



**A. Lanfranco  
& Associates Inc.**

Environmental Consultants

Prepared for  
**METRO VANCOUVER**

**Metrotower III 4730 Kingsway  
Burnaby, BC V5H 0C6**

**WASTE TO ENERGY FACILITY**  
**Appendices of Compliance Emissions Testing Report**  
**November 2020 Survey**

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## **Appendix**

- A      Quality Assurance / Quality Control Results
- B      Laboratory Results
- C      Computer Generated Results
- D      Field Data Sheets
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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 ALS Environmental in Burnaby, B.C.
- Nitrous Oxide (N<sub>2</sub>O) analysis conducted with portable analyzer by A. Lanfranco and Associates.
- Particulate analysis conducted at A. Lanfranco and Associates Inc., Surrey, BC.
- Ammonium (for ammonia NH<sub>3</sub>) conducted at Exova Labs, Surrey, B.C.
- THC/VOC analysis conducted at ALS Environmental in Simi Valley, California
- Chain of Custody protocols followed for all samples.
- Excellent blank values for all sample types. All samples blank corrected.

| Sample Type          | Blank Value |          |          |
|----------------------|-------------|----------|----------|
| Fourth Survey 2020   | Unit 1      | Unit 2   | Unit 3   |
| Filter               | 0.4 mg      | 0.3 mg   | 0.2 mg   |
| Front Half Washings  | -0.7 mg     | -1.4 mg  | 1.6 mg   |
| Mercury Front        | <0.02 ug    | <0.02 ug | <0.02 ug |
| Mercury Back         | <0.208 ug   | <0.19 ug | <0.17 ug |
| Trace Metals Front * | <57.8 ug    | <65.0 ug | <76.0 ug |
| Trace Metals Back*   | <22.0 ug    | <30.4 ug | <40.0 ug |
| Fluoride             | <5.0 ug     | <5.0 ug  | <5.0 ug  |
| Ammonium             | 64.7 ug     | <2.2 ug  | <2.3 ug  |

Sum of all reported elements except Hg\*

**APPENDIX - B**

**LABORATORY RESULTS**

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**Report Transmission Cover Page**

|                                    |                                     |                             |
|------------------------------------|-------------------------------------|-----------------------------|
| Bill To: A. Lanfranco & Associates | Project ID: Metro Vancouver WTE     | Lot ID: <b>1461068</b>      |
| #101, 9488 - 189 Street            | Project Name: Filter Reagent Blanks | Control Number:             |
| Surrey, BC, Canada                 | Project Location:                   | Date Received: Nov 24, 2020 |
| V4N 4W7                            | LSD:                                | Date Reported: Dec 17, 2020 |
| Attn: Missy                        | P.O.:                               | Report Number: 2574896      |
| Sampled By:                        | Proj. Acct. code:                   |                             |
| Company:                           |                                     |                             |

---

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

| <u>Delivery</u>                       | <u>Format</u> | <u>Deliverables</u>     |
|---------------------------------------|---------------|-------------------------|
| Email - Merge Reports                 | PDF           | COC / COA / Test Report |
| Email - Multiple Reports By Agreement | PDF           | COA                     |
| Email - Single Report                 | PDF           | COR                     |

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**Notes To Clients:**

## 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: Filter Reagent Blanks  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1461068**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574896

