	15	
74-84-0	Ethane	7.49	7.67	7.42	**102**	**99**	70-130	3	15	

ISO/IEC 17025:2017-Accredited Testing Laboratory

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: (305) 667-5167
info@betalabservices.com

March 3, 2025

Mark Lanfranco
A. Lanfranco and Associates Inc.
Unit 101 - 9488 189 St.
Surrey, British Columbia (BC) V4N4W7
Canada

Dear Mark Lanfranco,

Please find enclosed your radiocarbon (C14) report for the material recently submitted. The result is reported as “% Biogenic Carbon”. This indicates the percentage carbon from “renewable” (biomass or animal by-product) sources versus petroleum (or otherwise fossil) sources . For reference, 100 % Biogenic Carbon indicates that a material is entirely sourced from plants or animal by-products and 0 % Biogenic Carbon indicates that a material did not contain any carbon from plants or animal by-products. A value in between represents a mixture of natural and fossil sources.

The analytical measurement is cited as “percent modern carbon (pMC)”. This is the percentage of C14 measured in the sample relative to a modern reference standard (NIST 4990C). The % Biogenic Carbon content is calculated from pMC by applying a small adjustment factor for C14 in carbon dioxide in air today. It is important to note is that all internationally recognized standards using C14 assume that the plant or biomass feedstocks were obtained from natural environments.

Reported results are accredited to ISO/IEC 17025:2017 PJLA #59423 standards and all chemistry was performed here in our laboratory and counted in our own accelerators in Miami, Florida.

The international standard method utilized for this analysis is cited under Summary of Results. The standard version used is the latest available as of the date reported (unless otherwise noted). The report also indicates if the result is relative to total carbon (TC) or only total organic carbon (TOC). When interpreting the results, please consider any communications you may have had with us regarding the analysis. If you have any questions, please contact us. We welcome your inquiries.

Sincerely,

Carlos Barroso
Laboratory Management Group / AMS Pretreatment Manager

ISO/IEC 17025:2017-Accredited Testing Laboratory

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: (305) 667-5167
info@betalabservices.com

Summary of Results - % Biogenic CO2 ASTM D6866-16

Method B (AMS) TC

Validation:

Certificate Number:
E58C512A01064BAF9003B0A0B7049763

To validate report, scan this QR code on a mobile device or go to https://verify.betalabservices.com and enter the requested information.

Submitter	Mark Lanfranco
Company	A. Lanfranco and Associates Inc.
Received Date	February 25, 2025
Report Date	March 3, 2025
Sample Code	Unit 1 Run 1

Result

50% Biogenic CO2

Laboratory Number	Beta-737222
Percent modern carbon (pMC)	49.65 +/- 0.13 pMC
Atmospheric adjustment factor (REF)	99.4; = pMC/0.994

Labeling COC


View of Content

Disclosures: All analytical work is performed by BETA Analytic's professional staff, in its laboratories on our AMS, IRMS, CRDS and GC instruments. No subcontractors are ever used. We are a tracer-free 14C facility that does not accept or analyze materials that might contain artificial 14C (from biomedical, environmental, or other studies). Quality Assurance is maintained through our ongoing ISO/IEC 17025:2017 Laboratory Testing Accreditation, and verified by Quality Assurance Reports, posted to the web-library along with this report.

The published report is final and non-modifiable.

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Precision on the RESULT is cited as +/- 3% (absolute). The cited precision on the analytical measure (pMC) is 1 sigma (1 relative standard deviation). The reported result only applies to the analyzed material. The accuracy of the RESULT relies on the measured carbon in the analyzed material having been in recent equilibrium with CO2 in the air and/or from fossil carbon (more than 45,000 years old) such as petroleum or coal. The RESULT only applies to relative carbon content, not to relative mass content. The RESULT is calculated by adjusting pMC by the applicable "Atmospheric adjustment factor (REF)" cited in this report.

ISO/IEC 17025:2017-Accredited Testing Laboratory

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: (305) 667-5167
info@betalabservices.com

Summary of Results - % Biogenic CO2 ASTM D6866-16

Method B (AMS) TC

Validation:

Certificate Number:
E58C512A01064BAF9003B0A0B7049763

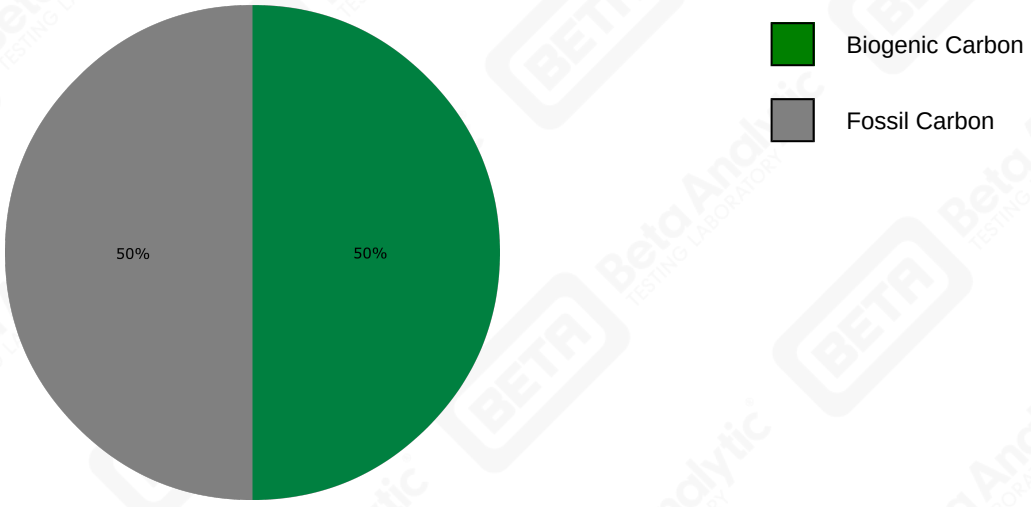
To validate report, scan this QR code on a mobile device or go to https://verify.betalabservices.com and enter the requested information.

Submitter	Mark Lanfranco
Company	A. Lanfranco and Associates Inc.
Received Date	February 25, 2025
Report Date	March 3, 2025
Sample Code	Unit 1 Run 1

Result

50% Biogenic CO2

Laboratory Number	Beta-737222
Percent modern carbon (pMC)	49.65 +/- 0.13 pMC
Atmospheric adjustment factor (REF)	99.4; = pMC/0.994



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% Biogenic CO2 ASTM D6866-16 Method B (AMS) TC

Explanation of Results

The result was obtained using the radiocarbon isotope (also known as Carbon-14, C14 or 14C), a naturally occurring isotope of carbon that is radioactive and decays in such a way that there is none left after about 45,000 years following the death of a plant or animal. Its most common use is radiocarbon dating by archaeologists. An industrial application was also developed to determine if consumer products and CO2 emissions were sourced from plants/biomass or from materials such as petroleum or coal (fossil-ba sed). By 2003 there was growing demand for a standardized methodology for applying Carbon -14 testing within the regulatory environment. The first of these standards was ASTM D6866-04, which was written with the assistance of Beta Analytic. Since ASTM was largely viewed as a US standard, European stakeholders soon began demanding an equivalent CEN standard while global stakeholders called for ISO standardization.

The analytical procedures for measuring radiocarbon content using the different standards are identical. The only difference is the reporting format. Results are usually reported using the standardized terminology “% biobased carbon”. Only ASTM D6866 uses the term “% biogenic carbon” when the result represents all carbon present (Total Carbon) rather than just the organic carbon (Total Organic Carbon). The terms “% biobased carbon” and “% biogenic carbon” are now the standard units in regulatory and industrial applications, replacing obscure units of measure historically reported by radiocarbon dating laboratories e.g. disintegra tions per minute per gram (dpm/g) or radiocarbon age.

The result was obtained by measuring the ratio of radiocarbon in the material relative to a National Institute of Standards and Technology (NIST) modern reference standard (SRM 4990C). This ratio was calculated as a percentage and is reported as percent modern carbon (pMC). The value obtained relative to the NIST standard is normalized to the year 1950 AD so an adjustment was required to calculate a carbon source value relative to today. This factor is listed on the report sheet as the terminology “REF”.

Interpretation and application of the results is straightforward. A value of 100% biobased or biogenic carbon would indicate that 100% of the carbon came from plants or animal by-products (biomass) living in the natural environment and a value of 0% would mean that all of the carbon was derived from petrochemicals, coal and other fossil sources. A value between 0-100% would indicate a mixture. The higher the value, the greater the proportion of naturally sourced components in the material.

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Quality Assurance Report

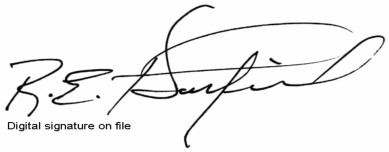
This report provides the results of reference materials used to validate radiocarbon analyses prior to reporting. Known-value reference materials were analyzed quasi-simultaneously with the unknowns. Results are reported as expected values vs measured values. Reported values are calculated relative to NIST SRM-4990C and corrected for isotopic fractionation. Results are reported using the direct analytical measure percent modern carbon (pMC) with one relative standard deviation. Agreement between expected and measured values is taken as being within 2 sigma agreement (error x 2) to account for total laboratory error.

Report Date	March 3, 2025
Submitter	Mark Lanfranco

QA MEASUREMENTS

Reference 1	
Expected Value	129.41 +/- 0.06 pMC
Measured Value	129.55 +/- 0.16 pMC
Agreement	Accepted
Reference 2	
Expected Value	0.44 +/- 0.04 pMC
Measured Value	0.43 +/- 0.04 pMC
Agreement	Accepted
Reference 3	
Expected Value	95.86 +/- 0.37 pMC
Measured Value	95.50 +/- 0.24 pMC
Agreement	Accepted

Comment All measurements passed acceptance tests.

Validation 

Date March 3, 2025

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Beta Analytic, Inc.
4985 SW 74th Court
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March 3, 2025

Mark Lanfranco
A. Lanfranco and Associates Inc.
Unit 101 - 9488 189 St.
Surrey, British Columbia (BC) V4N4W7
Canada

Dear Mark Lanfranco,

Please find enclosed your radiocarbon (C14) report for the material recently submitted. The result is reported as “% Biogenic Carbon”. This indicates the percentage carbon from “renewable” (biomass or animal by-product) sources versus petroleum (or otherwise fossil) sources . For reference, 100 % Biogenic Carbon indicates that a material is entirely sourced from plants or animal by-products and 0 % Biogenic Carbon indicates that a material did not contain any carbon from plants or animal by-products. A value in between represents a mixture of natural and fossil sources.

The analytical measurement is cited as “percent modern carbon (pMC)”. This is the percentage of C14 measured in the sample relative to a modern reference standard (NIST 4990C). The % Biogenic Carbon content is calculated from pMC by applying a small adjustment factor for C14 in carbon dioxide in air today. It is important to note is that all internationally recognized standards using C14 assume that the plant or biomass feedstocks were obtained from natural environments.

Reported results are accredited to ISO/IEC 17025:2017 PJLA #59423 standards and all chemistry was performed here in our laboratory and counted in our own accelerators in Miami, Florida.

The international standard method utilized for this analysis is cited under Summary of Results. The standard version used is the latest available as of the date reported (unless otherwise noted). The report also indicates if the result is relative to total carbon (TC) or only total organic carbon (TOC). When interpreting the results, please consider any communications you may have had with us regarding the analysis. If you have any questions, please contact us. We welcome your inquiries.

Sincerely,

Carlos Barroso
Laboratory Management Group / AMS Pretreatment Manager

ISO/IEC 17025:2017-Accredited Testing Laboratory

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: (305) 667-5167
info@betalabservices.com

Summary of Results - % Biogenic CO2 ASTM D6866-16

Method B (AMS) TC

Validation:

Certificate Number:
5F41A63675924CB57AF5387D7BF78346

To validate report, scan this QR code on a mobile device or go to https://verify.betalabservices.com and enter the requested information.

Submitter	Mark Lanfranco
Company	A. Lanfranco and Associates Inc.
Received Date	February 25, 2025
Report Date	March 3, 2025
Sample Code	Unit 2 Run 1

Result

56% Biogenic CO2

Laboratory Number	Beta-737223
Percent modern carbon (pMC)	55.49 +/- 0.14 pMC
Atmospheric adjustment factor (REF)	99.4; = pMC/0.994

Labeling COC


View of Content

Disclosures: All analytical work is performed by BETA Analytic's professional staff, in its laboratories on our AMS, IRMS, CRDS and GC instruments. No subcontractors are ever used. We are a tracer-free 14C facility that does not accept or analyze materials that might contain artificial 14C (from biomedical, environmental, or other studies). Quality Assurance is maintained through our ongoing ISO/IEC 17025:2017 Laboratory Testing Accreditation, and verified by Quality Assurance Reports, posted to the web-library along with this report.

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Summary of Results - % Biogenic CO2 ASTM D6866-16

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Received Date	February 25, 2025
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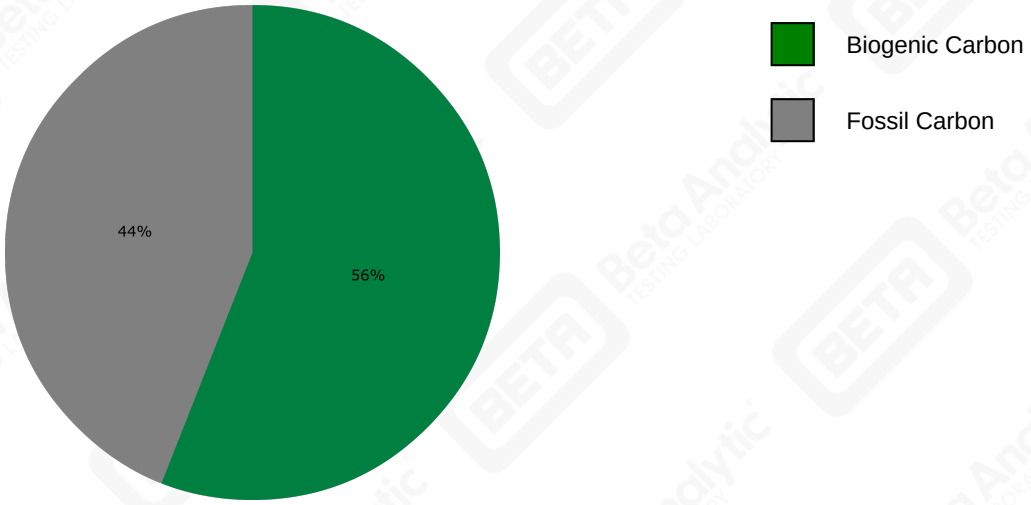

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% Biogenic CO2 ASTM D6866-16 Method B (AMS) TC

Explanation of Results

The result was obtained using the radiocarbon isotope (also known as Carbon-14, C14 or 14C), a naturally occurring isotope of carbon that is radioactive and decays in such a way that there is none left after about 45,000 years following the death of a plant or animal. Its most common use is radiocarbon dating by archaeologists. An industrial application was also developed to determine if consumer products and CO2 emissions were sourced from plants/biomass or from materials such as petroleum or coal (fossil-ba sed). By 2003 there was growing demand for a standardized methodology for applying Carbon -14 testing within the regulatory environment. The first of these standards was ASTM D6866-04, which was written with the assistance of Beta Analytic. Since ASTM was largely viewed as a US standard, European stakeholders soon began demanding an equivalent CEN standard while global stakeholders called for ISO standardization.

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Report Date	March 3, 2025
Submitter	Mark Lanfranco

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Expected Value	129.41 +/- 0.06 pMC
Measured Value	129.55 +/- 0.16 pMC
Agreement	Accepted
Reference 2	
Expected Value	0.44 +/- 0.04 pMC
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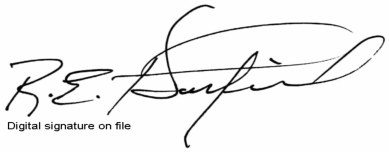
Comment All measurements passed acceptance tests.

Validation 

Date March 3, 2025

ISO/IEC 17025:2017-Accredited Testing Laboratory

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A. Lanfranco and Associates Inc.
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Summary of Results - % Biogenic CO2 ASTM D6866-16

Method B (AMS) TC

Validation:

Certificate Number:
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Submitter	Mark Lanfranco
Company	A. Lanfranco and Associates Inc.
Received Date	February 25, 2025
Report Date	March 3, 2025
Sample Code	Unit 3 Run 1

Result

57% Biogenic CO2

Laboratory Number	Beta-737224
Percent modern carbon (pMC)	57.00 +/- 0.14 pMC
Atmospheric adjustment factor (REF)	99.4; = pMC/0.994

Labeling COC


View of Content

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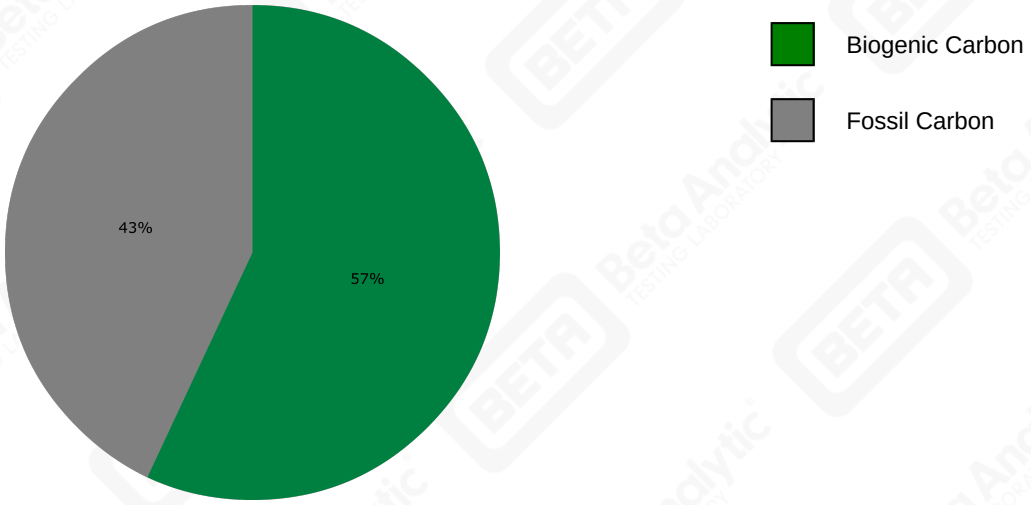

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% Biogenic CO2 ASTM D6866-16 Method B (AMS) TC

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Agreement	Accepted
Reference 3	
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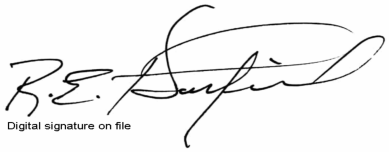
Comment All measurements passed acceptance tests.

Validation 

Date March 3, 2025

Element
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

T: +1 (604) 514-3322
E: info.vancouver@element.com
W: www.element.com

Report Transmission Cover Page

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796331**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109076
Report Type: Final Report

Contact	Company	Address
Mark Lanfranco	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
Missy	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: missy@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	Invoice

Element
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796331**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109076
Report Type: Final Report

Reference Number	1796331-1	1796331-2	1796331-3
Sample Date	Feb 13, 2025	Feb 12, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Field Blank Unit 1 (MV Unit 1 Blank + 4 Bottles) / 18.1 °C	Field Blank Unit 2 (MV Unit 2 Blank + 4 Bottles) / 18.1 °C	Field Blank Unit 3 (MV Unit 3 Blank + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Front Half Metals Fraction 1A						
Aluminum		µg	6	<5	<5	5
Antimony		µg	6	<2	<2	2.5
Arsenic		µg	2	<1	8.6	1
Cadmium		µg	<0.3	<0.3	<0.3	0.25
Chromium		µg	0.55	<0.2	0.60	0.2
Cobalt		µg	0.3	<0.3	<0.3	0.25
Copper		µg	0.4	<0.3	1	0.25
Lead		µg	<2	<2	2	1.5
Manganese		µg	0.3	0.3	0.8	0.25
Nickel		µg	<0.5	1	1	0.5
Phosphorus		µg	39	55	44	2.5
Selenium		µg	<2	<2	5.7	1.5
Tellurium		µg	<2	2.9	<2	2
Thallium		µg	<2	<2	2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	0.6	<0.5	2	0.5
Back Half Metals Fraction 2A						
Aluminum		µg	<5	<5	<5	5
Antimony		µg	3	<2	3	2.5
Arsenic		µg	<0.9	<0.9	<0.9	1
Cadmium		µg	<0.2	<0.2	<0.2	0.25
Chromium		µg	0.46	0.31	0.97	0.2
Cobalt		µg	<0.2	<0.2	<0.2	0.25
Copper		µg	<0.2	1	1	0.25
Lead		µg	<1	<1	<1	1.5
Manganese		µg	<0.2	<0.2	0.8	0.25
Nickel		µg	<0.5	<0.5	<0.5	0.5
Phosphorus		µg	10	20	20	2.5
Selenium		µg	<1	<1	<1	1.5
Tellurium		µg	<2	<2	<2	2
Thallium		µg	<1	<1	<1	1.5
Vanadium		µg	<0.9	<0.9	<0.9	1
Zinc		µg	0.9	0.7	0.8	0.5
Volume	Sample	mL	400	321	320	
Volume	aliquot volume	mL	350	271	270	
Mercury by CVAA						
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796331**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109076
Report Type: Final Report

Reference Number	1796331-1	1796331-2	1796331-3
Sample Date	Feb 13, 2025	Feb 12, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Field Blank Unit 1 (MV Unit 1 Blank + 4 Bottles) / 18.1 °C	Field Blank Unit 2 (MV Unit 2 Blank + 4 Bottles) / 18.1 °C	Field Blank Unit 3 (MV Unit 3 Blank + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Mercury by CVAA - Continued						
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	250	250	250	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 1B	µg/sample	<0.02	<0.02	<0.02	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	400	321	320	
Volume	aliquot volume	mL	5.0	5.0	5.0	
Volume	Final	mL	40	40	40	
Mercury	Fraction 2B	µg/sample	<0.2	<0.1	<0.1	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	101	98	107	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3A	µg/sample	<0.008	<0.008	<0.009	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	500	500	500	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3B	µg/sample	<0.04	<0.04	<0.04	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	200	200	200	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3C	µg/sample	<0.02	<0.02	<0.02	

Approved by:

Rachel Eden , B. Sc.
Operations Manager

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Methodology and Notes

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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796331**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109076
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Mercury in Air (VAN) - 1B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 2B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3A	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3C	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Metals in Stack Samples - Back half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 27, 2025	Element Vancouver
Metals in Stack Samples - Front half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 24, 2025	Element Vancouver

** Reference Method Modified*

References

EMC Emission Measurement Center of EPA

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Report Transmission Cover Page

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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Filter Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796283**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109022
Report Type: Final Report

Contact	Company	Address
Mark Lanfranco	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
Missy	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: missy@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	Invoice

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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Filter Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796283**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109022
Report Type: Final Report

Reference Number	1796283-1	1796283-2	1796283-3
Sample Date	Feb 07, 2025	Feb 07, 2025	Feb 07, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Reagent Blank Unit 1 Container 1 (filter) / 18.1 °C	Reagent Blank Unit 2 Container 1 (filter) / 18.1 °C	Reagent Blank Unit 3 Container 1 (filter) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Front Half Metals Fraction 1A						
Aluminum		µg	<5	<5	<5	5
Antimony		µg	5	<2	<2	2.5
Arsenic		µg	1	7.8	6.3	1
Cadmium		µg	<0.3	<0.3	<0.3	0.25
Chromium		µg	0.50	0.34	0.56	0.2
Cobalt		µg	0.7	0.6	<0.3	0.25
Copper		µg	2	<0.3	<0.3	0.25
Lead		µg	<2	<2	<2	1.5
Manganese		µg	<0.3	0.3	<0.3	0.25
Nickel		µg	1	<0.5	<0.5	0.5
Phosphorus		µg	45	50	35	2.5
Selenium		µg	<2	2	<2	1.5
Tellurium		µg	<2	<2	<2	2
Thallium		µg	<2	2.9	<2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	0.5	<0.5	<0.5	0.5
Mercury by CVAA						
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	250	250	250	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 1B	µg/sample	<0.02	<0.02	<0.02	

Approved by:

Rachel Eden , B. Sc.
Operations Manager

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Methodology and Notes

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Company:

Project ID: Metro Vancouver WTE
Project Name: Filter Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796283**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109022
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Mercury in Air (VAN) - 1B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Metals in Stack Samples - Front half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 24, 2025	Element Vancouver

** Reference Method Modified*

References

EMC Emission Measurement Center of EPA

Please direct any inquiries regarding this report to our Client Services group.
Results relate only to samples as submitted.

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Company:

Project ID: Metro Vancouver WTE
Project Name: HF Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796277**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 25, 2025
Report Number: 3109013
Report Type: Final Report

Contact	Company	Address
Mark Lanfranco	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email	PDF	Invoice

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Analytical Report

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Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: HF Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796277**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 25, 2025
Report Number: 3109013
Report Type: Final Report

Reference Number	1796277-1	1796277-2	1796277-3
Sample Date	Feb 13, 2025	Feb 12, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit #1 HF Blank / 18.1 °C	Unit #2 HF Blank / 18.1 °C	Unit #3 HF Blank / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Volume	Sample	mL	242	248	243	
Dilution Factor	fluoride		1.00	1.00	1.00	
Fluoride	As Tested	mg/L	<0.03	<0.03	<0.03	0.03
Fluoride	Water Soluble	µg/sample	<7	<7	<7	

Approved by:

Carol Nam, Dipl. T.
Quality Assurance Coordinator

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Methodology and Notes

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Company:

Project ID: Metro Vancouver WTE
Project Name: HF Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796277**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 25, 2025
Report Number: 3109013
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Anions by IEC in air (VAN)	EMC	*	Determination of Hydrogen Halide & Halogen Emissions from Stationary Sources (Isokinetic), 26A	Feb 24, 2025	Element Vancouver

** Reference Method Modified*

References

EMC Emission Measurement Center of EPA

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Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: HF Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796279**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 27, 2025
Report Number: 3109833
Report Type: Reissue Report
Original Report #: 3109016

Contact	Company	Address
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Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email	PDF	Invoice

Notes To Clients:

- Report was issued to include retest result for fluoride analysis on samples 1796279-1 to 9 as requested by Mark Lanfranco of A. Lanfranco on February 25, 2025.
  Previous report 3109016.

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Analytical Report

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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: HF Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796279**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 27, 2025
Report Number: 3109833
Report Type: Reissue Report
Original Report #: 3109016

Reference Number	1796279-1	1796279-2	1796279-3
Sample Date	Feb 13, 2025	Feb 13, 2025	Feb 13, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit #1 HF Run 1 / 18.1 °C	Unit #1 HF Run 2 / 18.1 °C	Unit #1 HF Run 3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Volume	Sample	mL	311	350	337	
Dilution Factor	fluoride		1.00	1.00	1.00	
Fluoride	As Tested	mg/L	0.09	0.03	0.08	0.03
Fluoride	Water Soluble	µg/sample	30	10	30	

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Analytical Report

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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: HF Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796279**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 27, 2025
Report Number: 3109833
Report Type: Reissue Report
Original Report #: 3109016

Reference Number	1796279-4	1796279-5	1796279-6
Sample Date	Feb 12, 2025	Feb 12, 2025	Feb 12, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit #2 HF Run 1 / 18.1 °C	Unit #2 HF Run 2 / 18.1 °C	Unit #2 HF Run 3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Volume	Sample	mL	350	312	395	
Dilution Factor	fluoride		1.00	1.00	1.00	
Fluoride	As Tested	mg/L	0.04	0.05	0.03	0.03
Fluoride	Water Soluble	µg/sample	10	20	10	

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Analytical Report

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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: HF Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796279**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 27, 2025
Report Number: 3109833
Report Type: Reissue Report
Original Report #: 3109016

Reference Number	1796279-7	1796279-8	1796279-9
Sample Date	Feb 11, 2025	Feb 11, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit #3 HF Run 1 / 18.1 °C	Unit #3 HF Run 2 / 18.1 °C	Unit #3 HF Run 3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Volume	Sample	mL	327	310	360	
Dilution Factor	fluoride		1.00	1.00	1.00	
Fluoride	As Tested	mg/L	0.08	0.08	0.05	0.03
Fluoride	Water Soluble	µg/sample	30	20	20	

Approved by:

Carol Nam, Dipl. T.
Quality Assurance Coordinator

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Methodology and Notes

Bill To:	A. Lanfranco & Associates #101, 9488 - 189 Street Surrey, BC, Canada V4N 4W7	Project ID:	Metro Vancouver WTE	Lot ID:	**1796279**
Attn:	Missy	Project Name:	HF Samples	Control Number:	
Sampled By:		Project Location:		Date Received:	Feb 21, 2025
Company:		LSD:		Date Reported:	Feb 27, 2025
		P.O.:		Report Number:	3109833
		Proj. Acct. code:		Report Type:	Reissue Report
				Original Report #:	3109016

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Anions by IEC in air (VAN)	EMC	*	Determination of Hydrogen Halide & Halogen Emissions from Stationary Sources (Isokinetic), 26A	Feb 25, 2025	Element Vancouver

** Reference Method Modified*

References

EMC	Emission Measurement Center of EPA

Comments:

- Report was issued to include retest result for fluoride analysis on samples 1796279-1 to 9 as requested by Mark Lanfranco of A. Lanfranco on February 25, 2025.
  Previous report 3109016.

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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email	PDF	Invoice

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Reference Number	1796341-1	1796341-2	1796341-3
Sample Date	Feb 13, 2025	Feb 13, 2025	Feb 13, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 1 Run 1 (Unit 1 R1 + 4 Bottles) / 18.1 °C	Unit 1 Run 2 (MV Unit 1 Run 2 + 4 Bottles) / 18.1 °C	Unit 1 Run 3 (MV Unit 1 Run 3 + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Front Half Metals Fraction 1A						
Aluminum		µg	9	10	20	5
Antimony		µg	4	<2	3	2.5
Arsenic		µg	3.6	<1	7.4	1
Cadmium		µg	0.7	0.8	0.3	0.25
Chromium		µg	3.57	2.0	2.56	0.2
Cobalt		µg	0.5	0.9	<0.3	0.25
Copper		µg	4.0	2	4.3	0.25
Lead		µg	4.3	5.7	6.1	1.5
Manganese		µg	2	0.8	1	0.25
Nickel		µg	3.2	1	2	0.5
Phosphorus		µg	52	51	55	2.5
Selenium		µg	<2	19	<2	1.5
Tellurium		µg	5.1	<2	<2	2
Thallium		µg	<2	2.9	2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	46.2	50.5	45.8	0.5
Back Half Metals Fraction 2A						
Aluminum		µg	10	20	6	5
Antimony		µg	<2	<2	<2	2.5
Arsenic		µg	<0.9	<0.9	4.8	1
Cadmium		µg	<0.2	<0.2	<0.2	0.25
Chromium		µg	0.88	0.83	0.35	0.2
Cobalt		µg	<0.2	<0.2	<0.2	0.25
Copper		µg	1	1	1	0.25
Lead		µg	<1	4.4	<1	1.5
Manganese		µg	0.8	0.3	0.3	0.25
Nickel		µg	0.6	<0.4	<0.4	0.5
Phosphorus		µg	9	8	10	2.5
Selenium		µg	2.7	<1	<1	1.5
Tellurium		µg	<2	<2	<2	2
Thallium		µg	<1	<1	<1	1.5
Vanadium		µg	<0.9	<0.9	<0.9	1
Zinc		µg	3.9	2	1.0	0.5
Volume	Sample	mL	683	726	748	
Volume	aliquot volume	mL	633	676	698	
Mercury by CVAA						
Mercury	As Tested	µg/L	0.07	0.07	0.13	0.05

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Reference Number	1796341-1	1796341-2	1796341-3
Sample Date	Feb 13, 2025	Feb 13, 2025	Feb 13, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 1 Run 1 (Unit 1 R1 + 4 Bottles) / 18.1 °C	Unit 1 Run 2 (MV Unit 1 Run 2 + 4 Bottles) / 18.1 °C	Unit 1 Run 3 (MV Unit 1 Run 3 + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Mercury by CVAA - Continued						
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	250	250	250	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 1B	µg/sample	0.03	0.03	0.053	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	683	726	748	
Volume	aliquot volume	mL	5.0	5.0	5.0	
Volume	Final	mL	40	40	40	
Mercury	Fraction 2B	µg/sample	<0.3	<0.3	<0.3	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	99	98	99	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3A	µg/sample	<0.008	<0.008	<0.008	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	500	500	500	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3B	µg/sample	<0.04	<0.04	<0.04	
Mercury	As Tested	µg/L	<0.05	0.07	0.10	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	200	200	200	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3C	µg/sample	<0.02	0.02	0.03	

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Reference Number	1796341-4	1796341-5	1796341-6
Sample Date	Feb 11, 2025	Feb 12, 2025	Feb 12, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 2 Run 1 (Unit 2 R1 + 4 Bottles) / 18.1 °C	Unit 2 Run 2 (MV Unit 2 Run 2 + 4 Bottles) / 18.1 °C	Unit 2 Run 3 (MV Unit 2 Run 3 + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Front Half Metals Fraction 1A						
Aluminum		µg	20	20	20	5
Antimony		µg	3	<2	10	2.5
Arsenic		µg	2	3.7	3.5	1
Cadmium		µg	0.5	0.3	0.7	0.25
Chromium		µg	3.50	5.68	8.88	0.2
Cobalt		µg	0.5	<0.3	<0.3	0.25
Copper		µg	3.7	3.9	4.8	0.25
Lead		µg	8.8	7.0	11	1.5
Manganese		µg	1	2	1	0.25
Nickel		µg	3.8	5.7	4.2	0.5
Phosphorus		µg	44	64	50	2.5
Selenium		µg	<2	9.1	<2	1.5
Tellurium		µg	<2	<2	<2	2
Thallium		µg	<2	<2	<2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	63.1	48.0	126	0.5
Back Half Metals Fraction 2A						
Aluminum		µg	24	6	7	5
Antimony		µg	4	10	<2	2.5
Arsenic		µg	1	<0.9	2	1
Cadmium		µg	<0.2	<0.2	<0.2	0.25
Chromium		µg	2.23	0.68	5.08	0.2
Cobalt		µg	<0.2	<0.2	<0.2	0.25
Copper		µg	0.9	0.7	1	0.25
Lead		µg	4.0	<1	2	1.5
Manganese		µg	0.8	0.3	0.6	0.25
Nickel		µg	0.4	<0.4	2	0.5
Phosphorus		µg	20	20	10	2.5
Selenium		µg	<1	<1	<1	1.5
Tellurium		µg	<2	<2	<2	2
Thallium		µg	3.4	<1	<1	1.5
Vanadium		µg	<0.9	<0.9	<0.9	1
Zinc		µg	2.2	1	4.2	0.5
Volume	Sample	mL	665	652	719	
Volume	aliquot volume	mL	615	602	669	
Mercury by CVAA						
Mercury	As Tested	µg/L	0.05	0.12	0.14	0.05

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Reference Number	1796341-4	1796341-5	1796341-6
Sample Date	Feb 11, 2025	Feb 12, 2025	Feb 12, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 2 Run 1 (Unit 2 R1 + 4 Bottles) / 18.1 °C	Unit 2 Run 2 (MV Unit 2 Run 2 + 4 Bottles) / 18.1 °C	Unit 2 Run 3 (MV Unit 2 Run 3 + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Mercury by CVAA - Continued						
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	250	250	250	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 1B	µg/sample	0.02	0.049	0.054	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	665	652	719	
Volume	aliquot volume	mL	5.0	5.0	5.0	
Volume	Final	mL	40	40	40	
Mercury	Fraction 2B	µg/sample	<0.3	<0.3	<0.3	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	99	100	102	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3A	µg/sample	<0.008	<0.008	<0.008	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	500	500	500	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3B	µg/sample	<0.04	<0.04	<0.04	
Mercury	As Tested	µg/L	0.05	0.05	0.11	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	200	200	200	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3C	µg/sample	0.02	0.02	0.034	

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Analytical Report

Bill To: A. Lanfranco & Associates
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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Reference Number	1796341-7	1796341-8	1796341-9
Sample Date	Feb 10, 2025	Feb 11, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 3 Run 1 (Unit 3 R1 + 4 Bottles / 18.1 °C	Unit 3 Run 2 (MV Unit 3 Run 2 + 4 Bottles) / 18.1 °C	Unit 3 Run 3 (MV Unit 3 Run 3 + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Front Half Metals Fraction 1A						
Aluminum		µg	20	20	10	5
Antimony		µg	<2	<2	3	2.5
Arsenic		µg	<1	1	6.3	1
Cadmium		µg	<0.3	0.6	0.3	0.25
Chromium		µg	1.9	1.5	0.90	0.2
Cobalt		µg	0.4	<0.3	0.6	0.25
Copper		µg	2	3.3	1	0.25
Lead		µg	5.0	5.7	<2	1.5
Manganese		µg	1	1	0.6	0.25
Nickel		µg	<0.5	3.9	0.7	0.5
Phosphorus		µg	59	55	45	2.5
Selenium		µg	<2	<2	<2	1.5
Tellurium		µg	<2	<2	<2	2
Thallium		µg	<2	<2	<2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	20	28.3	20	0.5
Back Half Metals Fraction 2A						
Aluminum		µg	20	10	27	5
Antimony		µg	<2	<2	3	2.5
Arsenic		µg	<0.9	<0.9	<0.9	1
Cadmium		µg	<0.2	<0.2	<0.2	0.25
Chromium		µg	1.1	1.5	1.0	0.2
Cobalt		µg	<0.2	0.5	0.2	0.25
Copper		µg	2	2	2	0.25
Lead		µg	2.7	<1	<1	1.5
Manganese		µg	0.5	0.9	0.6	0.25
Nickel		µg	<0.4	<0.4	1	0.5
Phosphorus		µg	9	10	10	2.5
Selenium		µg	2	<1	<1	1.5
Tellurium		µg	3.0	<2	2.3	2
Thallium		µg	<1	<1	<1	1.5
Vanadium		µg	<0.9	<0.9	<0.9	1
Zinc		µg	2.3	16	11	0.5
Volume	Sample	mL	636	668	699	
Volume	aliquot volume	mL	586	618	649	
Mercury by CVAA						
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Reference Number	1796341-7	1796341-8	1796341-9
Sample Date	Feb 10, 2025	Feb 11, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 3 Run 1 (Unit 3 R1 + 4 Bottles / 18.1 °C	Unit 3 Run 2 (MV Unit 3 Run 2 + 4 Bottles) / 18.1 °C	Unit 3 Run 3 (MV Unit 3 Run 3 + 4 Bottles) / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Mercury by CVAA - Continued						
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	250	250	250	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 1B	µg/sample	<0.02	<0.02	<0.02	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	636	668	699	
Volume	aliquot volume	mL	5.0	5.0	5.0	
Volume	Final	mL	40	40	40	
Mercury	Fraction 2B	µg/sample	<0.3	<0.3	<0.3	
Mercury	As Tested	µg/L	0.12	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	99	98	99	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3A	µg/sample	0.019	<0.008	<0.008	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	500	500	500	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3B	µg/sample	<0.04	<0.04	<0.04	
Mercury	As Tested	µg/L	1.44	0.15	0.07	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	200	200	200	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3C	µg/sample	0.46	0.048	0.02	

Approved by:

Carol Nam, Dipl. T.
Quality Assurance Coordinator

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Metals and Hg Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796341**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 17, 2025
Report Number: 3109096
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Mercury in Air (VAN) - 1B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 1B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 2B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3A	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3C	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Metals in Stack Samples - Back half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 27, 2025	Element Vancouver
Metals in Stack Samples - Front half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 24, 2025	Element Vancouver

** Reference Method Modified*

References

EMC Emission Measurement Center of EPA

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Report Transmission Cover Page

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: NH3 Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796255**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108969
Report Type: Final Report

Contact	Company	Address
Mark Lanfranco	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
Missy	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: missy@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	Invoice

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

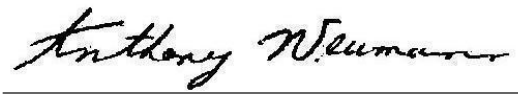
Project ID: Metro Vancouver WTE
Project Name: NH3 Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796255**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108969
Report Type: Final Report

Reference Number	1796255-1	1796255-2	1796255-3
Sample Date	Feb 13, 2025	Feb 12, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit #1 NH3 Blk / 18.1 °C	Unit #2 NH3 Blk / 18.1 °C	Unit #3 NH3 Blk / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Ammonium - N	As Tested	µg/L	<25	<25	<25	25
Dilution Factor	As Tested		1.00	1.00	1.00	
Sample Volume	Sample volume	mL	240	238	246	
Ammonium - N		µg/sample	<6.0	<6.0	<6.2	

Approved by:



Anthony Neumann, MSc
General Manager

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Methodology and Notes

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
Surrey, BC, Canada
V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: NH3 Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796255**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108969
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Ammonium in Impingers	APHA	*	Automated Phenate Method, 4500-NH3 G	Feb 26, 2025	Element Edmonton - Roper Road

** Reference Method Modified*

References

APHA Standard Methods for the Examination of Water and Wastewater

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Report Transmission Cover Page

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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: NH3 Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796254**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108967
Report Type: Final Report

Contact	Company	Address
Mark Lanfranco	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
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Delivery	Format	Deliverables
Email	PDF	Invoice

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Analytical Report

Bill To: A. Lanfranco & Associates
#101, 9488 - 189 Street
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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: NH3 Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796254**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108967
Report Type: Final Report

Reference Number	1796254-1	1796254-2	1796254-3
Sample Date	Feb 13, 2025	Feb 13, 2025	Feb 13, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 1 Run 1 NH3 / 18.1 °C	Unit 1 Run 2 NH3 / 18.1 °C	Unit 1 Run 3 NH3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Ammonium - N	As Tested	µg/L	12700	29600	24600	25
Dilution Factor	As Tested		10.0	10.0	10.0	
Sample Volume	Sample volume	mL	368	336	352	
Ammonium - N		µg/sample	4680	9960	8650	

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Analytical Report

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V4N 4W7
Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: NH3 Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796254**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108967
Report Type: Final Report

Reference Number	1796254-4	1796254-5	1796254-6
Sample Date	Feb 12, 2025	Feb 12, 2025	Feb 12, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 2 Run 1 NH3 / 18.1 °C	Unit 2 Run 2 NH3 / 18.1 °C	Unit 2 Run 3 NH3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Ammonium - N	As Tested	µg/L	3750	4580	164	25
Dilution Factor	As Tested		1.00	1.00	1.00	
Sample Volume	Sample volume	mL	344	318	248	
Ammonium - N		µg/sample	1290	1460	40.7	

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Analytical Report

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Sampled By:
Company:

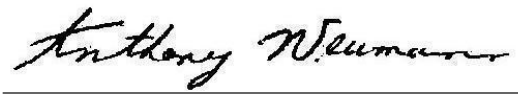
Project ID: Metro Vancouver WTE
Project Name: NH3 Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796254**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108967
Report Type: Final Report

Reference Number	1796254-7	1796254-8	1796254-9
Sample Date	Feb 11, 2025	Feb 11, 2025	Feb 11, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Unit 3 Run 1 NH3 / 18.1 °C	Unit 3 Run 2 NH3 / 18.1 °C	Unit 3 Run 3 NH3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Air Quality						
Ammonium - N	As Tested	µg/L	<25	11700	3220	25
Dilution Factor	As Tested		1.00	10.0	1.00	
Sample Volume	Sample volume	mL	296	320	360	
Ammonium - N		µg/sample	<7.4	3740	1160	