|                                      |                | Reference Number   | 1461068-1                                    | 1461068-2                                    | 1461068-3                                    |
|--------------------------------------|----------------|--------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
|                                      |                | Sample Date        | Nov 16, 2020                                 | Nov 16, 2020                                 | Nov 16, 2020                                 |
|                                      |                | Sample Time        | NA                                           | NA                                           | NA                                           |
|                                      |                | Sample Location    |                                              |                                              |                                              |
|                                      |                | Sample Description | Reagent Blank Unit 1<br>Container 1 (filter) | Reagent Blank Unit 2<br>Container 1 (filter) | Reagent Blank Unit 3<br>Container 1 (filter) |
|                                      |                | Matrix             | Stack Samples                                | Stack Samples                                | Stack Samples                                |
| Analyte                              | Units          | Results            | Results                                      | Results                                      | Nominal Detection Limit                      |
| <b>Front Half Metals Fraction 1A</b> |                |                    |                                              |                                              |                                              |
| Aluminum                             | µg             | <5                 | 10                                           | 9                                            | 5                                            |
| Antimony                             | µg             | 4                  | 4                                            | 6                                            | 2.5                                          |
| Arsenic                              | µg             | 1                  | <1                                           | <1                                           | 1                                            |
| Cadmium                              | µg             | <0.3               | <0.3                                         | <0.3                                         | 0.25                                         |
| Chromium                             | µg             | 0.2                | <0.2                                         | 0.34                                         | 0.2                                          |
| Cobalt                               | µg             | <0.3               | <0.3                                         | <0.3                                         | 0.25                                         |
| Copper                               | µg             | 0.3                | <0.3                                         | 0.4                                          | 0.25                                         |
| Lead                                 | µg             | <2                 | <2                                           | <2                                           | 1.5                                          |
| Manganese                            | µg             | <0.3               | <0.3                                         | <0.3                                         | 0.25                                         |
| Nickel                               | µg             | <0.5               | <0.5                                         | <0.5                                         | 0.5                                          |
| Phosphorus                           | µg             | 49                 | 45                                           | 45                                           | 2.5                                          |
| Selenium                             | µg             | 2                  | 4.6                                          | <2                                           | 1.5                                          |
| Tellurium                            | µg             | <2                 | <2                                           | <2                                           | 2                                            |
| Thallium                             | µg             | <2                 | 2                                            | 2                                            | 1.5                                          |
| Vanadium                             | µg             | <1                 | <1                                           | <1                                           | 1                                            |
| Zinc                                 | µg             | 1                  | 1                                            | 0.8                                          | 0.5                                          |
| <b>Mercury by CVAA</b>               |                |                    |                                              |                                              |                                              |
| Mercury                              | As Tested      | µg/L               | <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:



Max Hewitt  
Operations Manager

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.

## Methodology and Notes

|                                                                                                |                                                                                                                                   |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Filter Reagent Blanks<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461068</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574896 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                                   |                                                                                                                                   |

## Method of Analysis

| Method Name                                | Reference | Method                                         | Date Analysis Started | Location          |
|--------------------------------------------|-----------|------------------------------------------------|-----------------------|-------------------|
| Mercury in Air (VAN) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 30, 2020          | Element Vancouver |
| Metals in Stack Samples - Front half (VAN) | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 25, 2020          | Element Vancouver |

*\* Reference Method Modified*

## References

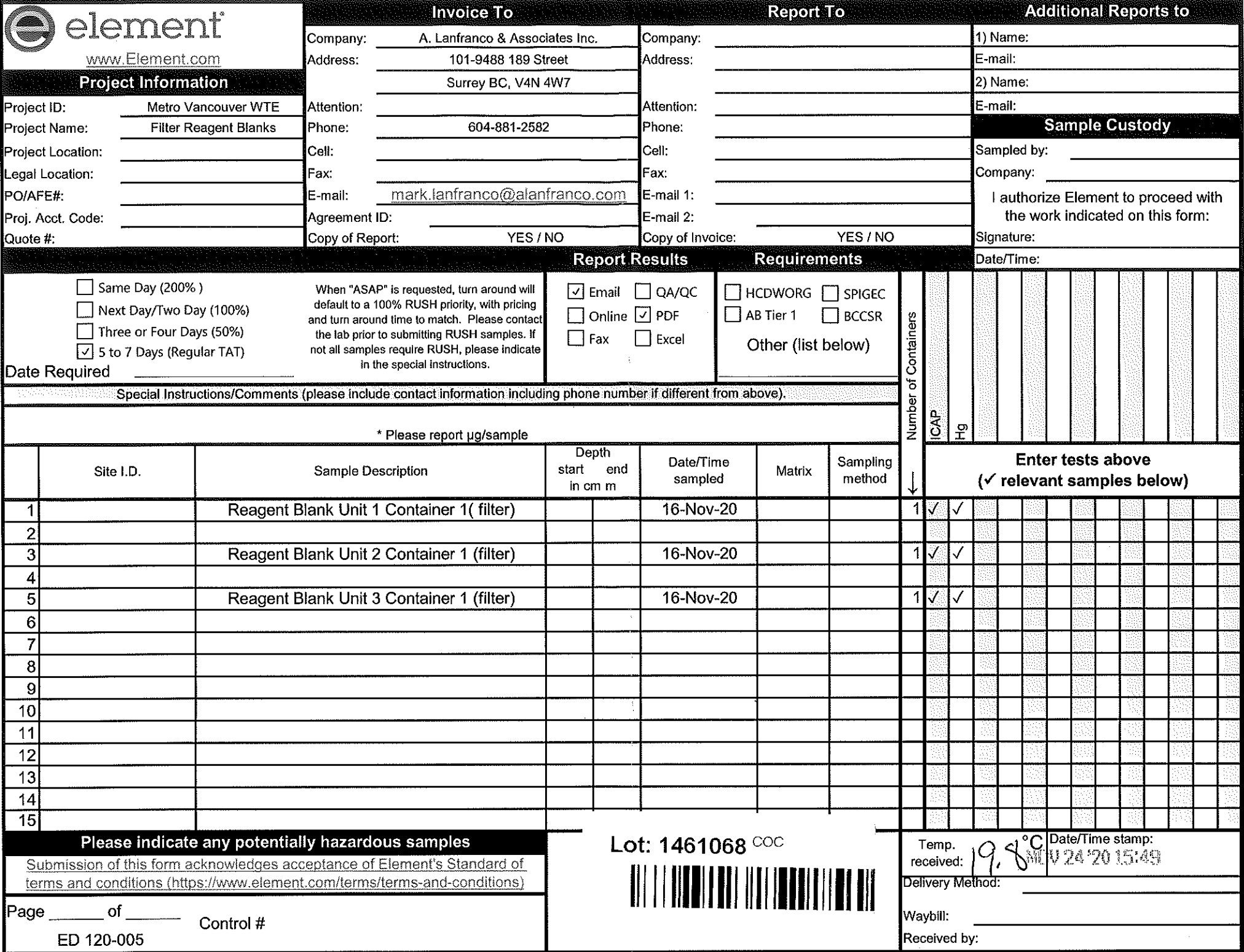
EMC      Emission Measurement Center of EPA