Approved by:



Anthony Neumann, MSc
General Manager

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Methodology and Notes

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Company:

Project ID: Metro Vancouver WTE
Project Name: NH3 Samples
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796254**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Feb 26, 2025
Report Number: 3108967
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Ammonium in Impingers	APHA	*	Automated Phenate Method, 4500-NH3 G	Feb 26, 2025	Element Edmonton - Roper Road

** Reference Method Modified*

References

APHA Standard Methods for the Examination of Water and Wastewater

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Report Transmission Cover Page

Bill To: A. Lanfranco & Associates
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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796284**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109023
Report Type: Final Report

Contact	Company	Address
Mark Lanfranco	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: mark.lanfranco@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	COA / COC
Email	PDF	COC / Test Report

Contact	Company	Address
Missy	**A. Lanfranco & Associates**	#101, 9488 - 189 Street Surrey, BC V4N 4W7 Phone: (604) 881-2582 Fax: (604) 881-2581 Email: missy@alanfranco.com

Delivery	Format	Deliverables
Email	PDF	Invoice

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Analytical Report

Bill To: A. Lanfranco & Associates
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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796284**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109023
Report Type: Final Report

Reference Number	1796284-1	1796284-2	1796284-3
Sample Date	Feb 07, 2025	Feb 07, 2025	Feb 07, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Reagent Blank Unit 1 / 18.1 °C	Reagent Blank Unit 2 / 18.1 °C	Reagent Blank Unit 3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Front Half Metals Fraction 1A						
Aluminum		µg	<5	<5	<5	5
Antimony		µg	4	<2	<2	2.5
Arsenic		µg	6.6	3.4	5.5	1
Cadmium		µg	<0.3	<0.3	<0.3	0.25
Chromium		µg	0.58	0.83	0.91	0.2
Cobalt		µg	<0.3	<0.3	<0.3	0.25
Copper		µg	<0.3	0.6	<0.3	0.25
Lead		µg	2	2	<2	1.5
Manganese		µg	<0.3	<0.3	0.3	0.25
Nickel		µg	1	<0.5	<0.5	0.5
Phosphorus		µg	<2	5	<2	2.5
Selenium		µg	<2	<2	<2	1.5
Tellurium		µg	6.7	<2	<2	2
Thallium		µg	<2	<2	<2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	<0.5	0.5	<0.5	0.5
Back Half Metals Fraction 2A						
Aluminum		µg	<5	<5	<5	5
Antimony		µg	<3	<3	<3	2.5
Arsenic		µg	<1	<1	<1	1
Cadmium		µg	<0.3	<0.3	<0.3	0.25
Chromium		µg	0.31	0.89	<0.2	0.2
Cobalt		µg	<0.3	<0.3	<0.3	0.25
Copper		µg	1	0.8	<0.3	0.25
Lead		µg	<2	4.5	4.8	1.5
Manganese		µg	<0.3	<0.3	<0.3	0.25
Nickel		µg	0.6	<0.5	<0.5	0.5
Phosphorus		µg	10	10	10	2.5
Selenium		µg	2	<2	<2	1.5
Tellurium		µg	2.8	<2	<2	2
Thallium		µg	<2	<2	<2	1.5
Vanadium		µg	<1	<1	<1	1
Zinc		µg	<0.5	<0.5	0.6	0.5
Volume	Sample	mL	207	207	208	
Volume	aliquot volume	mL	157	157	158	
Mercury by CVAA						
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	

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Analytical Report

Bill To: A. Lanfranco & Associates
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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796284**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109023
Report Type: Final Report

Reference Number	1796284-1	1796284-2	1796284-3
Sample Date	Feb 07, 2025	Feb 07, 2025	Feb 07, 2025
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Reagent Blank Unit 1 / 18.1 °C	Reagent Blank Unit 2 / 18.1 °C	Reagent Blank Unit 3 / 18.1 °C
Matrix	Stack Samples	Stack Samples	Stack Samples

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Mercury by CVAA - Continued						
Volume	Sample	mL	250	250	250	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 1B	µg/sample	<0.02	<0.02	<0.02	
Mercury	As Tested	µg/L	<0.05	<0.05	0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	207	207	208	
Volume	aliquot volume	mL	5.0	5.0	5.0	
Volume	Final	mL	45	45	45	
Mercury	Fraction 2B	µg/sample	<0.09	<0.09	0.10	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	92	100	99	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3A	µg/sample	<0.007	<0.008	<0.008	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	500	500	500	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3B	µg/sample	<0.04	<0.04	<0.04	
Mercury	As Tested	µg/L	<0.05	<0.05	<0.05	0.05
Dilution Factor	As Tested		1	1	1	
Volume	Sample	mL	200	200	200	
Volume	aliquot volume	mL	25	25	25	
Volume	Final	mL	40	40	40	
Mercury	Fraction 3C	µg/sample	<0.02	<0.02	<0.02	

Approved by:

Rachel Eden , B. Sc.
Operations Manager

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Methodology and Notes

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Attn: Missy
Sampled By:
Company:

Project ID: Metro Vancouver WTE
Project Name: Reagent Blanks
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1796284**
Control Number:
Date Received: Feb 21, 2025
Date Reported: Mar 14, 2025
Report Number: 3109023
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Mercury in Air (VAN) - 1B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 2B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3A	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3B	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Mercury in Air (VAN) - 3C	EMC	*	Metals Emissions from Stationary Sources, 29	Mar 12, 2025	Element Vancouver
Metals in Stack Samples - Back half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 27, 2025	Element Vancouver
Metals in Stack Samples - Front half (VAN)	EMC	*	Metals Emissions from Stationary Sources, 29	Feb 24, 2025	Element Vancouver

** Reference Method Modified*

References

EMC Emission Measurement Center of EPA

Your Project #: MVWTE
Site#: C515068
Site Location: BURNABY, BC
Your C.O.C. #: C515068-ONTV-01-01

Attention: Shanaz Akbar

Bureau Veritas
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2025/02/25
Report #: R8492540
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C517296
Received: 2025/02/19, 09:00

Sample Matrix: Tedlar Bag
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Nitrous Oxide	9	N/A	2025/02/20	CAM SOP-00203	GC/ECD

Remarks:

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All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: MVWTE
Site#: C515068
Site Location: BURNABY, BC
Your C.O.C. #: C515068-ONTV-01-01

Attention: Shanaz Akbar

Bureau Veritas
4606 Canada Way
Burnaby, BC
CANADA V5G 1K5

Report Date: 2025/02/25
Report #: R8492540
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C517296
Received: 2025/02/19, 09:00

Encryption Key

Julian Tong
Project Manager Assistant
25 Feb 2025 17:37:18

Please direct all questions regarding this Certificate of Analysis to:
Julian Tong, Project Manager Assistant
Email: Julian.Tong@bureauveritas.com
Phone# (905) 817-5700

==========

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COMPRESSED GAS PARAMETERS (TEDLAR BAG)

Bureau Veritas ID		AODP60	AODP61	AODP62	AODP63		
Sampling Date		2025/02/11	2025/02/11	2025/02/11	2025/02/12		
COC Number		C515068-ONTV-01-01	C515068-ONTV-01-01	C515068-ONTV-01-01	C515068-ONTV-01-01		
	UNITS	DEU325-UNIT3 BAG1	DEU326-UNIT3 BAG2	DEU327-UNIT3 BAG3	DEU328-UNIT2 BAG1	RDL	QC Batch
Gas							
Nitrous Oxide	ppmv	4.5	5.0	3.4	2.4	0.1	9880505

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		AODP64	AODP65	AODP66	AODP67		
Sampling Date		2025/02/12	2025/02/12	2025/02/13	2025/02/13		
COC Number		C515068-ONTV-01-01	C515068-ONTV-01-01	C515068-ONTV-01-01	C515068-ONTV-01-01		
	UNITS	DEU329-UNIT2 BAG2	DEU330-UNIT2 BAG3	DEU331-UNIT1 BAG1	DEU332-UNIT1 BAG2	RDL	QC Batch
Gas							
Nitrous Oxide	ppmv	5.0	8.2	3.5	6.5	0.1	9880505

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		AODP68	AODP68		
Sampling Date		2025/02/13	2025/02/13		
COC Number		C515068-ONTV-01-01	C515068-ONTV-01-01		
	UNITS	DEU333-UNIT1 BAG3	DEU333-UNIT1 BAG3 Lab-Dup	RDL	QC Batch
Gas					
Nitrous Oxide	ppmv	11	11	0.1	9880505

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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TEST SUMMARY

Bureau Veritas ID: AODP60
Sample ID: DEU325-UNIT3 BAG1
Matrix: Tedlar Bag
Collected: 2025/02/11
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP61
Sample ID: DEU326-UNIT3 BAG2
Matrix: Tedlar Bag
Collected: 2025/02/11
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP62
Sample ID: DEU327-UNIT3 BAG3
Matrix: Tedlar Bag
Collected: 2025/02/11
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP63
Sample ID: DEU328-UNIT2 BAG1
Matrix: Tedlar Bag
Collected: 2025/02/12
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP64
Sample ID: DEU329-UNIT2 BAG2
Matrix: Tedlar Bag
Collected: 2025/02/12
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP65
Sample ID: DEU330-UNIT2 BAG3
Matrix: Tedlar Bag
Collected: 2025/02/12
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP66
Sample ID: DEU331-UNIT1 BAG1
Matrix: Tedlar Bag
Collected: 2025/02/13
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

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Bureau Veritas Job #: C517296
Report Date: 2025/02/25

Bureau Veritas
Client Project #: MVWTE
Site Location: BURNABY, BC

TEST SUMMARY

Bureau Veritas ID: AODP67
Sample ID: DEU332-UNIT1 BAG2
Matrix: Tedlar Bag

Collected: 2025/02/13
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP68
Sample ID: DEU333-UNIT1 BAG3
Matrix: Tedlar Bag

Collected: 2025/02/13
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

Bureau Veritas ID: AODP68 Dup
Sample ID: DEU333-UNIT1 BAG3
Matrix: Tedlar Bag

Collected: 2025/02/13
Shipped:
Received: 2025/02/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrous Oxide	GC/ECD	9880505	N/A	2025/02/20	Satvinder Bhathal

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GENERAL COMMENTS

Nitrous Oxide Analysis: The samples were analysed 9/10/11 days after the date of sampling. The recommended holding time is 2 days.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Method Blank		RPD	
QC Batch	Parameter	Date	Value	UNITS	Value (%)	QC Limits
9880505	Nitrous Oxide	2025/02/20	<0.1	ppmv	NC	N/A

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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VALIDATION SIGNATURE PAGE

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

Tom Mitchell, B.Sc, Supervisor, Compressed Gases

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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C517296
2025/02/19 09:00

Sent to: Bureau Veritas Campobello
6740 Campobello Road
Mississauga, ON, L5N 2L8
Tel: (905) 817-5700

AIR

BUREAU VERITAS INTERLAB CHAIN OF CUSTODY RECORD

COC # C515068-ONTV-01-01

REPORT INFORMATION	
Company:	Bureau Veritas
Address:	4606 Canada Way, Burnaby, British Columbia, V5G 1K5
Contact Name:	Shanaz Akbar
Email:	Shanaz.Akbar@bureauveritas.com, Customersolutionswest@bureauveritas.com
Phone:	
BV Project #:	C515068
Client Invoice To:	A. LANFRANCO & ASSOCIATES INC. (1301)
Client Report To:	A. LANFRANCO & ASSOCIATES INC. (1301) Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

NONT-2025-02-2936

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	N2O Gas CSA 22396.1-09 Subcontract	ADDITIONAL SAMPLE INFORMATION
1	DEU325-UNIT3 BAG1	AIR	2025/02/11			1	X	(P: 01)
2	DEU326-UNIT3 BAG2	AIR	2025/02/11			1	X	(P: 01)
3	DEU327-UNIT3 BAG3	AIR	2025/02/11			1	X	(P: 01)
4	DEU328-UNIT2 BAG1	AIR	2025/02/12			1	X	(P: 01)
5	DEU329-UNIT2 BAG2	AIR	2025/02/12			1	X	(P: 01)
6	DEU330-UNIT2 BAG3	AIR	2025/02/12			1	X	(P: 01)
7	DEU331-UNIT1 BAG1	AIR	2025/02/13			1	X	(P: 01)
8	DEU332-UNIT1 BAG2	AIR	2025/02/13			1	X	(P: 01)
9	DEU333-UNIT1 BAG3	AIR	2025/02/13			1	X	(P: 01)
10								

SITE LOCATION:	REGULATORY CRITERIA	SPECIAL INSTRUCTIONS	REQUIRED EDDs	TURNAROUND TIME
BURNABY BC SITE #: PROJECT #: MVWTE PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:		Please inform Bureau Veritas immediately if you are not accredited for the requested test(s) or the hold time is approaching. **Please return a copy of this form with the report.**	National Excel (N001)	☐ Rush Required 2025/03/03 Date Required *Please inform us if rush charges will be incurred*

COOLER ID: 1	YES	NO	Temp: (°C)	COOLER ID: 2	YES	NO	Temp: (°C)	COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present	✓			Custody Seal Present	✓			Custody Seal Present			
Custody Seal Intact	✓			Custody Seal Intact	✓			Custody Seal Intact			
Cooling Media Present				Cooling Media Present				Cooling Media Present			

RECEIVING LAB USE ONLY

Bureau Veritas Job #

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. BILLO PUN	2025-02-18	15:00	1.	2025/02/19	JGW		
2.			2.				

APPENDIX - D

COMPUTER GENERATED RESULTS

Client:	Metro Vancouver	**Date:**	13-Feb-25
Jobsite:	WTE (Burnaby, BC)	**Run:**	1 - Particulate / Metals
Source:	Unit 1	**Run Time:**	08:30 - 10:34

Concentrations:

Particulate	1.33	mg/dscm	0.00058	gr/dscf
	0.76	mg/Acm	0.00033	gr/Acf
	1.27	mg/dscm (@ 11% O2)	0.00055	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.096	Kg/hr	0.211	lb/hr

Flue Gas Characteristics:

Flow	1198	dscm/min	42315	dscf/min
	19.97	dscm/sec	705	dscf/sec
	2097	Acm/min	74041	Acf/min
Velocity	13.719	m/sec	45.01	f/sec
Temperature	151.4	oC	304.5	oF
Moisture	11.7	%		
Gas Analysis	10.5	% O2		
	8.8	% CO2		
	29.835	Mol. Wt (g/gmole) Dry		
	28.454	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.7843	dscm	98.326	dscf
Sample Time	120.0	minutes		
Isokineticity	101.8	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	13-Feb-25
Jobsite:	WTE (Burnaby, BC)	**Run:**	1 - Particulate / Metals
Source:	Unit 1	**Run Time:**	08:30 - 10:34

Control Unit (Y)	1.0010
Nozzle Diameter (in.)	0.3092
Pitot Factor	0.8505
Baro. Press. (in. Hg)	29.43
Static Press. (in. H20)	-19.00
Stack Height (ft)	30
Stack Diameter (in.)	70.90
Stack Area (sq.ft.)	27.417
Minutes Per Reading	5.0
Minutes Per Point	5.0

Collection:

Filter (grams)	0.00160
Washings (grams)	0.00210
Total (grams)	**0.00370**

Gas Analysis (Vol. %):

	CO2	O2
Traverse 1	8.83	10.32
Traverse 2	8.83	10.74
	8.83	**10.53**

Condensate Collection:

Impinger 1	185.0
Impinger 2	65.0
Impinger 3	12.0
Impinger 4	0.0
Impinger 5	1.0
Impinger 6	0.0
Gel	13.0
Gain (grams)	**276.0**

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	884.328								
1	5.0	887.766	0.29	1.87	54	54	4.5	295	1.5	101.3
2	10.0	891.281	0.30	1.94	55	55	4.5	296	4.7	101.7
3	15.0	894.684	0.28	1.81	56	56	4.5	296	8.4	101.7
4	20.0	898.210	0.30	1.95	57	57	4.5	295	12.5	101.6
5	25.0	901.423	0.25	1.61	58	58	4	300	17.7	101.5
6	30.0	905.172	0.34	2.20	58	58	4	300	25.2	101.7
7	35.0	909.517	0.46	2.94	60	60	6	310	45.6	101.8
8	40.0	914.295	0.55	3.54	60	60	6	305	53.2	102.2
9	45.0	919.002	0.53	3.43	61	61	7.5	302	58.3	102.1
10	50.0	923.584	0.50	3.25	63	63	7.5	303	62.5	102.0
11	55.0	927.910	0.45	2.89	63	63	6.5	311	66.1	101.9
12	60.0	931.781	0.35	2.28	64	64	6.5	302	69.4	102.4
Traverse 2	0.0	931.781								
1	5.0	935.780	0.38	2.46	65	65	6.5	308	1.5	101.8
2	10.0	940.130	0.45	2.93	66	66	6.5	306	4.7	101.6
3	15.0	944.748	0.50	3.28	67	67	7.5	301	8.4	101.9
4	20.0	949.350	0.50	3.25	68	68	7.5	310	12.5	101.9
5	25.0	953.873	0.48	3.13	69	69	7.5	308	17.7	101.9
6	30.0	958.410	0.48	3.14	71	71	7.5	310	25.2	101.9
7	35.0	962.882	0.47	3.05	70	70	7	315	45.6	102.0
8	40.0	967.276	0.45	2.94	70	70	7	309	53.2	102.0
9	45.0	971.618	0.44	2.88	70	70	7	308	58.3	101.9
10	50.0	975.870	0.42	2.76	71	71	7	305	62.5	101.7
11	55.0	979.520	0.31	2.03	71	71	6	307	66.1	101.6
12	60.0	982.802	0.25	1.64	71	71	6	305	69.4	101.5
Average:			0.405	2.633	64.1	64.1	6.2	304.5		101.8

Client:	Metro Vancouver	**Date:**	13-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	2 - Particulate / Metals
Source:	Unit 1	**Run Time:**	10:56 - 1300

Concentrations:

Particulate	0.88	mg/dscm	0.00038	gr/dscf
	0.48	mg/Acm	0.00021	gr/Acf
	0.86	mg/dscm (@ 11% O2)	0.00038	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.062	Kg/hr	0.136	lb/hr

Flue Gas Characteristics:

Flow	1177	dscm/min	41559	dscf/min
	19.61	dscm/sec	693	dscf/sec
	2133	Acm/min	75310	Acf/min
Velocity	13.954	m/sec	45.78	f/sec
Temperature	158.1	oC	316.6	oF
Moisture	13.2	%		
Gas Analysis	10.8	% O2		
	8.4	% CO2		
	29.780	Mol. Wt (g/gmole) Dry		
	28.221	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.8533	dscm	100.765	dscf
Sample Time	120.0	minutes		
Isokineticity	103.2	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	13-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	2 - Particulate / Metals
Source:	Unit 1	**Run Time:**	10:56 - 1300

Control Unit (Y)	1.0010	**Collection:**			**Gas Analysis (Vol. %):**			**Condensate Collection:**	
Nozzle Diameter (in.)	0.3137	Filter (grams)	0.00100		CO2	O2		Impinger 1	213.0
Pitot Factor	0.8367	Washings (grams)	0.00150	Traverse 1	8.00	11.15		Impinger 2	82.0
Baro. Press. (in. Hg)	29.39			Traverse 2	8.83	10.50		Impinger 3	11.0
Static Press. (in. H20)	-19.00	**Total (grams)**	**0.00250**					Impinger 4	5.0
Stack Height (ft)	30							Impinger 5	0.0
Stack Diameter (in.)	70.90							Impinger 6	0.0
Stack Area (sq.ft.)	27.417							Gel	15.5
Minutes Per Reading	5.0				**8.42**	**10.83**		**Gain (grams)**	**326.5**
Minutes Per Point	5.0								

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	983.232								
1	5.0	987.220	0.36	2.42	70	70	9	305	1.5	103.2
2	10.0	991.802	0.48	3.19	70	70	9	314	4.7	103.5
3	15.0	996.457	0.50	3.30	70	70	11.5	319	8.4	103.4
4	20.0	1001.150	0.51	3.36	69	69	11.5	319	12.5	103.4
5	25.0	1005.801	0.50	3.30	69	69	11.5	319	17.7	103.5
6	30.0	1010.363	0.48	3.17	69	69	11.5	318	25.2	103.5
7	35.0	1014.831	0.46	3.04	70	70	11.5	318	45.6	103.3
8	40.0	1019.246	0.45	2.97	70	70	11.5	319	53.2	103.2
9	45.0	1023.805	0.48	3.18	70	70	12	318	58.3	103.2
10	50.0	1027.974	0.40	2.65	70	70	12	318	62.5	103.3
11	55.0	1031.988	0.37	2.46	71	71	10.5	317	66.1	103.1
12	60.0	1035.485	0.28	1.86	71	71	10.5	318	69.4	103.1
Traverse 2	0.0	1035.485								
1	5.0	1039.218	0.32	2.12	70	70	8	317	1.5	103.2
2	10.0	1042.900	0.31	2.06	71	71	8	317	4.7	103.2
3	15.0	1046.520	0.30	1.99	71	71	8	317	8.4	103.1
4	20.0	1050.316	0.33	2.19	71	71	8	316	12.5	103.1
5	25.0	1054.244	0.35	2.33	72	72	9	316	17.7	103.4
6	30.0	1058.269	0.37	2.46	72	72	9	317	25.2	103.2
7	35.0	1062.855	0.48	3.20	72	72	12	315	45.6	103.2
8	40.0	1067.888	0.58	3.86	71	71	12	315	53.2	103.4
9	45.0	1072.754	0.54	3.59	71	71	13	316	58.3	103.6
10	50.0	1077.435	0.50	3.32	71	71	13	316	62.5	103.5
11	55.0	1081.820	0.44	2.92	71	71	12	317	66.1	103.4
12	60.0	1085.490	0.32	2.12	71	71	12	317	69.4	101.2
Average:			0.421	2.794	70.5	70.5	10.7	316.6		103.2

Client:	Metro Vancouver	**Date:**	13-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	3 - Particulate / Metals
Source:	Unit 1	**Run Time:**	13:20 - 15:23

Concentrations:

Particulate	1.9	mg/dscm	0.0008	gr/dscf
	1.0	mg/Acm	0.0005	gr/Acf
	1.8	mg/dscm (@ 11% O2)	0.0008	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.134	Kg/hr	0.295	lb/hr

Flue Gas Characteristics:

Flow	1166	dscm/min	41189	dscf/min
	19.44	dscm/sec	686	dscf/sec
	2144	Acm/min	75729	Acf/min
Velocity	14.032	m/sec	46.04	f/sec
Temperature	160.4	oC	320.8	oF
Moisture	14.0	%		
Gas Analysis	10.6	% O2		
	8.8	% CO2		
	29.836	Mol. Wt (g/gmole) Dry		
	28.180	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.7693	dscm	97.800	dscf
Sample Time	120.0	minutes		
Isokineticity	104.0	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	13-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	3 - Particulate / Metals
Source:	Unit 1	**Run Time:**	13:20 - 15:23

Control Unit (Y)	1.0010	**Collection:**			**Gas Analysis (Vol. %):**			**Condensate Collection:**	
Nozzle Diameter (in.)	0.3092	Filter (grams)	0.00160		CO2	O2		Impinger 1	234.0
Pitot Factor	0.8505	Washings (grams)	0.00370	Traverse 1	9.00	10.39		Impinger 2	76.0
Baro. Press. (in. Hg)	29.38			Traverse 2	8.67	10.73		Impinger 3	9.0
Static Press. (in. H20)	-19.00	**Total (grams)**	**0.00530**					Impinger 4	0.0
Stack Height (ft)	30							Impinger 5	1.0
Stack Diameter (in.)	70.90							Impinger 6	1.0
Stack Area (sq.ft.)	27.417							Gel	17.0
Minutes Per Reading	5.0				**8.83**	**10.56**		**Gain (grams)**	**338.0**
Minutes Per Point	5.0								

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	86.015								
1	5.0	89.625	0.31	2.00	67	67	5	315	1.5	103.9
2	10.0	93.180	0.30	1.93	67	67	5	315	4.7	104.0
3	15.0	96.740	0.30	1.93	68	68	5	316	8.4	104.0
4	20.0	100.405	0.32	2.06	67	67	5	315	12.5	103.8
5	25.0	104.252	0.35	2.25	68	68	5.5	317	17.7	104.2
6	30.0	108.151	0.36	2.32	69	69	5.5	317	25.2	103.9
7	35.0	112.514	0.45	2.91	69	69	6	316	45.6	104.1
8	40.0	117.415	0.57	3.68	69	69	6	317	53.2	104.2
9	45.0	122.183	0.54	3.46	69	69	7	321	58.3	104.3
10	50.0	126.770	0.50	3.20	70	70	7	325	62.5	104.3
11	55.0	131.117	0.45	2.87	70	70	6.5	326	66.1	104.2
12	60.0	134.794	0.32	2.04	70	70	6.5	328	69.4	104.4
Traverse 2	0.0	134.794								
1	5.0	138.624	0.35	2.25	68	68	5.5	319	1.5	103.9
2	10.0	142.711	0.40	2.55	68	68	5.5	324	4.7	104.1
3	15.0	146.890	0.42	2.67	68	68	6	327	8.4	104.1
4	20.0	151.150	0.44	2.77	68	68	6	333	12.5	104.1
5	25.0	155.505	0.46	2.90	69	69	6.5	335	17.7	104.0
6	30.0	159.762	0.44	2.77	69	69	6.5	337	25.2	104.1
7	35.0	164.221	0.47	3.03	69	69	6.5	318	45.6	104.3
8	40.0	168.613	0.45	2.93	70	70	6.5	310	53.2	104.2
9	45.0	173.080	0.47	3.04	70	70	7	315	58.3	104.1
10	50.0	177.604	0.48	3.11	70	70	7	315	62.5	104.3
11	55.0	181.525	0.36	2.33	70	70	5.5	316	66.1	104.3
12	60.0	185.020	0.30	1.93	70	70	5.5	321	69.4	102.0
Average:			0.409	2.622	68.8	68.8	6.0	320.8		104.0

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)
Source: Unit 1

Sample Type: HF

Parameter		Test 1	Test 2	Test 3
Test Date		13-Feb-25	13-Feb-25	13-Feb-25
Test Time		09:25 - 10:25	10:56 - 11:56	12:10 - 13:10
Test Duration	(min.)	60	60	60
Baro. Press.	(in. Hg)	29.41	29.41	29.41
DGM Factor	(Y)	0.9880	0.9880	0.9880
Initial Reading	(m^3)	217.482	218.018	218.583
Final Reading	(m^3)	218.016	218.578	219.164
Temp. Outlet	(Avg. oF)	43.0	47.5	48.5
Orifice Press.	(ΔH in.H2O)	0.50	0.50	0.50
Gas Volume	(Sm^3)	0.55	0.57	0.59
HF	(mg)	0.032	0.011	0.032
Oxygen	(Vol. %)	10.5	10.8	10.6
HF	**(mg/Sm^3)**	**0.058**	**0.019**	**0.054**
HF	**(mg/Sm^3 @ 11% O2)**	**0.055**	**0.018**	**0.052**
Moisture	**(Vol. %)**	13.2	13.2	14.0

Tstd. (oF) 68 Pstd. (in. Hg) 29.92

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)
Source: Unit 1

Sample Type: NH_3

Parameter		Test 1	Test 2	Test 3
Test Date		13-Feb-25	13-Feb-25	13-Feb-25
Test Time		09:25 - 10:25	10:56 - 11:56	12:10 - 13:10
Test Duration	(min.)	60	60	60
Baro. Press.	(in. Hg)	29.41	29.41	29.41
DGM Factor	(Y)	0.9965	0.9965	0.9965
Initial Reading	(m^3)	646.898	647.461	647.999
Final Reading	(m^3)	647.458	647.995	648.555
Temp. Outlet	(Avg. oF)	44.3	48.5	46.0
Orifice Press.	(ΔH in.H2O)	0.50	0.50	0.50
Gas Volume	(Sm^3)	0.57	0.54	0.57
NH_3	(mg)	5.7	12.1	10.5
Oxygen	(Vol. %)	10.5	10.8	10.6
NH_3	**(mg/Sm^3)**	**9.9**	**22.3**	**18.5**
NH_3	**(mg/Sm^3 @ 11% O2)**	**9.5**	**21.9**	**17.7**
Moisture	**(Vol. %)**	13.2	13.2	14.0

Tstd. (oF) 68 Pstd. (in. Hg) 29.92

Client:	Metro Vancouver	**Date:**	11-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	1 - Particulate / Metals
Source:	Unit 2	**Run Time:**	10:16 - 12:20

Concentrations:

Particulate	2.9	mg/dscm	0.0013	gr/dscf
	1.7	mg/Acm	0.0008	gr/Acf
	2.9	mg/dscm (@ 11% O2)	0.0012	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.205	Kg/hr	0.452	lb/hr

Flue Gas Characteristics:

Flow	1167	dscm/min	41200	dscf/min
	19.44	dscm/sec	687	dscf/sec
	1973	Acm/min	69677	Acf/min
Velocity	12.910	m/sec	42.36	f/sec
Temperature	150.9	oC	303.6	oF
Moisture	11.4	%		
Gas Analysis	10.8	% O2		
	7.9	% CO2		
	29.700	Mol. Wt (g/gmole) Dry		
	28.369	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.7637	dscm	97.601	dscf
Sample Time	120.0	minutes		
Isokineticity	101.0	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	11-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	1 - Particulate / Metals
Source:	Unit 2	**Run Time:**	10:16 - 12:20

Control Unit (Y)	0.9784	**Collection:**			**Gas Analysis (Vol. %):**		**Condensate Collection:**	
Nozzle Diameter (in.)	0.3137	Filter (grams)	0.00370		CO2	O2	Impinger 1	116.0
Pitot Factor	0.8376	Washings (grams)	0.00440	Traverse 1	7.87	10.87	Impinger 2	100.0
Baro. Press. (in. Hg)	30.31			Traverse 2	8.00	10.63	Impinger 3	26.0
Static Press. (in. H20)	-19.50	**Total (grams)**	**0.00810**				Impinger 4	0.0
Stack Height (ft)	30						Impinger 5	3.0
Stack Diameter (in.)	70.90						Impinger 6	1.0
Stack Area (sq.ft.)	27.417						Gel	20.2
Minutes Per Reading	5.0				**7.94**	**10.75**	**Gain (grams)**	**266.2**
Minutes Per Point	5.0							

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	66.789								
1	5.0	70.295	0.33	1.76	29	29	4.5	304	1.5	99.7
2	10.0	73.700	0.31	1.65	30	30	4.5	306	4.7	99.8
3	15.0	77.005	0.29	1.55	30	30	4.5	305	8.4	100.1
4	20.0	80.440	0.30	1.60	31	31	4.5	305	12.5	102.1
5	25.0	83.748	0.29	1.55	32	32	4.5	304	17.7	99.7
6	30.0	87.596	0.38	2.04	33	33	4.5	304	25.2	101.2
7	35.0	92.820	0.70	3.77	35	35	6.5	304	45.6	101.3
8	40.0	98.036	0.70	3.78	36	36	6.5	305	53.2	101.0
9	45.0	103.285	0.70	3.78	36	36	7	304	58.3	101.5
10	50.0	108.310	0.64	3.47	38	38	7	304	62.5	101.2
11	55.0	111.343	0.23	1.25	39	39	4	304	66.1	101.1
12	60.0	113.802	0.15	0.82	40	40	4	298	69.4	100.8
Traverse 2	0.0	113.802								
1	5.0	118.183	0.48	2.62	41	41	5.5	304	1.5	101.0
2	10.0	122.554	0.47	2.57	42	42	5.5	304	4.7	101.7
3	15.0	126.856	0.46	2.52	43	43	5.5	305	8.4	101.0
4	20.0	131.442	0.52	2.84	43	43	5.5	307	12.5	101.5
5	25.0	135.850	0.48	2.63	44	44	6	306	17.7	101.2
6	30.0	140.130	0.45	2.47	45	45	6	304	25.2	101.1
7	35.0	143.885	0.35	1.93	46	46	5	303	45.6	100.2
8	40.0	147.345	0.30	1.66	46	46	5	302	53.2	99.6
9	45.0	151.000	0.33	1.82	46	46	5	303	58.3	100.4
10	50.0	154.196	0.25	1.39	47	47	5	301	62.5	100.4
11	55.0	156.800	0.16	0.89	47	47	4	300	66.1	102.1
12	60.0	159.455	0.16	0.89	48	48	4	301	69.4	104.0
Average:			0.393	2.135	39.5	39.5	5.2	303.6		101.0

Client:	Metro Vancouver	**Date:**	12-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	2 - Particulate / Metals
Source:	Unit 2	**Run Time:**	09:07 - 11:09

Concentrations:

Particulate	4.29	mg/dscm	0.00187	gr/dscf
	2.49	mg/Acm	0.00109	gr/Acf
	4.18	mg/dscm (@ 11% O2)	0.00183	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.271	Kg/hr	0.597	lb/hr

Flue Gas Characteristics:

Flow	1053	dscm/min	37174	dscf/min
	17.54	dscm/sec	620	dscf/sec
	1814	Acm/min	64052	Acf/min
Velocity	11.868	m/sec	38.94	f/sec
Temperature	148.0	oC	298.3	oF
Moisture	12.7	%		
Gas Analysis	10.7	% O2		
	7.9	% CO2		
	29.697	Mol. Wt (g/gmole) Dry		
	28.216	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.3549	dscm	83.163	dscf
Sample Time	120.0	minutes		
Isokineticity	102.6	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	12-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	2 - Particulate / Metals
Source:	Unit 2	**Run Time:**	09:07 - 11:09

Control Unit (Y)	0.9784	**Collection:**			**Gas Analysis (Vol. %):**			**Condensate Collection:**	
Nozzle Diameter (in.)	0.3092	Filter (grams)	0.00380		CO2	O2		Impinger 1	173.0
Pitot Factor	0.8505	Washings (grams)	0.00630	Traverse 1	8.17	10.50		Impinger 2	62.0
Baro. Press. (in. Hg)	30.03			Traverse 2	7.67	10.97		Impinger 3	3.0
Static Press. (in. H20)	-20.0	**Total (grams)**	**0.01010**					Impinger 4	0.0
Stack Height (ft)	30							Impinger 5	2.0
Stack Diameter (in.)	70.90							Impinger 6	0.0
Stack Area (sq.ft.)	27.417							Gel	16.1
Minutes Per Reading	5.0				**7.92**	**10.74**		**Gain (grams)**	**256.1**
Minutes Per Point	5.0								

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	160.740								
1	5.0	164.124	0.30	1.57	29	29	5	298	1.5	102.7
2	10.0	167.330	0.27	1.41	30	30	5	298	4.7	102.3
3	15.0	170.539	0.27	1.42	30	30	5	295	8.4	102.2
4	20.0	173.556	0.24	1.25	31	31	5	290	12.5	102.4
5	25.0	176.608	0.24	1.28	32	32	4	288	17.7	102.2
6	30.0	179.770	0.26	1.37	33	33	4	300	25.2	102.3
7	35.0	183.628	0.39	2.04	35	35	5.5	306	45.6	102.1
8	40.0	188.042	0.50	2.64	36	36	5.5	300	53.2	102.7
9	45.0	192.200	0.45	2.39	37	37	6	298	58.3	101.6
10	50.0	196.110	0.37	1.96	37	37	6	298	62.5	105.2
11	55.0	200.020	0.40	2.13	39	39	6	297	66.1	100.8
12	60.0	202.850	0.20	1.07	40	40	6	297	69.4	102.7
Traverse 2	0.0	202.850								
1	5.0	206.542	0.34	1.81	41	41	5.5	300	1.5	102.9
2	10.0	210.369	0.37	1.97	42	42	5.5	302	4.7	102.2
3	15.0	214.220	0.37	1.98	43	43	6	300	8.4	102.5
4	20.0	217.966	0.35	1.88	43	43	6	300	12.5	102.5
5	25.0	221.610	0.33	1.77	44	44	6	299	17.7	102.4
6	30.0	225.141	0.30	1.61	45	45	6	301	25.2	104.0
7	35.0	228.513	0.28	1.51	45	45	5.5	298	45.6	102.6
8	40.0	231.818	0.27	1.46	46	46	5.5	299	53.2	102.2
9	45.0	235.005	0.25	1.35	46	46	5	300	58.3	102.5
10	50.0	238.263	0.26	1.40	47	47	5	300	62.5	102.5
11	55.0	241.264	0.22	1.19	47	47	5	297	66.1	102.4
12	60.0	244.210	0.20	1.08	48	48	5	299	69.4	105.3
Average:			0.309	1.648	39.4	39.4	5.4	298.3		102.6

Client:	Metro Vancouver	**Date:**	12-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	3 - Particulate / Metals
Source:	Unit 2	**Run Time:**	11:35 - 13:37

Concentrations:

Particulate	4.0	mg/dscm	0.0017	gr/dscf
	2.3	mg/Acm	0.0010	gr/Acf
	3.7	mg/dscm (@ 11% O2)	0.0016	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.25	Kg/hr	0.561	lb/hr

Flue Gas Characteristics:

Flow	1064	dscm/min	37558	dscf/min
	17.73	dscm/sec	626	dscf/sec
	1860	Acm/min	65685	Acf/min
Velocity	12.171	m/sec	39.93	f/sec
Temperature	150.7	oC	303.3	oF
Moisture	13.2	%		
Gas Analysis	10.3	% O2		
	8.3	% CO2		
	29.732	Mol. Wt (g/gmole) Dry		
	28.179	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.5836	dscm	91.241	dscf
Sample Time	120.0	minutes		
Isokineticity	103.4	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	12-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	3 - Particulate / Metals
Source:	Unit 2	**Run Time:**	11:35 - 13:37

Control Unit (Y)	0.9784	**Collection:**			**Gas Analysis (Vol. %):**			**Condensate Collection:**	
Nozzle Diameter (in.)	0.3137	Filter (grams)	0.00400		CO2	O2		Impinger 1	197.0
Pitot Factor	0.8367	Washings (grams)	0.00630	Traverse 1	8.33	10.13		Impinger 2	78.0
Baro. Press. (in. Hg)	29.98			Traverse 2	8.17	10.47		Impinger 3	6.0
Static Press. (in. H20)	-20.00	**Total (grams)**	**0.0103**					Impinger 4	0.0
Stack Height (ft)	30							Impinger 5	0.0
Stack Diameter (in.)	70.90							Impinger 6	0.0
Stack Area (sq.ft.)	27.417							Gel	14.7
Minutes Per Reading	5.0				**8.25**	**10.30**		**Gain (grams)**	**295.7**
Minutes Per Point	5.0								

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	246.159								
1	5.0	249.980	0.35	1.92	47	47	5.5	305	1.5	103.3
2	10.0	254.009	0.40	2.20	47	47	5.5	306	4.7	102.1
3	15.0	257.735	0.33	1.82	48	48	6	303	8.4	103.4
4	20.0	261.340	0.31	1.71	47	47	6	303	12.5	103.4
5	25.0	264.713	0.27	1.49	48	48	6	302	17.7	103.4
6	30.0	268.100	0.27	1.49	48	48	6	302	25.2	103.8
7	35.0	271.833	0.33	1.83	49	49	6	302	45.6	103.3
8	40.0	275.341	0.29	1.61	50	50	6	302	53.2	103.3
9	45.0	278.615	0.25	1.40	50	50	5.5	297	58.3	103.5
10	50.0	281.880	0.25	1.40	50	50	5.5	297	62.5	103.2
11	55.0	285.000	0.23	1.29	50	50	5	295	66.1	102.6
12	60.0	287.855	0.19	1.06	51	51	5	300	69.4	103.4
Traverse 2	0.0	287.855								
1	5.0	291.642	0.34	1.88	52	52	7.5	307	1.5	103.0
2	10.0	295.330	0.32	1.78	53	53	7.5	307	4.7	103.2
3	15.0	298.922	0.30	1.67	55	55	7	306	8.4	103.3
4	20.0	302.351	0.27	1.51	56	56	7	306	12.5	103.7
5	25.0	305.304	0.20	1.12	57	57	6	307	17.7	103.5
6	30.0	308.670	0.26	1.46	58	58	6	306	25.2	103.3
7	35.0	313.228	0.48	2.70	58	58	8.5	304	45.6	103.2
8	40.0	318.179	0.56	3.15	59	59	8.5	305	53.2	103.7
9	45.0	323.355	0.62	3.48	58	58	13.5	306	58.3	103.4
10	50.0	328.090	0.51	2.88	60	60	13.5	303	62.5	103.5
11	55.0	332.769	0.50	2.82	60	60	11.5	304	66.1	103.4
12	60.0	336.175	0.25	1.42	62	62	11.5	304	69.4	105.7
Average:			0.337	1.879	53.0	53.0	3.0	303.3		103.4

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)
Source: Unit 2

Sample Type: HF

Parameter		Test 1	Test 2	Test 3
Test Date		12-Feb-25	12-Feb-25	12-Feb-25
Test Time		09:45 - 10:45	10:56 - 11:56	12:07 - 13:07
Test Duration	(min.)	60	60	60
Baro. Press.	(in. Hg)	30.03	30.03	30.03
DGM Factor	(Y)	0.9880	0.9880	0.9880
Initial Reading	(m^3)	645.249	645.788	646.339
Final Reading	(m^3)	645.784	646.337	646.894
Temp. Outlet	(Avg. oF)	36.3	39.3	41.5
Orifice Press.	(ΔH in.H2O)	0.50	0.50	0.50
Gas Volume	(Sm^3)	0.56508	0.57618	0.57985
HF	(mg)	0.011	0.021	0.011
Oxygen	(Vol. %)	10.8	10.7	10.3
HF	**(mg/Sm^3)**	**0.019**	**0.037**	**0.018**
HF	**(mg/Sm^3 @ 11% O2)**	**0.018**	**0.036**	**0.017**
Moisture (isokinetic)	**(Vol. %)**	11.4	12.7	13.2

*Wet Basis Calculated on moisture from isokinetic tests
Tstd. (oF) 68 Pstd. (in. Hg) 29.92

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)
Source: Unit 2

Sample Type: NH_3

Parameter		Test 1	Test 2	Test 3
Test Date		12-Feb-25	12-Feb-25	
Test Time		09:45 - 10:45	10:56 - 11:56	
Test Duration	(min.)	60	60	
Baro. Press.	(in. Hg)	30.03	30.03	
DGM Factor	(Y)	0.9965	0.9965	
Initial Reading	(m^3)	215.420	216.091	
Final Reading	(m^3)	216.088	216.759	
Temp. Outlet	(Avg. oF)	40.0	42.7	
Orifice Press.	(ΔH in.H2O)	0.50	0.50	
Gas Volume	(Sm^3)	0.70726	0.70203	
NH_3	(mg)	1.57	1.78	
Oxygen	(Vol. %)	10.8	10.7	
NH_3	**(mg/Sm^3)**	**2.22**	**2.53**	
NH_3	**(mg/Sm^3 @ 11% O2)**	**2.16**	**2.46**	
Moisture (isokinetic)	**(Vol. %)**	11.4	12.7	

*Wet Basis Calculated on moisture from isokinetic tests
Tstd. (oF) 68 Pstd. (in. Hg) 29.92

Client:	Metro Vancouver	**Date:**	10-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	1 - Particulate / Metals
Source:	Unit 3	**Run Time:**	11:50 - 13:51