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.





## Confirmation of Service Request

Lot ID: **1461068**

Number of Samples: **3**

Printed Date: Nov 27, 2020

Please verify the following service request. If you have corrections or questions, please contact Client Services. No response to this confirmation of analysis will signify all services listed below are accurate.

### Report To:

Attn: Mark Lanfranco  
A. Lanfranco & Associates  
#101, 9488 - 189 Street  
Surrey, BC V4N 4W7  
Phone: (604) 881-2582  
Fax: (604) 881-2581

### Invoice To:

Attn: Missy  
A. Lanfranco & Associates  
#101, 9488 - 189 Street  
Surrey, BC V4N 4W7  
Phone: (604) 881-2582  
Fax: (604) 881-2581

### Bill Paid by:

Attn: Accounts Payable  
A. Lanfranco & Associates  
101-9488 189th Street  
Surrey, BC V4N 4W7  
Phone: (877) 533-2584  
Fax: (604) 881-2581

|                         |                       |                           |              |
|-------------------------|-----------------------|---------------------------|--------------|
| <b>Agreement Id</b>     | 5875                  | <b>Control Id</b>         |              |
| <b>Project Id</b>       | Metro Vancouver WTE   | <b>Report Due Date</b>    | Dec 22, 2020 |
| <b>Project Name</b>     | Filter Reagent Blanks | <b>Received Date</b>      | Nov 24, 2020 |
| <b>Project Location</b> |                       | <b>Sampled By</b>         |              |
| <b>Legal Location</b>   |                       | <b>Sampling Company</b>   |              |
| <b>PO#</b>              |                       | <b>Est. Disposal Date</b> | Jan 21, 2021 |
| <b>Proj. Acct. Code</b> |                       |                           |              |

## Service Information

| Sample Id                 | 1                                            | Service  | Service Name                               |
|---------------------------|----------------------------------------------|----------|--------------------------------------------|
|                           | 7305415                                      | AIRMET29 | Metals in filters & impingers - front half |
|                           |                                              | -F       |                                            |
| <b>Date Sampled</b>       | Nov 16, 2020 12:00                           | AIRHG-1B | Mercury in permanganate impingers          |
| <b>Priority</b>           | Normal                                       | DISP     | Environmental Disposal Fee                 |
| <b>Sample Description</b> | Reagent Blank Unit 1<br>Container 1 (filter) |          |                                            |
| Sample Id                 | 2                                            | Service  | Service Name                               |
|                           | 7305416                                      | AIRMET29 | Metals in filters & impingers - front half |
|                           |                                              | -F       |                                            |
| <b>Date Sampled</b>       | Nov 16, 2020 12:00                           | AIRHG-1B | Mercury in permanganate impingers          |
| <b>Priority</b>           | Normal                                       | DISP     | Environmental Disposal Fee                 |
| <b>Sample Description</b> | Reagent Blank Unit 2<br>Container 1 (filter) |          |                                            |
| Sample Id                 | 3                                            | Service  | Service Name                               |
|                           | 7305417                                      | AIRMET29 | Metals in filters & impingers - front half |
|                           |                                              | -F       |                                            |
| <b>Date Sampled</b>       | Nov 16, 2020 12:00                           | AIRHG-1B | Mercury in permanganate impingers          |
| <b>Priority</b>           | Normal                                       | DISP     | Environmental Disposal Fee                 |
| <b>Sample Description</b> | Reagent Blank Unit 3<br>Container 1 (filter) |          |                                            |