Concentrations:

Particulate	0.48	mg/dscm	0.00021	gr/dscf
	0.28	mg/Acm	0.00012	gr/Acf
	0.45	mg/dscm (@ 11% O2)	0.00020	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.034	Kg/hr	0.076	lb/hr

Flue Gas Characteristics:

Flow	1191	dscm/min	42050	dscf/min
	19.85	dscm/sec	701	dscf/sec
	2045	Acm/min	72215	Acf/min
Velocity	13.381	m/sec	43.90	f/sec
Temperature	153.1	oC	307.6	oF
Moisture	12.7	%		
Gas Analysis	10.4	% O2		
	9.8	% CO2		
	29.974	Mol. Wt (g/gmole) Dry		
	28.456	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.6073	dscm	92.077	dscf
Sample Time	120.0	minutes		
Isokineticity	101.3	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	10-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	1 - Particulate / Metals
Source:	Unit 3	**Run Time:**	11:50 - 13:51

Control Unit (Y)	1.0010
Nozzle Diameter (in.)	0.3009
Pitot Factor	0.8505
Baro. Press. (in. Hg)	30.48
Static Press. (in. H20)	-20.00
Stack Height (ft)	30
Stack Diameter (in.)	70.90
Stack Area (sq.ft.)	27.417
Minutes Per Reading	5.0
Minutes Per Point	5.0

Collection:	
Filter (grams)	0.00005
Washings (grams)	0.00120
Total (grams)	**0.00125**

Gas Analysis (Vol. %):		
	CO2	O2
Traverse 1	10.25	9.89
Traverse 2	9.25	10.82
	9.75	**10.35**

Condensate Collection:	
Impinger 1	140.0
Impinger 2	108.0
Impinger 3	16.0
Impinger 4	5.0
Impinger 5	2.0
Impinger 6	1.0
Gel	12.0
Gain (grams)	**284.0**

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	574.827								
1	5.0	577.880	0.28	1.53	50	50	4	306	1.5	101.0
2	10.0	580.820	0.26	1.42	51	51	4	308	4.7	100.8
3	15.0	583.690	0.25	1.34	50	50	5	316	8.4	101.1
4	20.0	586.460	0.23	1.26	51	51	5	306	12.5	100.8
5	25.0	589.620	0.30	1.62	52	52	5	316	17.7	101.3
6	30.0	592.880	0.32	1.74	52	52	5	312	25.2	100.9
7	35.0	596.350	0.36	1.97	52	52	5	306	45.6	101.0
8	40.0	599.980	0.39	2.15	52	52	5	299	53.2	101.0
9	45.0	603.880	0.45	2.48	53	53	5	302	58.3	101.1
10	50.0	607.920	0.48	2.66	54	54	5	300	62.5	101.2
11	55.0	612.040	0.50	2.76	53	53	5	299	66.1	101.2
12	60.0	616.250	0.52	2.89	54	54	5	297	69.4	101.1
Traverse 2	0.0	616.250								
1	5.0	620.280	0.48	2.65	54	54	6	311	1.5	101.6
2	10.0	624.350	0.49	2.68	55	55	6	309	4.7	101.3
3	15.0	628.540	0.52	2.85	55	55	6	310	8.4	101.3
4	20.0	632.860	0.55	3.03	56	56	6	308	12.5	101.3
5	25.0	637.230	0.56	3.10	57	57	7	310	17.7	101.5
6	30.0	641.690	0.58	3.22	57	57	7	310	25.2	101.8
7	35.0	645.420	0.41	2.25	57	57	7	310	45.6	101.0
8	40.0	648.980	0.38	2.08	57	57	7	310	53.2	100.1
9	45.0	652.460	0.35	1.96	58	58	7	310	58.3	101.8
10	50.0	655.800	0.32	1.80	59	59	7	310	62.5	101.9
11	55.0	659.100	0.31	1.75	59	59	6	309	66.1	102.2
12	60.0	662.340	0.30	1.69	59	59	6	308	69.4	101.9
Average:			0.400	2.203	54.5	54.5	5.7	307.6		101.3

Client:	Metro Vancouver	**Date:**	11-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	2 - Particulate / Metals
Source:	Unit 3	**Run Time:**	09:07 - 11:08

Concentrations:

Particulate	1.08	mg/dscm	0.00047	gr/dscf
	0.62	mg/Acm	0.00027	gr/Acf
	1.03	mg/dscm (@ 11% O2)	0.00045	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.078	Kg/hr	0.172	lb/hr

Flue Gas Characteristics:

Flow	1206	dscm/min	42591	dscf/min
	20.10	dscm/sec	710	dscf/sec
	2095	Acm/min	73971	Acf/min
Velocity	13.706	m/sec	44.97	f/sec
Temperature	149.6	oC	301.3	oF
Moisture	13.9	%		
Gas Analysis	10.5	% O2		
	9.4	% CO2		
	29.927	Mol. Wt (g/gmole) Dry		
	28.271	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.6944	dscm	95.154	dscf
Sample Time	120.0	minutes		
Isokineticity	103.4	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	11-Feb-25
Jobsite:	WTE (Burnaby, B.C)	**Run:**	2 - Particulate / Metals
Source:	Unit 3	**Run Time:**	09:07 - 11:08

Control Unit (Y)	1.0010	**Collection:**			**Gas Analysis (Vol. %):**			**Condensate Collection:**	
Nozzle Diameter (in.)	0.3009	Filter (grams)	0.00040		CO2	O2		Impinger 1	191.0
Pitot Factor	0.8505	Washings (grams)	0.00250	Traverse 1	9.67	10.35		Impinger 2	96.0
Baro. Press. (in. Hg)	30.32			Traverse 2	9.17	10.67		Impinger 3	20.0
Static Press. (in. H20)	-20.00	**Total (grams)**	**0.00290**					Impinger 4	5.0
Stack Height (ft)	30							Impinger 5	1.0
Stack Diameter (in.)	70.90							Impinger 6	0.0
Stack Area (sq.ft.)	27.417							Gel	13.0
Minutes Per Reading	5.0				**9.42**	**10.51**		**Gain (grams)**	**326.0**
Minutes Per Point	5.0								

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	663.525								
1	5.0	666.760	0.32	1.75	38	38	4	285	1.5	102.0
2	10.0	670.040	0.33	1.80	39	39	4	290	4.7	102.0
3	15.0	673.180	0.30	1.63	39	39	5	291	8.4	102.4
4	20.0	676.140	0.27	1.44	40	40	5	305	12.5	102.5
5	25.0	679.030	0.26	1.38	40	40	5	308	17.7	102.1
6	30.0	682.080	0.29	1.54	40	40	5	312	25.2	102.4
7	35.0	685.920	0.45	2.43	42	42	5	302	45.6	102.6
8	40.0	690.080	0.53	2.85	43	43	5	305	53.2	102.5
9	45.0	694.440	0.55	3.14	44	44	7	301	58.3	105.1
10	50.0	698.930	0.61	3.32	45	45	7	298	62.5	102.4
11	55.0	703.450	0.62	3.40	46	46	7	296	66.1	101.9
12	60.0	708.020	0.62	3.42	48	48	7	294	69.4	102.5
Traverse 2	0.0	708.020								
1	5.0	712.420	0.55	3.15	49	49	7	296	1.5	104.6
2	10.0	716.890	0.57	3.26	50	50	7	297	4.7	104.3
3	15.0	721.360	0.58	3.26	50	50	7	310	8.4	104.3
4	20.0	725.680	0.54	3.03	51	51	7	313	12.5	104.4
5	25.0	729.800	0.49	2.75	52	52	7	314	17.7	104.3
6	30.0	733.790	0.46	2.59	52	52	7	312	25.2	104.1
7	35.0	737.350	0.36	2.05	53	53	5	306	45.6	104.2
8	40.0	740.820	0.34	1.94	53	53	5	304	53.2	104.4
9	45.0	743.980	0.28	1.60	54	54	5	301	58.3	104.3
10	50.0	747.020	0.26	1.50	54	54	5	298	62.5	103.9
11	55.0	750.010	0.25	1.45	55	55	5	297	66.1	103.9
12	60.0	753.110	0.27	1.56	54	54	5	296	69.4	103.8
Average:			0.421	2.343	47.1	47.1	5.8	301.3		103.4

Client:	Metro Vancouver	**Date:**	11-Feb-25
Jobsite:	WTE(Burnaby,B.C)	**Run:**	3 - Particulate / Metals
Source:	Unit 3	**Run Time:**	11:33 - 13:34

Concentrations:

Particulate	0.31	mg/dscm	0.00013	gr/dscf
	0.18	mg/Acm	0.00008	gr/Acf
	0.30	mg/dscm (@ 11% O2)	0.00013	gr/dscf (@ 11% O2)

Emission Rates:

Particulate	0.021	Kg/hr	0.047	lb/hr

Flue Gas Characteristics:

Flow	1161	dscm/min	40996	dscf/min
	19.35	dscm/sec	683	dscf/sec
	2012	Acm/min	71070	Acf/min
Velocity	13.169	m/sec	43.20	f/sec
Temperature	150.8	oC	303.5	oF
Moisture	13.5	%		
Gas Analysis	10.7	% O2		
	9.4	% CO2		
	29.936	Mol. Wt (g/gmole) Dry		
	28.327	Mol. Wt (g/gmole) Wet		

Sample Parameters:

Sample Volume	2.6054	dscm	92.011	dscf
Sample Time	120.0	minutes		
Isokineticity	103.9	%		

*** Standard Conditions:** Metric: 20 deg C, 101.325 kPa
Imperial: 68 deg F, 29.92 in.Hg

Client:	Metro Vancouver	**Date:**	11-Feb-25
Jobsite:	WTE(Burnaby,B.C)	**Run:**	3 - Particulate / Metals
Source:	Unit 3	**Run Time:**	11:33 - 13:34

Control Unit (Y)	1.0010	**Collection:**			**Gas Analysis (Vol. %):**			**Condensate Collection:**	
Nozzle Diameter (in.)	0.3009	Filter (grams)	0.00010		CO2	O2		Impinger 1	225.0
Pitot Factor	0.8505	Washings (grams)	0.00070	Traverse 1	9.33	10.75		Impinger 2	58.0
Baro. Press. (in. Hg)	30.32			Traverse 2	9.50	10.71		Impinger 3	6.0
Static Press. (in. H20)	-20.00	**Total (grams)**	**0.00080**					Impinger 4	0.0
Stack Height (ft)	30							Impinger 5	2.0
Stack Diameter (in.)	70.90							Impinger 6	0.0
Stack Area (sq.ft.)	27.417							Gel	13.5
Minutes Per Reading	5.0				**9.42**	**10.73**		**Gain (grams)**	**304.5**
Minutes Per Point	5.0								

Traverse / Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature Inlet (oF)	Dry Gas Temperature Outlet (oF)	Vacuum (in. Hg.)	Stack Temp. (oF)	Wall Dist. (in.)	Isokin. (%)
Traverse 1	0.0	753.340								
1	5.0	757.330	0.45	2.58	53	53	7	299	1.5	103.8
2	10.0	761.380	0.46	2.65	53	53	7	296	4.7	104.0
3	15.0	765.680	0.52	2.99	53	53	7	297	8.4	104.0
4	20.0	769.630	0.44	2.53	54	54	7	301	12.5	103.8
5	25.0	773.730	0.48	2.72	54	54	7	310	17.7	103.8
6	30.0	777.700	0.45	2.56	54	54	7	309	25.2	103.7
7	35.0	781.010	0.31	1.77	55	55	5	308	45.6	103.7
8	40.0	784.150	0.28	1.59	55	55	5	309	53.2	103.5
9	45.0	787.200	0.26	1.49	55	55	5	304	58.3	104.0
10	50.0	790.200	0.25	1.44	56	56	5	300	62.5	103.8
11	55.0	793.150	0.24	1.39	56	56	5	299	66.1	104.1
12	60.0	796.090	0.24	1.39	56	56	5	297	69.4	103.6
Traverse 2	0.0	796.090								
1	5.0	799.280	0.28	1.61	56	56	6	305	1.5	104.7
2	10.0	802.490	0.29	1.67	57	57	6	302	4.7	103.2
3	15.0	805.600	0.27	1.55	57	57	6	305	8.4	103.8
4	20.0	808.600	0.25	1.44	57	57	6	304	12.5	103.9
5	25.0	811.760	0.28	1.61	57	57	5	306	17.7	103.6
6	30.0	814.880	0.27	1.56	57	57	5	302	25.2	103.9
7	35.0	818.790	0.43	2.46	58	58	6	308	45.6	103.6
8	40.0	823.100	0.51	2.93	58	58	6	306	53.2	104.8
9	45.0	827.500	0.54	3.11	59	59	7.5	305	58.3	103.8
10	50.0	832.130	0.60	3.47	59	59	7.5	302	62.5	103.5
11	55.0	836.810	0.61	3.52	59	59	8	304	66.1	103.9
12	60.0	841.520	0.62	3.56	58	58	8	306	69.4	104.1
Average:			0.389	2.233	56.1	56.1	6.2	303.5		103.9

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)
Source: Unit 3

Sample Type: HF

Parameter		Test 1	Test 2	Test 3
Test Date		11-Feb-25	11-Feb-25	11-Feb-25
Test Time		09:35 - 10:35	10:46 - 11:46	11:58 - 12:58
Test Duration	(min.)	60	60	60
Baro. Press.	(in. Hg)	30.30	30.30	30.30
DGM Factor	(Y)	0.9880	0.9880	0.9880
Initial Reading	(m^3)	643.625	644.166	644.715
Final Reading	(m^3)	644.163	644.709	645.244
Temp. Outlet	(Avg. oF)	41.0	45.3	48.0
Orifice Press.	(ΔH in.H2O)	0.30	0.30	0.30
Gas Volume	(Sm^3)	0.56689	0.56831	0.55085
HF	(mg)	0.031	0.021	0.021
Oxygen	(Vol. %)	10.4	10.5	10.7
HF	**(mg/Sm^3)**	**0.054**	**0.036**	**0.037**
HF	**(mg/Sm^3 @ 11% O2)**	**0.051**	**0.034**	**0.036**
Moisture (isokinetic)	**(Vol. %)**	12.7	13.9	13.5

*Wet Basis Calculated on moisture from isokinetic tests
Tstd. (oF) 68 Pstd. (in. Hg) 29.92

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)
Source: Unit 3

Sample Type: NH_3

Parameter		Test 1	Test 2	Test 3
Test Date			0-Jan-00	0-Jan-00
Test Time			10:46 - 11:46	11:58 - 12:58
Test Duration	(min.)		0	0
Baro. Press.	(in. Hg)		30.30	30.30
DGM Factor	(Y)		0.9965	0.9965
Initial Reading	(m^3)		214.090	214.602
Final Reading	(m^3)		214.574	215.346
Temp. Outlet	(Avg. oF)		44.3	48.0
Orifice Press.	(ΔH in.H2O)		0.30	0.30
Gas Volume	(Sm^3)		0.51174	0.78096
NH_3	(mg)		4.55	1.41
Oxygen	(Vol. %)		10.5	10.7
NH_3	**(mg/Sm^3)**		**8.89**	**1.81**
NH_3	**(mg/Sm^3 @ 11% O2)**		**8.47**	**1.76**
Moisture (isokinetic)	**(Vol. %)**		13.9	13.5

*Wet Basis Calculated on moisture from isokinetic tests
Tstd. (oF) 68 Pstd. (in. Hg) 29.92

Client: Metro Vancouver
Jobsite: WTE (Burnaby,B.C)

Parameter: N_2O

Molecular Weight: 44.00 grams/mol **Reportable Detection Limit:** 0.18 mg/Sm^3
Lab Detection Limit: 0.1 ppm

Sample ID	Date	Time	N_2O ppm	N_2O mg/Sm^3	N_2O mg/Sm^3 @ 11% O_2
Unit 1 - Run 1	13-Feb-25	09:25 - 10:25	3.50	6.41	6.12
Unit 1 - Run 2	13-Feb-25	10:56 - 11:56	6.50	11.90	11.70
Unit 1 - Run 3	13-Feb-25	12:10 - 13:10	11.0	20.13	19.29
Average					**12.37**
Unit 2 - Run 1	12-Feb-25	09:45 - 10:45	2.40	4.39	4.29
Unit 2 - Run 2	12-Feb-25	10:56 - 11:56	5.00	9.15	8.92
Unit 2 - Run 3	12-Feb-25	12:07 - 13:07	8.20	15.01	14.03
Average					**9.08**
Unit 3 - Run 1	11-Feb-25	09:35 - 10:35	4.50	8.24	7.74
Unit 3 - Run 2	11-Feb-25	10:46 - 11:46	5.00	9.15	8.73
Unit 3 - Run 3	11-Feb-25	11:58 - 12:58	3.40	6.22	6.06
Average					**7.51**

Date:	**11-Feb-25**			**12-Feb-25**			**13-Feb-25**		
	Unit 1			**Unit 2**			**Unit 3**		
	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3
Test Times:	09:25 - 10:25	10:56 - 11:56	12:10 - 13:10	09:45 - 10:45	10:56 - 11:56	12:07 - 13:07	09:35 - 10:35	10:46 - 11:46	11:58 - 12:58
Methane (ppmv)	ND	3.3	3.0	4.1	8.2	3.2	ND	3.4	3.4
Ethane (ppmv)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethene (ppmv)	ND	ND	ND	ND	ND	ND	ND	ND	ND
C3 as Propane (ppmv)	ND	ND	ND	ND	ND	ND	ND	ND	ND
C4 as n-Butane (ppmv)	ND	ND	ND	0.85	1.1	ND	ND	0.76	ND
C5 as n-Pentane (ppmv)	0.75	1.0	1.3	1.4	1.6	1.1	1.3	1.3	1.1
C6 as n-Hexane (ppmv)	ND	ND	ND	ND	ND	ND	ND	ND	ND
C6+ as n-Hexane (ppmv)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detection Limits:									
Methane	2.8	3.1	3	3.1	3.5	3.1	3.3	2.9	3.1
Ethane	0.84	0.92	0.89	0.94	1.1	0.93	0.99	0.88	0.94
Ethene	0.84	0.92	0.89	0.94	1.1	0.93	0.99	0.88	0.94
C3 as Propane	0.70	0.77	0.74	0.78	0.89	0.78	0.83	0.73	0.78
C4 as n-Butane	0.70	0.77	0.74	0.78	0.89	0.78	0.83	0.73	0.78
C5 as n-Pentane	0.70	0.77	0.74	0.78	0.89	0.78	0.83	0.73	0.78
C6 as n-Hexane	0.70	0.77	0.74	0.78	0.89	0.78	0.83	0.73	0.78
C6+	4.2	4.6	4.4	4.7	5.3	4.7	5	4.4	4.7
Using 1/2 DL Convention									
Sample Date:	**11-Feb-25**			**12-Feb-25**			**13-Feb-25**		
	Unit 1			**Unit 2**			**Unit 3**		
	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3
Test Times:	09:25 - 10:25	10:56 - 11:56	12:10 - 13:10	09:45 - 10:45	10:56 - 11:56	12:07 - 13:07	09:35 - 10:35	10:46 - 11:46	11:58 - 12:58
Methane (ppm)	1.40	3.30	3.00	4.10	8.20	3.20	1.65	3.40	3.40
Ethane (ppm)	0.42	0.46	0.45	0.47	0.55	0.47	0.50	0.44	0.47
Ethene (ppm)	0.42	0.46	0.45	0.47	0.55	0.47	0.50	0.44	0.47
C3 as Propane (ppm)	0.35	0.39	0.37	0.39	0.45	0.39	0.42	0.37	0.39
C4 as n-Butane (ppm)	0.35	0.39	0.37	0.85	1.10	0.39	0.42	0.76	0.39
C5 as n-Pentane (ppm)	0.75	1.00	1.30	1.40	1.60	1.10	1.30	1.30	1.10
C6 as n-Hexane (ppm)	0.35	0.39	0.37	0.39	0.45	0.39	0.42	0.37	0.39
C6+ as n-Hexane (ppm)	2.10	2.30	2.20	2.35	2.65	2.35	2.50	2.20	2.35
Methane (mg/m^3 as CH_4)	0.93	2.20	2.00	2.74	5.47	2.14	1.10	2.27	2.27
Ethane (mg/m^3 as CH_4)	0.28	0.31	0.30	0.31	0.37	0.31	0.33	0.29	0.31
Ethene (mg/m^3 as CH_4)	0.28	0.31	0.30	0.31	0.37	0.31	0.33	0.29	0.31
C3 as Propane (mg/m^3 as CH_4)	0.23	0.26	0.25	0.26	0.30	0.26	0.28	0.24	0.26
C4 as n-Butane (mg/m^3 as CH_4)	0.23	0.26	0.25	0.57	0.73	0.26	0.28	0.51	0.26
C5 as n-Pentane (mg/m^3 as CH_4)	0.50	0.67	0.87	0.93	1.07	0.73	0.87	0.87	0.73
C6 as n-Hexane (mg/m^3 as CH_4)	0.23	0.26	0.25	0.26	0.30	0.26	0.28	0.24	0.26
C6+ as n-Hexane (mg/m^3 as CH_4)	1.40	1.53	1.47	1.57	1.77	1.57	1.67	1.47	1.57
Total mg/Sm^3 @11% O_2 as CH_4	2.86	4.03	3.95	4.76	7.10	4.17	3.28	4.33	4.10

All data is corrected to standard conditions (S) of 20 $^{\circ}$C, 101.325 kPa (dry) unless otherwise noted.