| Service Count                              |              |          |
|--------------------------------------------|--------------|----------|
| Service Name                               | Service Code | Quantity |
| Environmental Disposal Fee                 | DISP         | 3        |
| Mercury in permanganate impingers          | AIRHG-1B     | 3        |
| Metals in filters & impingers - front half | AIRMET29-F   | 3        |

## Notes

**Confirmation of Service Request****Lot ID: 1461068****Number of Samples: 3**

Printed Date: Nov 27, 2020

Please verify the following service request. If you have corrections or questions, please contact Client Services. No response to this confirmation of analysis will signify all services listed below are accurate.

**Notes**

If required for invoice approval, please sign and return to the address indicated at the top of the page.

(Signature) \_\_\_\_\_

**Report Delivery Plan**

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

| Delivery                              | Format | Deliverables            |
|---------------------------------------|--------|-------------------------|
| Email - Merge Reports                 | PDF    | COA / COC / Test Report |
| Email - Multiple Reports By Agreement | PDF    | COA                     |
| Email - Single Report                 | PDF    | COR                     |

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**Report Transmission Cover Page**

|                                                                                                |                                                                                                                            |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Reagent Blanks<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461075</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574904 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                            |                                                                                                                                   |

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

| Delivery                              | Format | Deliverables      |
|---------------------------------------|--------|-------------------|
| Email - Merge Reports                 | PDF    | COC / Test Report |
| Email - Multiple Reports By Agreement | PDF    | COA               |
| Email - Single Report                 | PDF    | COR               |

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**Notes To Clients:**

## 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: Reagent Blanks  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1461075**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574904

|                                      |                | Reference Number   | 1461075-1            | 1461075-2            | 1461075-3               |
|--------------------------------------|----------------|--------------------|----------------------|----------------------|-------------------------|
|                                      |                | Sample Date        | Nov 16, 2020         | Nov 16, 2020         | Nov 16, 2020            |
|                                      |                | Sample Time        | NA                   | NA                   | NA                      |
|                                      |                | Sample Location    |                      |                      |                         |
|                                      |                | Sample Description | Reagent Blank Unit 1 | Reagent Blank Unit 2 | Reagent Blank Unit 3    |
|                                      |                | Matrix             | Stack Samples        | Stack Samples        | Stack Samples           |
| Analyte                              | Units          | Results            | Results              | Results              | Nominal Detection Limit |
| <b>Front Half Metals Fraction 1A</b> |                |                    |                      |                      |                         |
| Aluminum                             | µg             | <5                 | <5                   | <5                   | 5                       |
| Antimony                             | µg             | 6                  | 6                    | 4                    | 2.5                     |
| Arsenic                              | µg             | 3.2                | 2                    | <1                   | 1                       |
| Cadmium                              | µg             | <0.3               | <0.3                 | <0.3                 | 0.25                    |
| Chromium                             | µg             | <0.2               | <0.2                 | <0.2                 | 0.2                     |
| Cobalt                               | µg             | <0.3               | <0.3                 | <0.3                 | 0.25                    |
| Copper                               | µg             | 0.6                | 1                    | 2                    | 0.25                    |
| Lead                                 | µg             | <2                 | <2                   | 2                    | 1.5                     |
| Manganese                            | µg             | <0.3               | <0.3                 | <0.3                 | 0.25                    |
| Nickel                               | µg             | <0.5               | <0.5                 | <0.5                 | 0.5                     |
| Phosphorus                           | µg             | 3                  | 4                    | <2                   | 2.5                     |
| Selenium                             | µg             | <2                 | <2                   | <2                   | 1.5                     |
| Tellurium                            | µg             | <2                 | <2                   | <2                   | 2                       |
| Thallium                             | µg             | 4.8                | <2                   | 2                    | 1.5                     |
| Vanadium                             | µg             | <1                 | <1                   | <1                   | 1                       |
| Zinc                                 | µg             | 2                  | 1                    | <0.5                 | 0.5                     |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                      |                      |                         |
| Aluminum                             | µg             | <5                 | 5                    | <5                   | 5                       |
| Antimony                             | µg             | <2                 | <2                   | 3                    | 2.5                     |
| Arsenic                              | µg             | 2                  | 2                    | 2.8                  | 1                       |
| Cadmium                              | µg             | <0.2               | <0.2                 | <0.2                 | 0.25                    |
| Chromium                             | µg             | <0.2               | <0.2                 | <0.2                 | 0.2                     |
| Cobalt                               | µg             | <0.2               | <0.2                 | <0.2                 | 0.25                    |
| Copper                               | µg             | <0.2               | <0.2                 | 1                    | 0.25                    |
| Lead                                 | µg             | <1                 | <1                   | <1                   | 1.5                     |
| Manganese                            | µg             | 0.3                | <0.2                 | 0.7                  | 0.25                    |
| Nickel                               | µg             | 0.5                | <0.5                 | <0.5                 | 0.5                     |
| Phosphorus                           | µg             | 20                 | 20                   | 20                   | 2.5                     |
| Selenium                             | µg             | 2                  | 3.6                  | <1                   | 1.5                     |
| Tellurium                            | µg             | <2                 | <2                   | <2                   | 2                       |
| Thallium                             | µg             | <1                 | <1                   | 4.3                  | 1.5                     |
| Vanadium                             | µg             | <0.9               | <0.9                 | <0.9                 | 1                       |
| Zinc                                 | µg             | <0.5               | <0.5                 | 1                    | 0.5                     |
| Volume                               | Sample         | mL                 | 375                  | 375                  | 375                     |
| Volume                               | aliquot volume | mL                 | 325                  | 325                  | 325                     |
| <b>Mercury by CVAA</b>               |                |                    |                      |                      |                         |
| Mercury                              | As Tested      | µg/L               | <0.05                | <0.05                | <0.05                   |
| Dilution Factor                      | As Tested      |                    | 1                    | 1                    | 1                       |
| Volume                               | Sample         | mL                 | 250                  | 250                  | 250                     |