APPENDIX - E

FIELD DATA SHEETS

LF

Canister sampling sheet

Client MV WTE Test Date Feb 11,12,13 2025
File No. _____ Recovery Date _____

Source: Unit 3

		Run 1	Run 2	Run 3			
Pbar in hg		30.30	30.30	30.30			
Canister number		01193	01185	002747			
Controller number		881	881	881			
Initial:	Start time	9:35	1046	1158			
	Flask Vac. (in Hg)	~~-10~~ -30	-31	-30			
Final:	Finish time	10:35	1146	1258			
	Flask Vac. (in Hg)	-10	-8	-9			

Source: Unit 2

		Run-1	Run-2	Run-3			
Pbar in hg		30.03	30.03	30.03			
Canister number		02026	01119	002845			
Controller number		CA00696	"	"			
Initial:	Start time	0945	1056	1207			
	Flask Vac. (in Hg)	-30	-30	-30			
Final:	End time	1045	1156	1307			
	Flask Vac. (in Hg)	-8	-10	-7			

Source: Unit 1

		Run1	Run2	~~Run~~	Run3		
Pbar in hg		29.43	29.43		29.43		
Canister number		003213	~~560148~~	002588	02006		
Controller number		0A00102	0A00102		0A00102		
Initial:	Start time	9:25	10:56		12:00		
	Flask Vac. (in Hg)	-29	-29		+30		
Final:	End time	10:25	11:56		13:10		
	Flask Vac. (in Hg)	-5	-7		-7		

Source:

Pbar in hg							
Canister number							
Controller number							
Initial:	Start time						
	Flask Vac. (in Hg)						
Final:	End time						
	Flask Vac. (in Hg)						

LF

LF

Client	MWTE	Y	LMU-A 0.9880
Source	~~HF~~ Unit 1	Cp	
Parameter	HF	Pbar	29.~~854~~ Static
Date	FEB, 13, 25	Operator	BL/JD
Stack Dia		Down	Up

Leak Check	Run 1	Run 2	Run 3
Initial	0.0001	0.0001	0.0001
Final	0.0001	0.0001	0.0001

Test No.	Time (hhmm)	DGM Volume (cu ft) / (m^3)	Temperature (°F) DGM Outlet	Temperature (°F) Stack	Imp. Vol. (mL)	ΔP IN. H_2O R1	ΔP IN. H_2O R2	ΔP IN. H_2O R3
1	9:25	217.4818	37					
			45					
	10:25	218.0158	47					
2	10:56	218.0182	45					
	11:56	218.5778	50					
3	12:10	218.5828	51					
	13:10	219.1636	46					

Client	~~MW~~MWTE	Y	LMU-D 0.9965
Source	~~NH3~~ Unit 1	Cp	
Parameter	NH3	Pbar	29.~~854~~ Static
Date	FEB, 13, 25	Operator	BL/JD
Stack Dia		Down	Up

Leak Check	Run 1	Run 2	Run 3
Initial	0.0001	0.0001	0.0001
Final	0.0001	0.0001	0.0001

Test No.	Time (hhmm)	DGM Volume (cu ft) / (m^3)	Temperature (°F) DGM Outlet	Temperature (°F) Stack	Imp. Vol. (mL)	ΔP IN. H_2O R1	ΔP IN. H_2O R2	ΔP IN. H_2O R3
1	9:25	646.8984	37					
			48					
	10:25	647.4576	~~48~~					
2	10:56	647.4606	45					
	11:56	647.9998	52					
3	~~12:10~~	~~647.9948~~						
	12:10	647.9990	50					
	13:10	648.5547	42					

LF

Client MV WTE Y LMV-D 0.9965
Source Unit 2 Cp
Parameter NH3 Pbar 30.03 Static
Date Feb 12, 2025 Operator LF + JD
Stack Dia Down Up

Leak Check	Run 1	Run 2	Run 3
Initial	0.0001	0.0001	0.0001
Final	0.0000	0.0001	0.0001

Run No.	Time (hhmm)	DGM Volume (cu ft) / (m^3)	Temp (°F) DGM Outlet	Temp (°F) Stack	Imp. Vol. (mL)	ΔP IN. H_2O R1	ΔP IN. H_2O R2	ΔP IN. H_2O R3
1	0945	215.4296	39	300				
			40	302				
	1045	216.0884	41	300				
2	1056	216.0912	40	301				
			42	305				
	1156	216.7586	46	303				
3	1207	216.7697	39	306				
	1307	217.4462	36	305				

	Run 1	Run 2	Run 3
O_2			
CO_2			

Client MV WTE Y LMV-A 0.9880
Source Unit 2 Cp
Parameter HF Pbar 30.03 Static
Date Feb 12, 2025 Operator LF + JD
Stack Dia Down Up

Leak Check	Run 1	Run 2	Run 3
Initial	0.0001	0.0001	0.0001
Final	0.0000	0.0001	0.0001

Run No.	Time (hhmm)	DGM Volume (cu ft) / (m^3)	Temperature (°F) DGM Outlet	Temperature (°F) Stack	Imp. Vol. (mL)	ΔP IN. H_2O R1	ΔP IN. H_2O R2	ΔP IN. H_2O R3
1	0945	645.2490	34	300				
			36	302				
	1045	645.7840	39	300				
2	1056	645.7880	39	301				
			39	305				
	1156	646.3368	40	303				
3	1207	646.3391	43	306				
	1367	646.8938	40	305				

	Run 1	Run 2	Run 3
O_2			
CO_2			

LF

Client	MV WTE	Y	LMU-D 0.9965		
Source	Unit 3	Cp			
Parameter	NH_3	Pbar	30.30	Static	
Date	Feb 11, 2025	Operator	LF + BL		
Stack Dia		Down		Up	

Leak Check	Run 1	Run 2	Run 3
Initial	0.0000	0.0001	0.0001
Final	0.0000	0.0000	0.0001

Run No.	Time (hhmm)	DGM Volume (cu ft) / (m^3)	Temp (°F) DGM Outlet	Temp (°F) Stack	Imp. Vol. (mL)	ΔP IN. H_2O R1	ΔP IN. H_2O R2	ΔP IN. H_2O R3
1	0935	213.4890	33	300	200			
			39	303				
	1035	214.0835	45	305				
2	1046	214.0900	44	301				
			44	308				
	1146	214.5740	45	304				
3	1158	214.6021	45	300				
			48	302				
	1258	215.3461	51	307				

	Run 1	Run 2	Run 3
O_2			
CO_2			

Client	MV WTE	Y	LMU-A 0.9880		
Source	Unit 3	Cp			
Parameter	HF	Pbar	30.30	Static	
Date	Feb 11, 2025	Operator	LF + BL		
Stack Dia		Down		Up	

Leak Check	Run 1	Run 2	Run 3
Initial	0.0001	0.0001	0.0001
Final	0.0001	0.0000	0.0001

Run No.	Time (hhmm)	DGM Volume (cu ft) / (m^3)	Temperature (°F) DGM Outlet	Temperature (°F) Stack	Imp. Vol. (mL)	ΔP IN. H_2O R1	ΔP IN. H_2O R2	ΔP IN. H_2O R3
1	0935	643.6254	36	300	200			
			43	303				
	1035	644.1626	44	305				
2	1046	644.1658	44	301				
			45	308				
	1146	644.7090	47	304				
3	1158	644.7148	46	300				
			48	302				
	1258	645.2441	50	307				

	Run 1	Run 2	Run 3
O_2			
CO_2			

①

CLIENT: Reworld (MVWTE)	NOZZLE G-309 DIAMETER, IN. .3092	IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
SOURCE: Unit #1	PROBE 7 AL GVRD Cp .8505	Imp. #1	0	185	
PARAMETER / RUN No Metals Particulate / R-1	PORT LENGTH	Imp. #2	100	165	
DATE 13Feb25	STATIC PRESSURE, IN. H2O -.19	Imp. #3	100	112	
OPERATOR: CD + JD	STACK DIAMETER 70.9"	Imp. #4	0	0	
CONTROL UNIT JV 14 Y 1.001	STACK HEIGHT 30'	Imp. #5	100	101	
ΔH@ 2.12		Imp. #6	100 562	100	
BAROMETRIC PRESSURE, IN. Hg 29.43	INITIAL LEAK TEST .001 @ 15"	Upstream Diameters			
ASSUMED MOISTURE, Bw 13%	FINAL LEAK TEST .001 @ 15"	Downstream Diameters			

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F Dry Gas Outlet	Stack	Probe	Box	Impinger Exit	Pump Vac. IN. Hg	Fyrites CO_2 Vol. %	O_2 Vol. %		
	0830	884.328												
1		887.766	.29	1.87	54	295	249	264	34	4.5				
2	10	891.281	.30	1.94	55	296					8.5	10.6		
3		894.684	.28	1.81	56	296	250	263	32	4.5				
4	20	898.210	.30	1.95	57	295								
5		901.423	.25	1.61	58	300	261	251	33	4.0				
6	30	905.172	.34	2.2	58	300								
7		909.517	.46	2.94	60	310	251	250	35	6	9.0	10.1		
8	40	914.295	.55	3.54	60	305								
9		919.002	.53	3.43	61	302	265	265	34	7.5				
10	50	923.584	.50	3.26	63	303								
11		927.910	.45	2.89	63	311	260	258	34	6.5	9.0	10.27		
12	60	931.781	.35	2.28	64	302								
1		935.780	.38	2.46	65	308	265	262	38	6.5				
2	70	940.130	.45	2.93	66	306					8.5	10.89		
3		944.748	.50	3.28	67	301	260	265	34	7.5				
4	80	949.350	.50	3.25	68	310								
5		953.873	.48	3.13	69	308	261	269	33	7.5				
6	90	958.410	.48	3.14	71	310					9.0	10.55		
7		962.882	.47	3.05	70	315	260	265	33	7.0				
8	100	967.226	.45	2.96	70	309								
9		971.618	.44	2.88	70	308	260	259	33	7.0				
10	110	975.870	.42	2.76	71	305					9.0	10.87		
11		979.520	.31	2.03	71	307	259	270	32	6				
12	120	982.802	.25	1.64	71	305								
END TEST	10:34													

A. Lanfranco and Associates Inc.

CD

CLIENT: Reworld (MVWTE)	NOZZLE D-314	DIAMETER, IN. .3137	IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
SOURCE: Unit A1	PROBE 7C	Cp .8367	Imp. #1	0	213	
PARAMETER / RUN No Metals Particle / R-2	PORT LENGTH		Imp. #2	100	188	
DATE 13Feb25	STATIC PRESSURE, IN. H2O -.19		Imp. #3	100	112	
OPERATOR: CD + JD + DL	STACK DIAMETER 70.9"		Imp. #4	0	5	
CONTROL UNIT SU-14 Y 1.001	STACK HEIGHT 301		Imp. #5	100	100	
ΔH@ 2.12			Imp. #6	100 → SEL	100	
BAROMETRIC PRESSURE, IN. Hg 29.39	INITIAL LEAK TEST .001@15"		Upstream Diameters			
ASSUMED MOISTURE, Bw 13%	FINAL LEAK TEST .001@15"		Downstream Diameters			

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F					Pump Vac. IN. Hg	Fyrites	
					Dry Gas Outlet	Stack	Probe	Box	Impinger Exit		CO_2 Vol. %	O_2 Vol. %
	10:56	983.232										
1		987.220	.36	2.42	70	305	252	250	52	9	8.0	11.15
2	10	991.802	.48	3.19	70	314						
3		996.457	.50	3.3	70	319	266	254	57	11.5		
4	20	1001.150	.51	3.36	69	319						
5		1005.801	.50	3.3	69	319	266	257	54	11.5		
6	30	1010.363	.48	3.17	69	318					8.0	11.55
7		1014.831	.46	3.04	70	318	259	269	53	11.5		
8	40	1019.246	.45	2.97	70	319						
9		1023.005	.48	3.18	70	318	267	261	58	12		
10	50	1027.974	.40	2.65	70	318					8.0	10.75
11		1031.988	.37	2.46	71	317	259	263	41	10.5		10
12	60	1035.485	.28	1.86	71	318						
1		1039.218	.32	2.12	70	317	261	268	44	8.0		
2	70	1042.900	.31	2.06	71	317					8.0	11.12
3		1046.520	.30	1.99	71	317	259	268	45	8.0		
4	80	1050.316	.33	2.19	71	316						
5		1054.244	.35	2.33	72	316	259	259	42	9		
6	90	1058.267	.34	2.46	72	317						
7		1062.855	.48	3.20	72	315	261	268	43	12	9.0	10.38
8	100	1067.888	.58	3.86	71	315						
9		1072.754	.54	3.59	71	316	260	269	41	13		
10	110	1077.435	.50	3.32	71	316						
11		1081.890	.44	2.92	71	317	261	263	42	12	9.5	10.0
12	120	1085.49	.32	2.12	71	317						
END	13:00											

A. Lanfranco and Associates Inc.

CLIENT: Reworld (MVWTE)	NOZZLE G-309 DIAMETER, IN. .3092	IMPINGER VOLUMES	INITIAL (mL) / FINAL (mL) / TOTAL GAIN (mL)
SOURCE: Unit #1	PROBE 7AL GVRD Cp .8505	Imp. #1	0 / 234 /
PARAMETER / RUN No Metals Partic / R-3	PORT LENGTH	Imp. #2	100 / 176 /
DATE 13Feb25	STATIC PRESSURE, IN. H2O -.19	Imp. #3	100 / 109 /
OPERATOR: CD + JD + BL	STACK DIAMETER 70.9"	Imp. #4	0 / 0 /
CONTROL UNIT JU14 Y 1.001	STACK HEIGHT 30'	Imp. #5	100 / 101 /
ΔH@ 2.12		Imp. #6	100 GEL / 101 /
BAROMETRIC PRESSURE, IN. Hg 29.38	INITIAL LEAK TEST .001@15"	Upstream Diameters	
ASSUMED MOISTURE, Bw 13%	FINAL LEAK TEST .001@15"	Downstream Diameters	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F Dry Gas Outlet	Stack	Probe	Box	Impinger Exit	Pump Vac. IN. Hg	Fyrites CO_2 Vol. %	O_2 Vol. %		
	13:20	86.015												
1		89.625	.31	2.00	67	315	255	250	46	5.0				
2	10	93.180	.30	1.93	67	315					9.0	10.21		
3		96.740	.30	1.93	68	316	265	250	45	5.0				
4	20	100.405	.32	2.06	67	315								
5		104.252	.35	2.25	68	317	264	265	44	5.5				
6	30	108.151	.36	2.32	69	317								
7		112.514	.45	2.91	69	316	262	261	44	6.0	9.0	10.56		
8	40	117.415	.57	3.68	69	317								
9		122.183	.54	3.46	69	321	260	261	44	7.0				
10	50	126.770	.60	3.20	70	325								
11		131.117	.45	2.87	70	326	261	258	46	6.5	9.0	10.4		
12	60	134.794	.32	2.04	70	328								
1		138.624	.35	2.25	68	319	259	264	45	5.5	8.5			
2	70	142.711	.40	2.55	68	324					~~10.80~~	10.80		
3		146.890	.42	2.67	68	327	259	259	45	6.0				
4	80	151.150	.44	2.77	68	333								
5		155.505	.46	2.90	69	335	260	255	45	6.5				
6	90	159.762	.44	2.77	69	337					9.0	10.45		
7		164.221	.47	3.03	69	318	260	256	45	6.5				
8	100	168.613	.45	2.93	70	310								
9		173.080	.47	3.04	70	315	259	259	46	7				
10	110	177.604	.48	3.11	70	315								
11		181.525	.36	2.33	70	316	259	260	47	5.5	8.5	10.93		
12	120	185.020	.30	1.93	70	321								
END	1523													

A. Lanfranco and Associates Inc.

CD

METRO VANCOUVER WTE - BURNABY BC

RUN No 1 / Metals Partic
SOURCE Unit #2
DATE 11Feb25
OPERATOR: CD + JD
CONTROL UNIT / Y CAL 024 .9784
ΔH@ 1.812
BAROMETRIC PRESSURE, IN. Hg 30.31
ASSUMED MOISTURE, Bw 13%

PROBE TIP DIAMETER, IN. P-314 .3137
PROBE LENGTH, FT / Cp 7C .8376
PORT LENGTH
STATIC PRESSURE, IN. H2O -19.5
STACK DIAMETER
STACK HEIGHT
INITIAL LEAK TEST .0001 @ 15"
FINAL LEAK TEST .001 @ 15"

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. #1	100	116	
Imp. #2	100	200	
Imp. #3	100	126	
Imp. #4	100	0	
Imp. #5	100	103	
Imp. #6	100/100	101	
Imp. #7	GEL		
Imp. #8			

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F: Dry Gas Outlet	Stack	Box	Probe	Impinger Exit	Pump Vac. IN. Hg	Fyrites: CO_2 Vol. %	Fyrites: O_2 Vol. %
	10:16	66.789										
1		70.295	.33	1.76	29	304	250	252	40	4.5	8.0	10.7
2	10	73.700	.31	1.65	30	306						
3		77.005	.29	1.55	30	305	251	251	42	4.5		
4	20	80.440	.30	1.60	31	305						
5		83.748	.29	1.55	32	304	251	251	43	4.5	8.0	10.8
6	30	87.596	.38	2.04	33	304						
7		92.820	.70	3.77	35	304	251	250	45	6.5		
8	40	98.036	.70	3.78	36	305						
9		103.285	.70	3.78	36	304	251	250	46	7.0	7.6	11.1
10	50	108.310	.64	3.47	38	304						
11		111.343	.23	1.25	39	304	250	251	48	4.0		
12	60	113.802	.15	.82	40	298						
+												
1		118.183	.48	2.62	41	304	250	250	44	5.5		
2	70	122.540	.47	2.57	42	304					8.0	10.5
3		126.856	.46	2.52	43	305	251	250	44	5.5		
4	80	131.442	.52	2.84	43	307						
5		135.850	.48	2.63	44	306	250	250	44	6.0		
6	90	140.130	.45	2.47	45	304					8.0	10.6
7		143.885	.35	1.93	46	303	254	251	44	5.0		
8	100	147.345	.30	1.66	46	302						
9		151.000	.33	1.82	46	303	250	250	43	5.0	8.0	10.8
10	110	154.196	.25	1.39	47	301						
11		156.800	.16	.84	47	300	250	250	42	4.0		
12	120	159.455	.16	.84	48	301						
END	12:20											

CD

A. Lanfranco and Associates Inc.

METRO VANCOUVER WTE - BURNABY B.C.

SOURCE Unit #2
PARAMETER / RUN No Metals Particulate #2
DATE 12 Feb 25
OPERATOR: CD
CONTROL UNIT CAE 024 Y .9784 ΔH@ 1.812
BAROMETRIC PRESSURE, IN. Hg 30.03
ASSUMED MOISTURE, Bw 13%

NOZZLE G-304 DIAMETER, IN. .3092
PROBE TALGURD Cp .8505
PORT LENGTH
STATIC PRESSURE, IN. H2O -.20
STACK DIAMETER
STACK HEIGHT
INITIAL LEAK TEST .002 @ 15"
FINAL LEAK TEST .001 @ 15"

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. #1	0	173	
Imp. #2	100	162	
Imp. #3	100	103	
Imp. #4	0	0	
Imp. #5	100	102	
Imp. #6	100	100	
Imp. #7	GEL		
Imp. #8			

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F: Dry Gas Outlet	Stack	Probe	Box	Impinger Exit	Pump Vac. IN. Hg	Fyrites: CO_2 Vol. %	Fyrites: O_2 Vol. %		
	0907	160.74												
1		164.124	.30	1.57	29	298	263	250	32	5				
2	10	167.336	.27	1.41	30	298								
3		170.539	.27	1.42	30	295	255	258	35	5	8.0	10.9		
4	20	173.556	.235	1.25	31	290								
5		176.608	.24	1.28	32	288	250	256	35	4				
6	30	179.770	.26	1.37	33	300								
7		183.628	.39	2.04	35	306	250	253	35	5.5	8.5	10.1		
8	40	188.042	.50	2.64	36	300								
9		192.200	.45	2.39	37	298	250	253	37	6.0				
10	50	196.110	.37	1.96	37	298					8.0	10.5		
11		200.02	.40	2.13	39	297	251	258	37	6				
12	60	202.850	.20	1.07	40	297								
1		206.542	.34	1.81	41	300	250	252	37	5.5				
2	10	210.369	.37	1.97	42	302					8.0	10.6		
3		214.220	.37	1.98	43	300	250	257	39	6.0				
4	20	217.966	.35	1.88	43	300								
5		221.610	.33	1.77	44	299	251	255	39	6				
6	30	225.141	.30	1.61	45	301								
7		228.513	.28	1.51	45	298	250	256	39	5.5	8.0	10.8		
8	40	231.818	.27	1.46	46	299								
9		235.005	.25	1.35	46	300	250	256	40	5				
10	50	238.263	.26	1.40	47	300					7.0 ↓	11.5 ↓		
11		241.264	.22	1.19	47	297	252	253	40	5				
12		244.210	.20	1.08	48	299								
END	11:04													

A. Lanfranco and Associates Inc.

CD

METRO VANCOUVER WTE - BURNABY BC

RUN No	#3 Metals Particle	PROBE TIP DIAMETER, IN.	P-314 .3137
SOURCE	Unit #2	PROBE LENGTH, FT / Cp	7C .8367
DATE	12 Feb 25	PORT LENGTH	
OPERATOR:	CD	STATIC PRESSURE, IN. H2O	-2
CONTROL UNIT / Y	CAE 024 / .9784	STACK DIAMETER	
ΔH@	1.812	STACK HEIGHT	
BAROMETRIC PRESSURE, IN. Hg	29.98	INITIAL LEAK TEST	.001@15"
ASSUMED MOISTURE, Bw	13%	FINAL LEAK TEST	.001 @ 15"

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. #1	5	197	
Imp. #2	100	78	
Imp. #3	100	106	
Imp. #4	0	0	
Imp. #5	100	100	
Imp. #6	100	100	
Imp. #7	GEL		
Imp. #8			

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F: Dry Gas Outlet	Stack	Box	Probe	Impinger Exit	Pump Vac. IN. Hg	Fyrites: CO_2 Vol. %	Fyrites: O_2 Vol. %		
	1135	246.159												
1		249.980	.35	1.92	47	305	252	257	37	5.5				
2	10	254.009	.40	2.20	47	306					8.5	9.9		
3		257.735	.33	1.82	48	303	251	258	40	6				
4	20	261.340	.31	1.71	47	303								
5		264.713	.27	1.49	48	303	250	257	40	6				
6	30	268.100	.27	1.49	48	302					8.5	10.3		
7		271.833	.33	1.83	49	302	251	256	41	6				
8	40	275.341	.29	1.61	50	302								
9		278.615	.25	1.40	50	297	250	251	41	5.5				
10	50	281.880	.25	1.40	50	297					8.0	10.2		
11		285.000	.23	1.29	50	295	250	250	42	5				
12	60	287.855	.19	1.06	51	300								
1		291.642	.34	1.88	52	307	250	255	41	7.5	7.5	11.1		
2	70	295.330	.32	1.78	53	307								
3		298.922	.30	1.67	55	306	253	257	40	7.0				
4	80	302.351	.27	1.51	56	306								
5		305.304	.20	1.12	57	307	256	256	40	6.0	8.5	10.1		
6	90	308.670	.26	1.46	58	306								
7		313.228	.40	2.70	58	304	252	253	41	8.5				
8	100	318.179	.56	3.15	59	305								
9		323.355	.62	3.48	58	306	258	261	42	13.5	8.5	10.2		
10	110	328.090	.51	2.88	60	303								
11		332.769	.50	2.82	60	304	255	258	42	12.5				
12	120	336.175	.25	1.42	62	304								
END	1237													

LF

A. Lanfranco and Associates Inc.

METRO VANCOUVER WTE - BURNABY B.C.