## 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: Reagent Blanks  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1461075**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574904

|                                    |                | Reference Number   | 1461075-1            | 1461075-2            | 1461075-3               |
|------------------------------------|----------------|--------------------|----------------------|----------------------|-------------------------|
|                                    |                | Sample Date        | Nov 16, 2020         | Nov 16, 2020         | Nov 16, 2020            |
|                                    |                | Sample Time        | NA                   | NA                   | NA                      |
|                                    |                | Sample Location    |                      |                      |                         |
|                                    |                | Sample Description | Reagent Blank Unit 1 | Reagent Blank Unit 2 | Reagent Blank Unit 3    |
|                                    |                | Matrix             | Stack Samples        | Stack Samples        | Stack Samples           |
| Analyte                            | Units          | Results            | Results              | Results              | Nominal Detection Limit |
| <b>Mercury by CVAA - Continued</b> |                |                    |                      |                      |                         |
| 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                   |
| Dilution Factor                    | As Tested      |                    | 1                    | 1                    | 1                       |
| Volume                             | Sample         | mL                 | 375                  | 375                  | 375                     |
| Volume                             | aliquot volume | mL                 | 5.0                  | 5.0                  | 5.0                     |
| Volume                             | Final          | mL                 | 50                   | 50                   | 45                      |
| Mercury                            | Fraction 2B    | µg/sample          | <0.2                 | <0.2                 | <0.2                    |
| Mercury                            | As Tested      | µg/L               | <0.05                | <0.05                | <0.05                   |
| Dilution Factor                    | As Tested      |                    | 1                    | 1                    | 1                       |
| Volume                             | Sample         | mL                 | 105                  | 105                  | 105                     |
| 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                   |
| 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 3B    | µg/sample          | <0.02                | <0.02                | <0.02                   |
| Mercury                            | As Tested      | µg/L               | 0.08                 | 0.13                 | 0.08                    |
| 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          | 0.03                 | 0.042                | 0.02                    |

Approved by:



Max Hewitt  
Operations Manager

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.

## Methodology and Notes

|                                                                                                |                                                                                                                            |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Reagent Blanks<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461075</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574904 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                            |                                                                                                                                   |

## Method of Analysis

| Method Name                                | Reference | Method                                         | Date Analysis Started | Location          |
|--------------------------------------------|-----------|------------------------------------------------|-----------------------|-------------------|
| Mercury in Air (VAN) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 30, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 2B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 26, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 3A                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 8, 2020           | Element Vancouver |
| Mercury in Air (VAN) - 3B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 14, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 3C                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 14, 2020          | Element Vancouver |
| Metals in Stack Samples - Back half (VAN)  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 2, 2020           | Element Vancouver |
| Metals in Stack Samples - Front half (VAN) | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 25, 2020          | 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.

The test report shall not be reproduced except in full, without the written approval of the laboratory.



www.Element.com

### Project Information

Project ID: Metro Vancouver WTE  
Project Name: Reagent Blanks  
Project Location:  
Legal Location:  
PO/AFE#:  
Proj. Acct. Code:  
Quote #:

**Invoice To**  
Company: A. Lanfranco & Associates Inc.  
Address: 101-9488 189 Street  
Surrey BC, V4N 4W7  
Attention:  
Phone: 604-881-2582  
Cell:  
Fax:  
E-mail: mark.lanfranco@alanfranco.com  
Agreement ID:  
Copy of Report: YES / NO

**Report To**  
Company:  
Address:  
Attention:  
Phone:  
Cell:  
Fax:  
E-mail 1:  
E-mail 2:  
Copy of Invoice: YES / NO

### Additional Reports to

1) Name:  
E-mail:  
2) Name:  
E-mail:  
**Sample Custody**  
Sampled by:  
Company:  
I authorize Element to proceed with the work indicated on this form:  
Signature:  
Date/Time:

### Report Results

### Requirements

- ☐ Same Day (200%)  
☐ Next Day/Two Day (100%)  
☐ Three or Four Days (50%)  
☒ 5 to 7 Days (Regular TAT)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

- ☒ Email ☐ QA/QC  
☐ Online ☒ PDF  
☐ Fax ☐ Excel

- ☐ HCDWORG ☐ SPIGEC  
☐ AB Tier 1 ☐ BCCSR  
Other (list below)

Date Required

Special Instructions/Comments (please include contact information including phone number if different from above).

\*Front and Back ICAP as per EPA Method 29. \*Hg analysis as per EPA Method 29. \*Please report µg/sample.

|    | Site I.D. | Sample Description   | Depth start end in cm m |  | Date/Time sampled | Matrix | Sampling method | Number of Containers | Enter tests above (✓ relevant samples below) |           |          |         |       |       |  |  |  |  |
|----|-----------|----------------------|-------------------------|--|-------------------|--------|-----------------|----------------------|----------------------------------------------|-----------|----------|---------|-------|-------|--|--|--|--|
|    |           |                      |                         |  |                   |        |                 |                      | Front ICAP                                   | Back ICAP | Front Hg | Back Hg | 5A Hg | 5B Hg |  |  |  |  |
| 1  |           | Reagent Blank Unit 1 |                         |  | 16-Nov-20         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |
| 2  |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 3  |           | Reagent Blank Unit 2 |                         |  | 16-Nov-20         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |
| 4  |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 5  |           | Reagent Blank Unit 3 |                         |  | 16-Nov-20         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |
| 6  |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 7  |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 8  |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 9  |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 10 |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 11 |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 12 |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 13 |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 14 |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |
| 15 |           |                      |                         |  |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |  |  |

### Please indicate any potentially hazardous samples

Submission of this form acknowledges acceptance of Element's Standard of terms and conditions (<https://www.element.com/terms/terms-and-conditions>)

Page \_\_\_\_\_ of \_\_\_\_\_ Control #  
ED 120-005

Lot: 1461075 COC



Temp. received: 19.8 °C  
Date/Time stamp: 24 Nov 2015 15:50  
Delivery Method:  
Waybill:  
Received by:



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**Report Transmission Cover Page**

|                                                                                                |                                                                                                                          |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Field Blanks<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461121</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574966 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                          |                                                                                                                                   |

---

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

| Delivery                              | Format | Deliverables      |
|---------------------------------------|--------|-------------------|
| Email - Merge Reports                 | PDF    | COC / Test Report |
| Email - Multiple Reports By Agreement | PDF    | COA               |
| Email - Single Report                 | PDF    | COR               |