SOURCE	Unit #3 (R3) Unit #3	NOZZLE G-33-13 DIAMETER, IN. 0.3009	
PARAMETER / RUN No	Metals (particulate) / R-1	PROBE 7' ALGVRD Cp 0.8505	
DATE	FEB. 10, 2025	PORT LENGTH	
OPERATOR:	DS & BL	STATIC PRESSURE, IN. H2O -20.04	
CONTROL UNIT	JU14 Y 1.0010	STACK DIAMETER 70.9	
	ΔH@ 2.120	STACK HEIGHT 30.0'	
BAROMETRIC PRESSURE, IN. Hg	30.48	INITIAL LEAK TEST 0.006 @ 15"	
ASSUMED MOISTURE, Bw	15 %	FINAL LEAK TEST 0.005 @ 15"	

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. #1	0	140	140
Imp. #2	100	203	103
Imp. #3	100	116	16
Imp. #4	0	3	3
Imp. #5	100	2	2
Imp. #6	100	1	1
Imp. #7	200g		
Imp. #8			

Tests #3

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F: Dry Gas Outlet	Stack	Probe	Box	Impinger Exit	Pump Vac. IN. Hg	Fyrites: CO_2 Vol. %	Fyrites: O_2 Vol. %		
	11:50	574.827												
1		577.88	0.28	1.53	50	306	253	244	52	4				
2	10	580.82	0.26	1.42	51	308					10.5	9.69		
3		583.69	0.25	1.34	50	316	265	232	54	5				
4	20	586.46	0.23	1.26	51	306								
5		589.62	0.30	1.62	52	316	260	259	55	5				
6	30	592.88	0.32	1.74	52	317								
7		596.35	0.36	1.94	52	306	260	264	54	5	10.0	9.76		
8	40	599.98	0.39	2.05	52	299								
9		603.88	0.45	2.48	53	302	261	265	55	5				
10	50	607.92	0.48	2.66	54	300								
11		612.04	0.50	2.76	53	299	260	261	51	5	10.0	10.29		
12	60	616.25	0.52	2.89	54	297								
1		620.28	0.48	2.65	54	302	262	258	52	6				
2	10	624.35	0.49	2.68	55	309					9.5	10.48		
3		628.54	0.52	2.85	55	310	261	260	54	6				
4	20	632.86	0.55	3.03	56	306								
5		637.23	0.56	3.10	57	305	260	263	55	7				
6	30	641.69	0.58	3.22	57	302					9.0	11.0		
7		645.42	0.41	2.25	57	310	259	254	56	7				
8	40	648.98	0.38	2.08	57	314								
9		652.46	0.35	1.96	58	297	259	260	55	7				
10	50	655.80	0.32	1.80	59	296					9.0	11.0		
11		659.10	0.31	1.75	59	294	260	259	54	6				
12	13:51	662.34	0.30	1.69	59	292								

A. Lanfranco and Associates Inc.

LF

METRO VANCOUVER WTE - BURNABY B.C.

SOURCE	Unit #3	NOZZLE G-33-13 DIAMETER, IN. 0.3009	
PARAMETER / RUN No	Metals (Particulate) R-2	PROBE 7' AL GUARD Cp 0.85 DS	
DATE	FEB. 11, 2025	PORT LENGTH	
OPERATOR:	DS + BC	STATIC PRESSURE, IN. H2O -20.0"	
CONTROL UNIT	JU 14 Y 1.0010	STACK DIAMETER 70.9"	
	ΔH@ 2.120	STACK HEIGHT 30.0'	
BAROMETRIC PRESSURE, IN. Hg	30.32	INITIAL LEAK TEST 0.004 @ 15"	
ASSUMED MOISTURE, Bw	15%	FINAL LEAK TEST 0.003 @ 15"	

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. #1		191	191
Imp. #2	100	196	96
Imp. #3	100	120	20
Imp. #4	0	5	5
Imp. #5	100	101	1
Imp. #6	100	100	0
Imp. #7	200		
Imp. #8			

Tests #3

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F: Dry Gas Outlet	Stack	Probe	Box	Impinger Exit	Pump Vac. IN. Hg	Fyrites: CO_2 Vol. %	Fyrites: O_2 Vol. %
	09:07	663.525										
1		666.76	0.32	1.75	38	285	257	235	40	4		
2	10	670.04	0.33	1.80	39	290					9.5	10.63
3		673.18	0.30	1.63	39	291	269	238	42	5		
4	20	676.14	0.27	1.44	40	305						
5		679.03	0.26	1.38	40	308	265	249	43	5		
6	30	682.08	0.29	1.54	40	312						
7		685.92	0.45	2.43	42	302	260	267	44	5		
8	40	690.08	0.53	2.85	43	305					9.5	10.28
9		694.44	0.58	3.14	44	301	262	270	45	7		
10	50	698.93	0.61	3.32	45	298						
11		703.45	0.62	3.40	46	296	259	264	42	7	10.0	10.15
12	60	708.02	0.62	3.42	48	294						
1		712.42	0.55	3.15	49	296	258	259	50	7	9.0	10.65
2	10	716.89	0.57	3.26	50	297						
3		721.36	0.58	3.26	50	310	258	256	47	7		
4	20	725.68	0.54	3.03	51	313						
5		729.80	0.49	2.75	52	314	261	254	48	7	9.0	10.90
6	30	733.79	0.46	2.59	52	312						
7		737.35	0.36	2.05	53	306	262	270	49	5		
8	40	740.87	0.34	1.94	53	304						
9		743.98	0.28	1.60	54	301	259	268	50	5	9.5	10.47
10	50	747.02	0.26	1.50	54	298						
11		750.01	0.25	1.45	55	297	258	270	51	5		
12	11:08	753.11	0.27	1.56	54	296						

A. Lanfranco and Associates Inc.

LF

METRO VANCOUVER WTE - BURNABY B.C.

SOURCE Unit #3
PARAMETER / RUN No Metals/Speciate R-3
DATE FEB. 11, 2025
OPERATOR: DS + BK
CONTROL UNIT JU14 Y 1.00/0
ΔH@ 2.1200
BAROMETRIC PRESSURE, IN. Hg 30.32
ASSUMED MOISTURE, Bw 13%

NOZZLE G35-13 DIAMETER, IN. 0.3009
PROBE 7' ALGARD Cp 0.8505
PORT LENGTH
STATIC PRESSURE, IN. H2O -20.0"
STACK DIAMETER 70.9"
STACK HEIGHT 30.5'
INITIAL LEAK TEST 0.002 @ 15"
FINAL LEAK TEST 0.002 @ 15"

IMPINGER VOLUMES	INITIAL (mL)	FINAL (mL)	TOTAL GAIN (mL)
Imp. #1	0	225	225
Imp. #2	100	158	58
Imp. #3	100	106	6
Imp. #4	0	0	0
Imp. #5	100	102	2
Imp. #6	100	100	0
Imp. #7	200g		
Imp. #8			

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP IN. H_2O	Orifice ΔH IN. H_2O	Temperature °F: Dry Gas Outlet	Stack	Probe	Box	Impinger Exit	Pump Vac. IN. Hg	Fyrites: CO_2 Vol. %	Fyrites: O_2 Vol. %		
1	11:33	753.340												
2		757.33	0.45	2.58	53	299	226	232	39	7				
3	10	761.38	0.46	2.65	53	296					9.5	10.31		
4		765.68	0.52	2.99	53	297	233	239	42	7				
5	20	769.63	0.44	2.53	54	301								
6		773.73	0.48	2.72	54	310	265	258	45	7				
7	30	777.70	0.45	2.56	54	309								
8		781.01	0.31	1.77	55	308	261	263	46	5	9.0	11.01		
9	40	784.15	0.28	1.59	55	309								
10		787.20	0.26	1.49	55	304	259	261	48	5				
11	50	790.20	0.25	1.44	56	300								
12		793.15	0.24	1.39	56	299	258	262	49	5	9.5	10.93		
	60	796.09	0.24	1.39	56	297								
1		799.26	0.28	1.61	56	305	259	262	46	6				
2	10	802.49	0.29	1.67	57	302					9.5	10.56		
3		805.60	0.27	1.55	57	305	259	272	48	6				
4	20	808.60	0.25	1.44	57	304								
5		811.76	0.28	1.61	57	306	259	260	49	5				
6	30	814.88	0.27	1.56	57	302					9.5	10.79		
7		818.79	0.43	2.46	58	308	259	260	49	6				
8	40	823.100	0.51	2.93	58	306								
9		827.500	0.54	3.11	59	305	260	272	50	7.5				
10	50	832.13	0.60	3.47	59	302					9.5	10.77		
11		836.81	0.61	3.52	59	304	259	270	50	8				
12		841.52	0.62	3.56	58	306								
END	13:34													

APPENDIX – F

CALIBRATION SHEETS and

TECHNICIAN CERTIFICATES

BAROMETER CALIBRATION FORM

Device	Cal Date	Pbar Env Canada		Device (inches of Hg)		Difference
		(kPa)	(inches of Hg)	Reading	Elevation Corrected	(Env Can - Elv Corr)
LA	6-Jan-25	103.3	30.51	30.42	30.49	0.02
DS	6-Jan-25	103.3	30.51	30.40	30.47	0.04
CL	6-Jan-25	103.3	30.51	30.42	30.49	0.02
JC	6-Jan-25	103.3	30.51	30.42	30.49	0.02
LF	6-Jan-25	103.3	30.51	30.41	30.48	0.03
Sv	6-Jan-25	103.3	30.51	30.41	30.48	0.03
CDO	6-Jan-25	103.3	30.51	30.41	30.48	0.03
JG	6-Jan-25	103.3	30.51	30.41	30.48	0.03
ML	6-Jan-25	103.3	30.51	30.41	30.48	0.03
BL	6-Jan-25	103.3	30.51	30.43	30.50	0.01

Calibrated by: Jeremy Gibbs Signature: Date: 06-Jan-25

Performance Specification is
Device Corrected for Elevation must be +/- 0.1 " Hg of ENV CANADA SEA-LEVEL Pbar
Enter Environment canada Pressure from their website for Vancouver (link below)
and the reading from your barometer on the ground floor of the office.

https://weather.gc.ca/city/pages/bc-74_metric_e.html

A.Lanfranco & Associates inc.

EPA Method 5

Meter Box Calibration

English Meter Box Units, English K' Factor

Model #: CAE 024
Serial #: 0028-043024-1

Date: 9-Jan-25
Barometric Pressure: 30.34 (in. Hg)
Theoretical Critical Vacuum: 14.31 (in. Hg)

!!!!!!!!!
IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).
!!!!!!!!!

---------- DRY GAS METER READINGS ---------- | **-CRITICAL ORIFICE READINGS-**

dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature -- Initial (deg F)	Final (deg F)	Average (deg F)
3.70	15.00	683.701	699.822	16.121	64.0	64.0	67.0	67.0	73	0.8185	19.0	76.0	78.0	77.0
1.90	15.00	699.822	711.545	11.723	67.0	67.0	69.0	69.0	63	0.5956	21.5	77.0	81.0	79.0
1.15	15.00	711.545	720.670	9.125	70.0	70.0	72.0	72.0	55	0.4606	23.0	80.0	84.0	82.0
0.67	15.00	720.670	727.685	7.015	74.0	74.0	73.0	73.0	48	0.3560	24.0	73.0	76.0	74.5
0.33	15.00	727.685	732.515	4.830	73.0	73.0	73.0	73.0	40	0.2408	25.5	77.0	79.0	78.0

********** **RESULTS** **********

--- DRY GAS METER --- VOLUME CORRECTED Vm(std) (cu ft)	--- DRY GAS METER --- VOLUME CORRECTED Vm(std) (liters)	--------- ORIFICE --------- VOLUME CORRECTED Vcr(std) (cu ft)	--------- ORIFICE --------- VOLUME CORRECTED Vcr(std) (liters)	--------- ORIFICE --------- VOLUME NOMINAL Vcr (cu ft)	-- DRY GAS METER -- CALIBRATION FACTOR Y Value (number)	-- DRY GAS METER -- CALIBRATION FACTOR Y Variation (number)	--------- ORIFICE --------- CALIBRATION FACTOR dH@ Value (in H2O)	--------- ORIFICE --------- CALIBRATION FACTOR dH@ Value (mm H2O)	--------- ORIFICE --------- CALIBRATION FACTOR dH@ Variation (in H2O)	--------- ORIFICE --------- Ko (value)
16.566	469.1	16.075	455.2	16.129	0.970	-0.008	1.846	46.90	0.035	0.710
11.938	338.1	11.675	330.6	11.758	0.978	0.000	1.789	45.44	-0.023	0.717
9.223	261.2	9.004	255.0	9.118	0.976	-0.002	1.810	45.98	-0.001	0.715
7.049	199.6	7.008	198.5	6.999	0.994	0.016	1.733	44.01	-0.079	0.718
4.854	137.5	4.725	133.8	4.749	0.973	-0.005	1.879	47.74	0.068	0.704
				Average Y--------->	**0.9784**		**Average dH@----->**	**1.812**	**46.0**	**Average Ko----->** **0.713**

TEMPERATURE CALIBRATION

Calibration Standard -------> Omega Model CL23A S/N:T-218768

Reference Set-Point (deg F)	Temperature Device Reading: Stack (deg F)	Stack (% diff)	Hot Box (deg F)	Hot Box (% diff)	Probe (deg F)	Probe (% diff)	Imp Out (deg F)	Imp Out (% diff)	Aux (deg F)	Aux (% diff)
32	30	-0.41%	31	-0.20%	31	-0.20%	29	-0.61%	30	-0.41%
100	97	-0.54%	99	-0.18%	99	-0.18%	97	-0.54%	97	-0.54%
300	297	-0.39%	298	-0.26%	298	-0.26%	297	-0.39%	297	-0.39%
500	497	-0.31%	498	-0.21%	498	-0.21%	497	-0.31%	497	-0.31%
1000	996	-0.27%	998	-0.14%	998	-0.14%	996	-0.27%	996	-0.27%

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.
For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.
For Temperature Devicee, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Liam Forrer Signature: Carter Lanfranco Date: January 9, 2025

MOUNT ROYAL UNIVERSITY
Faculty of Continuing Education

MOUNT ROYAL
UNIVERSITY
1910
CALGARY, ALBERTA

Christian Gonzalo De La O

has successfully completed

Stack Sampling

The Faculty of Continuing Education
Mount Royal University

30 hours | May 1, 2024

Dimitra Fotopoulos, Vice Dean
Professional and Continuing Education

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Conflict of Interest Disclosure Statement

A qualified professional [1] providing services to either the Ministry of Environment and Climate Change Strategy ("ministry"), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act,* the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

a) an ownership interest in the regulated person's business;

b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);

c) a personal or professional interest in a specific outcome;

d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;

e) a spouse or other family member who will benefit from a specific outcome; or

f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Christian De La O, as a member of **Air and Waste Management Association** declare

Select one of the following:

☒ Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this **project**. I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to **Mr. Sajid Barlas**, erring on the side of caution.

☐ Real or perceived conflict of interest

Description and nature of conflict(s):

_____

_____

_____

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

_____

_____

_____

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X _____

Print name: Christian De La O

Witnessed by:

X _____

Print name: Mark Lanfranco

Date: [redacted] 29 August 2024

[1]*Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who*

a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and

b) *through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.*

MOUNT ROYAL COLLEGE

Faculty of Continuing Education and Extension

Daryl Sampson

has successfully completed

The program of studies and is awarded the certificate in

STACK SAMPLING

May 2005
Date

Donna Spaulding
Dean
Faculty of Continuing Education and Extension

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Conflict of Interest Disclosure Statement

A qualified professional [1] providing services to either the Ministry of Environment and Climate Change Strategy ("ministry"), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act,* the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

a) an ownership interest in the regulated person's business;

b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);

c) a personal or professional interest in a specific outcome;

d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;

e) a spouse or other family member who will benefit from a specific outcome; or

f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Daryl Sampson, as a member of **Air and Waste Management Association** declare

Select one of the following:

☒ Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this **project**. I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to **Mr. Sajid Barlas**, erring on the side of caution.

Ministry of Environment and Climate Change Strategy

☐ Real or perceived conflict of interest

Description and nature of conflict(s):

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X Daryl Sampson

Print name: Daryl Sampson

Witnessed by:

X

Print name: Mark Lanfranco

Date: Dec.18, 2020

[1]*Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who*

a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and

b) *through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.*

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals[1], under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional Christian De La O

Title Environmental Air Quality Technician

2. Are you a registered member of a professional association in B.C.? ☐ Yes ☒ No

Name of Association: _____ Registration # _____

3. Brief description of professional services:

Environmental consulting, specializing in air and atmospheric sciences

This declaration of competency is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: Witnessed by:

X _____ **X** _____

Print Name: Christian De La O Print Name: Daryl Sampson

Date signed: 29 August 2024

[1] *Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who*

a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and

b) *through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.*

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Declaration of Competency

The Ministry of Environment and Climate Change Strategy relies on the work, advice, recommendations and in some cases decision making of qualified professionals[1], under government's professional reliance regime. With this comes an assumption that professionals who undertake work in relation to ministry legislation, regulations and codes of practice have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional Daryl Sampson

   Title Senior Environmental Technician/Project Manager

2. Are you a registered member of a professional association in B.C.? ☐ Yes ☒ No

   Name of Association: _____ Registration # _____

3. Brief description of professional services:

   Environmental consulting, specializing in air and atmospheric sciences

This declaration of competency is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: Witnessed by:

X Daryl Sampson **X** _____

Print Name: Daryl Sampson Print Name: Louis Agassiz

Date signed: November 23, 2020

[1] *Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who*

a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and

b) *through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.*

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Declaration of Competency

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1. Name of Qualified Professional Justin Ching

Title Environmental Technician

2. Are you a registered member of a professional association in B.C.? ☐ Yes ☑ No

Name of Association: _____ Registration # _____

3. Brief description of professional services:

Environmental Technician - specialising in air and atmospheric sciences

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature: Witnessed by:

X Justin Ching **X** Daryl Sampson

Print Name: Justin Ching Print Name: Daryl Sampson

Date signed: June 28, 2023

[1] *Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who*

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BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Declaration of Competency

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1. Name of Qualified Professional Liam Forrer

Title Environmental Technician

2. Are you a registered member of a professional association in B.C.? ☐ Yes ☒ No

Name of Association: _____ Registration # _____

3. Brief description of professional services:

Environmental consulting, specializing in air and atmospheric sciences

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Declaration

I am a qualified professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:

x Liam Forrer

Print Name: Liam Forrer

Witnessed by:

x Daryl Sampson

Print Name: Daryl Sampson

Date signed: July 12, 2023

[1] *Qualified Professional, in relation to a duty or function under ministry legislation, means an individual who*

a) is registered in British Columbia with a professional association, is acting under that organization's code of ethics, and is subject to disciplinary action by that association, and

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A.Lanfranco & Associates inc.

EPA Method 5

Meter Box Calibration

English Meter Box Units, English K' Factor

Model #: JU 14
Serial #: 0028-030615-1

Date: 8-Jan-25
Barometric Pressure: 30.43 (in. Hg)
Theoretical Critical Vacuum: 14.35 (in. Hg)

!!!!!!!!!
IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).
!!!!!!!!!