---

**Notes To Clients:**

## 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: Field Blanks  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1461121**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574966

|                                      |                | Reference Number   | 1461121-1                                              | 1461121-2                                              | 1461121-3                                              |
|--------------------------------------|----------------|--------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
|                                      |                | Sample Date        | Nov 17, 2020                                           | Nov 18, 2020                                           | Nov 19, 2020                                           |
|                                      |                | Sample Time        | NA                                                     | NA                                                     | NA                                                     |
|                                      |                | Sample Location    |                                                        |                                                        |                                                        |
|                                      |                | Sample Description | Field Blank Unit 1<br>(MV Unit 1 Blank + 4<br>Bottles) | Field Blank Unit 2<br>(MV Unit 2 Blank + 4<br>Bottles) | Field Blank Unit 3<br>(MV Unit 3 Blank + 4<br>Bottles) |
|                                      |                | Matrix             | Stack Samples                                          | Stack Samples                                          | Stack Samples                                          |
| Analyte                              | Units          | Results            | Results                                                | Results                                                | Nominal Detection Limit                                |
| <b>Front Half Metals Fraction 1A</b> |                |                    |                                                        |                                                        |                                                        |
| Aluminum                             | µg             | <5                 | 7                                                      | 20                                                     | 5                                                      |
| Antimony                             | µg             | <2                 | <2                                                     | 4                                                      | 2.5                                                    |
| Arsenic                              | µg             | <1                 | 2                                                      | <1                                                     | 1                                                      |
| Cadmium                              | µg             | <0.3               | <0.3                                                   | <0.3                                                   | 0.25                                                   |
| Chromium                             | µg             | 0.49               | <0.2                                                   | <0.2                                                   | 0.2                                                    |
| Cobalt                               | µg             | <0.3               | <0.3                                                   | <0.3                                                   | 0.25                                                   |
| Copper                               | µg             | 0.3                | <0.3                                                   | 2                                                      | 0.25                                                   |
| Lead                                 | µg             | 3.3                | <2                                                     | <2                                                     | 1.5                                                    |
| Manganese                            | µg             | <0.3               | <0.3                                                   | <0.3                                                   | 0.25                                                   |
| Nickel                               | µg             | <0.5               | <0.5                                                   | 0.5                                                    | 0.5                                                    |
| Phosphorus                           | µg             | 54                 | 56                                                     | 56                                                     | 2.5                                                    |
| Selenium                             | µg             | <2                 | 6.1                                                    | <2                                                     | 1.5                                                    |
| Tellurium                            | µg             | <2                 | <2                                                     | <2                                                     | 2                                                      |
| Thallium                             | µg             | 6.0                | 2                                                      | <2                                                     | 1.5                                                    |
| Vanadium                             | µg             | <1                 | <1                                                     | <1                                                     | 1                                                      |
| Zinc                                 | µg             | 1                  | 1                                                      | 1                                                      | 0.5                                                    |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                        |                                                        |                                                        |
| Aluminum                             | µg             | <5                 | <5                                                     | 10                                                     | 5                                                      |
| Antimony                             | µg             | 6                  | 8                                                      | 8                                                      | 2.5                                                    |
| Arsenic                              | µg             | 2                  | <1                                                     | <1                                                     | 1                                                      |
| Cadmium                              | µg             | <0.3               | <0.3                                                   | <0.3                                                   | 0.25                                                   |
| Chromium                             | µg             | <0.2               | 0.44                                                   | <0.2                                                   | 0.2                                                    |
| Cobalt                               | µg             | <0.3               | <0.3                                                   | <0.3                                                   | 0.25                                                   |
| Copper                               | µg             | <0.3               | 0.4                                                    | 0.5                                                    | 0.25                                                   |
| Lead                                 | µg             | <2                 | <2                                                     | <2                                                     | 1.5                                                    |
| Manganese                            | µg             | 1                  | <0.3                                                   | 1                                                      | 0.25                                                   |
| Nickel                               | µg             | <0.5               | 0.5                                                    | 1                                                      | 0.5                                                    |
| Phosphorus                           | µg             | 20                 | 30                                                     | 30                                                     | 2.5                                                    |
| Selenium                             | µg             | 2.6                | <2                                                     | 5.5                                                    | 1.5                                                    |
| Tellurium                            | µg             | <2                 | <2                                                     | <2                                                     | 2                                                      |
| Thallium                             | µg             | <2                 | <2                                                     | <2                                                     | 1.5                                                    |
| Vanadium                             | µg             | <1                 | <1                                                     | <1                                                     | 1                                                      |
| Zinc                                 | µg             | 2.8                | <0.5                                                   | 3.4                                                    | 0.5                                                    |
| Volume                               | Sample         | mL                 | 210                                                    | 210                                                    |                                                        |
| Volume                               | aliquot volume | mL                 | 160                                                    | 160                                                    |                                                        |
| <b>Mercury by CVAA</b>               |                |                    |                                                        |                                                        |                                                        |
| Mercury                              | As Tested      | µg/L               | <0.05                                                  | <0.05                                                  | 0.05                                                   |