---------- DRY GAS METER READINGS ----------

dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)
4.15	15.00	922.156	937.700	15.544	68.0	68.0	70.0	70.0
2.25	15.00	937.700	949.240	11.540	70.0	70.0	72.0	72.0
1.35	15.00	949.240	958.128	8.888	72.0	72.0	73.0	73.0
0.83	15.00	958.128	965.090	6.962	69.0	73.0	69.0	74.0
0.39	19.00	965.090	971.095	6.005	68.0	74.0	69.0	74.0

-CRITICAL ORIFICE READINGS-

Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature -- Initial (deg F)	Final (deg F)	Average (deg F)
73	0.8185	15.5	71.0	75.0	73.0
63	0.5956	17.0	72.0	77.0	74.5
55	0.4606	18.5	76.0	80.0	78.0
48	0.3560	20.0	79.0	81.0	80.0
40	0.2408	21.5	79.0	82.0	80.5

********** **RESULTS** **********

--- DRY GAS METER --- VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	-------- ORIFICE -------- VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	-- DRY GAS METER -- CALIBRATION FACTOR Y Value (number)	CALIBRATION FACTOR Y Variation (number)	-------- ORIFICE -------- CALIBRATION FACTOR dH@ Value (in H2O)	CALIBRATION FACTOR dH@ Value (mm H2O)	CALIBRATION FACTOR dH@ Variation (in H2O)	Ko (value)
15.931	451.2	16.183	458.3	16.068	1.016	0.015	2.036	51.71	-0.084	0.660
11.729	332.2	11.759	333.0	11.709	1.003	0.002	2.083	52.90	-0.037	0.663
8.989	254.6	9.064	256.7	9.085	1.008	0.007	2.097	53.27	-0.023	0.658
7.049	199.6	6.993	198.0	7.035	0.992	-0.009	2.162	54.92	0.043	0.656
6.073	172.0	5.988	169.6	6.030	0.986	-0.015	2.221	56.41	0.101	0.651
				Average Y--------->	**1.0010**	**Average dH@----->**	**2.120**	**53.8**	**Average Ko---->**	**0.658**

TEMPERATURE CALIBRATION

Calibration Standard -------> Omega Model CL23A S/N:T-218768

Reference Set-Point (deg F)	Temperature Device Reading Stack (deg F)	Stack (% diff)	Hot Box (deg F)	Hot Box (% diff)	Probe (deg F)	Probe (% diff)	Imp Out (deg F)	Imp Out (% diff)	Aux (deg F)	Aux (% diff)
32	33	0.20%	31	-0.20%	30	-0.41%	33	0.20%	33	0.20%
100	101	0.18%	99	-0.18%	98	-0.36%	101	0.18%	101	0.18%
300	301	0.13%	299	-0.13%	298	-0.26%	301	0.13%	301	0.13%
500	501	0.10%	499	-0.10%	498	-0.21%	501	0.10%	501	0.10%
1000	1000	0.00%	998	-0.14%	997	-0.21%	1001	0.07%	1000	0.00%

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.
For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.
For Temperature Devicee, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Liam Forrer Signature:  Date: January 8, 2025

MOUNT ROYAL UNIVERSITY
Faculty of Continuing Education

MOUNT ROYAL
UNIVERSITY
1910
CALGARY, ALBERTA

Justin Ching

has successfully completed

Stack Sampling

The Faculty of Continuing Education
Mount Royal University

30 hours | May 26, 2023

Dimitra Fotopoulos, Vice Dean
Professional and Continuing Education

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Conflict of Interest Disclosure Statement

A qualified professional [1] providing services to either the Ministry of Environment and Climate Change Strategy ("ministry"), or to a regulated person for the purpose of obtaining an authorization from the ministry, or pursuant to a requirement imposed under the *Environmental Management Act,* the *Integrated Pest Management Act* or the *Park Act* has a real or perceived conflict of interest when the qualified professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a qualified professional has

a) an ownership interest in the regulated person's business;

b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g. bonuses, stock options, other profit sharing arrangements);

c) a personal or professional interest in a specific outcome;

d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;

e) a spouse or other family member who will benefit from a specific outcome; or

f) any other interest that could be perceived as a threat to the independence or objectivity of the qualified professional in performing a duty or function.

Qualified professionals who work under ministry legislation must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

I Justin Ching, as a member of **Air and Waste Management Association** declare

Select one of the following:

☒ Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this **project**. I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to **Mr. Sajid Barlas**, erring on the side of caution.

☐ Real or perceived conflict of interest

Description and nature of conflict(s):

_____

_____

_____

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

_____

_____

_____

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purposes of increasing government transparency and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact the Ministry of Environment and Climate Change Strategy Headquarters Office at 1-800-663-7867.

Signature:

X Justin Ching

Print name: Justin Ching

Witnessed by:

X _____

Print name: Mark Lanfranco

Date: June 28, 2023

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CALGARY, ALBERTA

Liam Forrer

has successfully completed

Stack Sampling

The Faculty of Continuing Education
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30 hours | May 26, 2023

Dimitra Fotopoulos, Vice Dean
Professional and Continuing Education

BRITISH COLUMBIA | Ministry of Environment and Climate Change Strategy

Conflict of Interest Disclosure Statement

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A real or perceived conflict of interest occurs when a qualified professional has

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Declaration

I Liam Forrer, as a member of **Air and Waste Management Association** declare

Select one of the following:

☒ Absence from conflict of interest

Other than the standard fee I will receive for my professional services, I have no financial or other interest in the outcome of this **project**. I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to **Mr. Sajid Barlas**, erring on the side of caution.

Ministry of Environment and Climate Change Strategy

☐ Real or perceived conflict of interest

Description and nature of conflict(s):

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

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Signature:

X Liam Forrer

Print name: Liam Forrer

Witnessed by:

X

Print name: Mark Lanfranco

Date: July 12, 2023

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A. Lanfranco & Associates inc.

EPA Method 5

Meter Box Calibration

English Meter Box Units, English K' Factor

Model #: **LMU A**

Serial #: **Kimmon 186**

Date: 7-Jan-25

Barometric Pressure: 30.41 (in. Hg)

Theoretical Critical Vacuum: 14.34 (in. Hg)

!!!!!!!!!

IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

!!!!!!!!!

---------- DRY GAS METER READINGS ----------

dH (in H2O)	Time (min)	Volume Initial (m^3)	Volume Final (m^3)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)
0.00	15.00	634.455	634.652	6.957	63.0	63.0	69.0	69.0
0.00	15.00	634.652	634.851	7.028	68.0	68.0	71.0	71.0
0.00	15.00	634.851	635.049	6.992	70.0	70.0	73.0	73.0

-CRITICAL ORIFICE READINGS-

Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature -- Initial (deg F)	Final (deg F)	Average (deg F)
48	0.3560	20.0	70.0	79.0	74.5
48	0.3560	20.0	77.0	81.0	79.0
48	0.3560	20.0	78.0	79.0	78.5

********** **RESULTS** **********

--- DRY GAS METER ---

VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)
7.095	200.9
7.120	201.6
7.057	199.9

--------- ORIFICE ---------

VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)
7.024	198.9	6.999
6.995	198.1	7.028
6.998	198.2	7.025

-- DRY GAS METER --

CALIBRATION FACTOR Y Value (number)	Variation (number)
0.990	0.002
0.982	-0.006
0.992	0.004

--------- ORIFICE ---------

CALIBRATION FACTOR dH@ Value (in H2O)	Value (mm H2O)	Variation (in H2O)
0.000	0.00	0.000
0.000	0.00	0.000
0.000	0.00	0.000

Average Y---------> 0.9880 **Average dH@-----> 0.0000 0.00**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.

For Temperature Devicee, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Liam Forrer Signature: Date: January 7, 2025

A. Lanfranco & Associates inc.

EPA Method 5

Meter Box Calibration

English Meter Box Units, English K' Factor

Model #: **LMU-D**

Serial #: **Wizit 4618**

Date: 7-Jan-25

Barometric Pressure: 30.41 (in. Hg)

Theoretical Critical Vacuum: 14.34 (in. Hg)

!!!!!!!!!
IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).
!!!!!!!!!

---------- DRY GAS METER READINGS ----------

dH (in H2O)	Time (min)	Volume Initial (m^3)	Volume Final (m^3)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)
0.00	15.00	209.180	209.377	6.957	60.0	60.0	65.0	65.0
0.00	15.00	209.377	209.574	6.957	66.0	66.0	68.0	68.0
0.00	15.00	209.574	209.771	6.957	68.0	68.0	69.0	69.0

-CRITICAL ORIFICE READINGS-

Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature -- Initial (deg F)	Final (deg F)	Average (deg F)
48	0.3560	20.0	63.0	68.0	65.5
48	0.3560	20.0	67.0	70.0	68.5
48	0.3560	20.0	68.0	69.0	68.5

********** **RESULTS** **********

--- DRY GAS METER --- VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	--------- ORIFICE --------- VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	-- DRY GAS METER -- CALIBRATION FACTOR Y Value (number)	CALIBRATION FACTOR Y Variation (number)	--------- ORIFICE --------- CALIBRATION FACTOR dH@ Value (in H2O)	CALIBRATION FACTOR dH@ Value (mm H2O)	CALIBRATION FACTOR dH@ Variation (in H2O)
7.143	202.3	7.084	200.6	6.940	0.992	-0.005	0.000	0.00	0.000
7.082	200.5	7.064	200.0	6.959	0.997	0.001	0.000	0.00	0.000
7.061	200.0	7.064	200.0	6.959	1.000	0.004	0.000	0.00	0.000

Average Y---------> **0.9965** **Average dH@----->** **0.0000** **0.00**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.
For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.
For Temperature Devicee, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Liam Forrer Signature: _____ Date: January 7, 2025

A. LANFRANCO and ASSOCIATES INC.

ENVIRONMENTAL CONSULTANTS

GLASS NOZZLE DIAMETER CALIBRATION FORM

Calibrated by: Christian De La O
Date: 18-Feb-25

Signature: 

Nozzle I.D.	d1	d2	d3	difference	average dia.	average area
	(inch)	(inch)	(inch)	(inch)	(inch)	(ft^2)
A	0.1270	0.1270	0.1255	0.0015	0.1265	0.0000873
G-165	0.1650	0.1660	0.1645	0.0015	0.1652	0.0001488
G-170	0.1700	0.1710	0.1695	0.0015	0.1702	0.0001579
G-178	0.1760	0.1770	0.1790	0.0030	0.1773	0.0001715
E	0.1950	0.1930	0.1960	0.0030	0.1947	0.0002067
Q	0.2030	0.2040	0.2050	0.0020	0.2040	0.0002270
L	0.2100	0.2070	0.2090	0.0030	0.2087	0.0002375
P-2240	0.2160	0.2155	0.2170	0.0015	0.2162	0.0002549
P-224	0.2160	0.2170	0.2150	0.0020	0.2160	0.0002545
G-221	0.2160	0.2185	0.2190	0.0030	0.2178	0.0002588
G-2232	0.2210	0.2200	0.2215	0.0015	0.2208	0.0002660
P-223	0.2297	0.2296	0.2298	0.0002	0.2297	0.0002878
P-250	0.2500	0.2495	0.2505	0.0010	0.2500	0.0003409
C-250	0.2500	0.2500	0.2500	0.0000	0.2500	0.0003409
C-280	0.2800	0.2800	0.2800	0.0000	0.2800	0.0004276
C-281	0.2800	0.2820	0.2780	0.0040	0.2800	0.0004276
C-282	0.2800	0.2800	0.2800	0.0000	0.2800	0.0004276
C-283	0.2800	0.2800	0.2800	0.0000	0.2800	0.0004276
G-33-13	0.3008	0.3009	0.3009	0.0001	0.3009	0.0004937
G-3121	0.3055	0.3063	0.3070	0.0015	0.3063	0.0005116
G-3092	0.3100	0.3085	0.3090	0.0015	0.3092	0.0005213
P-31	0.3120	0.312	0.3120	0.0000	0.3120	0.0005309
P-314	0.3135	0.3135	0.3140	0.0005	0.3137	0.0005366
P-315	0.3145	0.3145	0.3145	0.0000	0.3145	0.0005395
P-34	0.3430	0.3430	0.3430	0.0000	0.3430	0.0006417
343-GS	0.3430	0.3430	0.3430	0.0000	0.3430	0.0006417
G-345	0.3470	0.3475	0.3475	0.0005	0.3473	0.0006580
G-367	0.3680	0.3660	0.3658	0.0022	0.3666	0.0007330
G-372	0.3669	0.3700	0.3668	0.0032	0.3679	0.0007382
P-375	0.3705	0.3710	0.3709	0.0005	0.3708	0.0007499
P-38	0.3750	0.3750	0.3750	0.0000	0.3750	0.0007670
P-401	0.3980	0.3990	0.4000	0.0020	0.3990	0.0008683
P-405	0.4047	0.4055	0.4056	0.0009	0.4053	0.0008958
P-407	0.4065	0.4070	0.4072	0.0007	0.4069	0.0009030
P-406	0.4058	0.4062	0.4060	0.0004	0.4060	0.0008990
P-41	0.4060	0.4060	0.4060	0.0000	0.4060	0.0008990
G-433	0.4360	0.4360	0.4355	0.0005	0.4358	0.0010360
P-47	0.4680	0.4680	0.4680	0.0000	0.4680	0.0011946
P-29	0.4681	0.4683	0.4685	0.0004	0.4683	0.0011961
G-468	0.4700	0.4685	0.4720	0.0035	0.4702	0.0012057
P-7	0.4965	0.4945	0.4975	0.0030	0.4962	0.0013427
G-540	0.5400	0.5410	0.5400	0.0010	0.5403	0.0015924

(a) D1, D2, D3 = three different nozzle diameters; each diameter must be measured to within (0.025mm) 0.001 in.

(b) Difference = maximum difference between any two diameters; must be less than or equal to (0.1mm) 0.004 in.

(c) Average = average of D1, D2 and D3

Pitot Tube Calibration

Date: 8-Jan-25
Pbar (in.Hg): 30.41
Temp (R): 539
Dn (in.): 0.25

Pitot ID: **7A-1**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.220	0.310	31.1	0.8340	0.0030
0.310	0.430	36.9	0.8406	0.0036
0.400	0.560	41.9	0.8367	0.0003
0.480	0.670	45.9	0.8380	0.0010
0.570	0.800	50.0	0.8357	0.0013
		Average :	0.8370	0.0018

Pitot ID: **ST 8A**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.220	0.300	31.1	0.8478	0.0128
0.340	0.480	38.6	0.8332	0.0018
0.430	0.610	43.4	0.8312	0.0038
0.520	0.740	47.8	0.8299	0.0051
0.630	0.890	52.6	0.8329	0.0021
		Average :	0.8350	0.0051

Pitot ID: **7B**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.180	0.240	28.1	0.8574	0.0084
0.290	0.400	35.7	0.8430	0.0060
0.390	0.530	41.4	0.8492	0.0003
0.480	0.650	45.9	0.8507	0.0018
0.560	0.770	49.6	0.8443	0.0046
		Average :	0.8489	0.0042

Pitot ID: **ST 8B**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.200	0.280	29.6	0.8367	0.0030
0.310	0.440	36.9	0.8310	0.0027
0.390	0.550	41.4	0.8337	0.0000
0.520	0.730	47.8	0.8356	0.0019
0.670	0.950	54.2	0.8314	0.0023
		Average :	0.8337	0.0020

Pitot ID: **7 AL GVRD-1**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.200	0.270	16.3	0.8521	0.0016
0.290	0.400	19.9	0.8430	0.0075
0.390	0.530	25.3	0.8492	0.0012
0.480	0.650	35.8	0.8507	0.0003
0.570	0.760	48.4	0.8574	0.0069
		Average :	0.8505	0.0035

Pitot ID: **ST 8C**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.210	0.290	14.9	0.8425	0.0063
0.310	0.440	19.4	0.8310	0.0052
0.430	0.600	29.0	0.8381	0.0019
0.520	0.730	43.1	0.8356	0.0006
0.610	0.860	52.8	0.8338	0.0024
		Average :	0.8362	0.0033

Pitot ID: **7C**

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
0.200	0.280	29.6	0.8367	0.0009
0.300	0.420	16.3	0.8367	0.0009
0.430	0.600	43.4	0.8381	0.0005
0.530	0.740	30.5	0.8378	0.0002
0.610	0.850	47.0	0.8387	0.0011
		Average :	0.8376	0.0007

Pitot ID:

Reference Pitot (in H2O)	S-Type Pitot (in H2O)	Air Velocity (ft/s)	Pitot Coeff. Cp	Deviation (absolute)
		Average :		

* Average absolute deviation must not exceed 0.01.

Calibrated by: Sean Verby Signature: Date: Jan 8, 2025

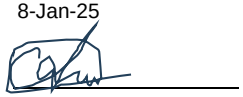
A. LANFRANCO and ASSOCIATES INC.

ENVIRONMENTAL CONSULTANTS

TEMPERATURE CALIBRATION FORM

Calibrated by: Christian De La O

Date: 8-Jan-25

Signature: 

TEMPERATURE DEVICE CALIBRATIONS

Reference Device Model CL23A Calibrator			Temperature Settings (degrees F)													
			32		100		200		300		500		800		1700	
Device	**ALA #**	**Serial #**	**Reading**	**Variation**	**Reading**	**Variation**	**Reading**	**Variation**	**Reading**	**Variation**	**Reading**	**Variation**	**Reading**	**Variation**	**Reading**	**Variation**
TPI 341K	7	20314590036	30.1	-0.39%	97.8	-0.39%	197.6	-0.36%	297.2	-0.37%	496.6	-0.35%	795.9	-0.33%	1693	-0.32%
TPI 341K	8	20313490047	31.1	-0.18%	99	-0.18%	198.6	-0.21%	298.3	-0.22%	497.6	-0.25%	797.1	-0.23%	1695	-0.23%
TPI 341K	11	20345510024	31.7	-0.06%	98.9	-0.20%	198.7	-0.20%	298.5	-0.20%	498	-0.21%	797.8	-0.17%	1696	-0.19%
TPI 341K	12	20345510031	32.7	0.14%	100.1	0.02%	199.9	-0.02%	299.8	-0.03%	499.4	-0.06%	798.8	-0.10%	1697	-0.14%
TPI 341K	18	20329480036		-6.51%		-17.87%		-30.32%		-39.49%		-52.10%		-63.51%		-78.72%
TPI 341K	20	20329480013	29.8	-0.45%	98.1	-0.34%	198	-0.30%	297.8	-0.29%	497.6	-0.25%	797.5	-0.20%	1697	-0.14%
TPI 341K	22	20329480041	30	-0.41%	98.1	-0.34%	197.7	-0.35%	297	-0.39%	497.1	-0.30%	796.8	-0.25%	1696	-0.19%
TPI 341K	24	20142030017	31.4	-0.12%	99.6	-0.07%	199.6	-0.06%	299.4	-0.08%	499	-0.10%	798.8	-0.10%	1697	-0.14%
TPI 341K	26	20345510036	31.6	-0.08%	99.6	-0.07%	199.2	-0.12%	299	-0.13%	498.7	-0.14%	798.4	-0.13%	1696	-0.19%
TPI 341K	28	20142030009	31	-0.20%	99.3	-0.13%	199.4	-0.09%	299.3	-0.09%	498.6	-0.15%	798.8	-0.10%	1697	-0.14%
TPI 341K	30	20345510023	31.7	-0.06%	99.3	-0.13%	198.9	-0.17%	298.7	-0.17%	498.4	-0.17%	797.8	-0.17%	1696	-0.19%
TPI 341K	32	20142030028	31.3	-0.14%	99.5	-0.09%	199.4	-0.09%	299	-0.13%	498.9	-0.11%	798.7	-0.10%	1697	-0.14%
Reference device is a NIST certified digital thermocouple calibrator																
Variation expressed as a percentage of the absolute temperature must be within 1.5 %																

Calibration Certificate

Date: 10-Jan-25
Calibrated by: Sean Verby
Authorizing Signature:

Insrtument Calibrated: Testo 3 (340)
Serial #: 64057016
Customer: ALA

Ambient Conditions: Temperature: 8 °C Barometric Pressure: 102.1 kPa Relative Humidity: 77%

A. Lanfranco and Associates Inc. certifies that the described instrument has been inspected and tested following calibration procedures in the Environment Canada Report EPS 1/PG/7 (Revised 2005). Below are the observed readings after calibrations are complete. Calibration checks should be completed at least every 6 months.

O_2	Initial Evaluation				After Calibration				
Gas	Instrument Reading (vol %)	Calibration Error	Pass/Fail	Notes	Instrument Reading (vol %)	Calibration Error	Pass/Fail	Notes	Certified Value (vol %)
Zero	0.13	0.13	Pass			0.00	Pass		0
O_2	11.12	0.29	Pass			10.83	Fail		10.83
Ambient	20.85	0.11	Pass			20.96	Fail		20.96

Performance Specification: +/- 1% O_2 (absolute diff)

CO	Initial Evaluation				After Calibration				
Gas	Instrument Reading (ppm)	% Calibration Error	Pass/Fail	Notes	Instrument Reading (ppm)	% Calibration Error	Pass/Fail	Notes	Certified Value (ppm)
Zero	2	0.7%	Pass			0.0%	Pass		0
1 Gas	254	0.0%	Pass			100.0%	Fail		254
2 Gas	500	1.2%	Pass			100.0%	Fail		494
3 Gas	937	1.7%	Pass			100.0%	Fail		953

Performance Specification: +/- 5% of Certified Gas Value

NO	Initial Evaluation				After Calibration				
Gas	Instrument Reading (ppm)	% Calibration Error	Pass/Fail	Notes	Instrument Reading (ppm)	% Calibration Error	Pass/Fail	Notes	Certified Value (ppm)
Zero	2	0.7%	Pass		0	0.0%	Pass		0
1 Gas	47	4.9%	Pass		46	2.7%	Pass		44.8
2 Gas	93	4.4%	Pass		92	3.2%	Pass		89.1
3 Gas	255	2.2%	Pass		250	0.2%	Pass		249.6

Performance Specification: +/- 5% of Certified Gas Value

NIST Traceable Calibration Gases:

Cylinder	Cylinder ID Number	Certification Date	Expiration Date	Cylinder Pressure (PSI)	NO (ppm)	O_2 (Vol. %)	CO (ppm)
Zero Gas (N_2)	353			1550	0	0	0
1 Gas	435	12/19/2023	12/20/2031	500	44.81	0	254.1
2 Gas	K9P	4/15/2024	4/15/2032	1500	89.11	0	494.2
3 Gas	K2H	5/22/2024	5/22/2032	1750	249.6	0	952.9
O_2/CO_2	A1M	3/14/2024	3/14/2032	1400	0	10.83	0

Note: National Institute of Standards and Technology traceable certificates are available upon request.