## 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: Field Blanks  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1461121**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574966

|                                    |                | Reference Number   | 1461121-1                                              | 1461121-2                                              | 1461121-3                                              |
|------------------------------------|----------------|--------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
|                                    |                | Sample Date        | Nov 17, 2020                                           | Nov 18, 2020                                           | Nov 19, 2020                                           |
|                                    |                | Sample Time        | NA                                                     | NA                                                     | NA                                                     |
|                                    |                | Sample Location    |                                                        |                                                        |                                                        |
|                                    |                | Sample Description | Field Blank Unit 1<br>(MV Unit 1 Blank + 4<br>Bottles) | Field Blank Unit 2<br>(MV Unit 2 Blank + 4<br>Bottles) | Field Blank Unit 3<br>(MV Unit 3 Blank + 4<br>Bottles) |
|                                    |                | Matrix             | Stack Samples                                          | Stack Samples                                          | Stack Samples                                          |
| Analyte                            | Units          | Results            | Results                                                | Results                                                | Nominal Detection Limit                                |
| <b>Mercury by CVAA - Continued</b> |                |                    |                                                        |                                                        |                                                        |
| 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                                                  |
| Dilution Factor                    | As Tested      | 1                  | 1                                                      | 1                                                      |                                                        |
| Volume                             | Sample         | mL                 | 210                                                    | 210                                                    | 210                                                    |
| Volume                             | aliquot volume | mL                 | 5.0                                                    | 5.0                                                    | 5.0                                                    |
| Volume                             | Final          | mL                 | 40                                                     | 40                                                     | 40                                                     |
| Mercury                            | Fraction 2B    | µg/sample          | <0.08                                                  | <0.08                                                  | <0.08                                                  |
| Mercury                            | As Tested      | µg/L               | <0.05                                                  | <0.05                                                  | <0.05                                                  |
| Dilution Factor                    | As Tested      | 1                  | 1                                                      | 1                                                      |                                                        |
| Volume                             | Sample         | mL                 | 105                                                    | 175                                                    | 175                                                    |
| Volume                             | aliquot volume | mL                 | 25                                                     | 25                                                     | 25                                                     |
| Volume                             | Final          | mL                 | 40                                                     | 40                                                     | 40                                                     |
| Mercury                            | Fraction 3A    | µg/sample          | <0.008                                                 | <0.01                                                  | <0.01                                                  |
| Mercury                            | As Tested      | µg/L               | <0.05                                                  | <0.05                                                  | <0.05                                                  |
| Dilution Factor                    | As Tested      | 1                  | 1                                                      | 1                                                      |                                                        |
| Volume                             | Sample         | mL                 | 700                                                    | 500                                                    | 500                                                    |
| Volume                             | aliquot volume | mL                 | 25                                                     | 25                                                     | 25                                                     |
| Volume                             | Final          | mL                 | 40                                                     | 40                                                     | 40                                                     |
| Mercury                            | Fraction 3B    | µg/sample          | <0.06                                                  | <0.04                                                  | <0.04                                                  |
| Mercury                            | As Tested      | µg/L               | <0.05                                                  | 0.07                                                   | <0.05                                                  |
| Dilution Factor                    | As Tested      | 1                  | 1                                                      | 1                                                      |                                                        |
| Volume                             | Sample         | mL                 | 700                                                    | 500                                                    | 500                                                    |
| Volume                             | aliquot volume | mL                 | 25                                                     | 25                                                     | 25                                                     |
| Volume                             | Final          | mL                 | 40                                                     | 40                                                     | 40                                                     |
| Mercury                            | Fraction 3C    | µg/sample          | <0.06                                                  | 0.06                                                   | <0.04                                                  |

Approved by:



Max Hewitt  
Operations Manager

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.

## Methodology and Notes

|                                                                                                |                                                                                                                          |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Field Blanks<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461121</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574966 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                          |                                                                                                                                   |

## Method of Analysis

| Method Name                                | Reference | Method                                         | Date Analysis Started | Location          |
|--------------------------------------------|-----------|------------------------------------------------|-----------------------|-------------------|
| Mercury in Air (VAN) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 30, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 2B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 26, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 3A                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 8, 2020           | Element Vancouver |
| Mercury in Air (VAN) - 3B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 14, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 3C                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 14, 2020          | Element Vancouver |
| Metals in Stack Samples - Back half (VAN)  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 2, 2020           | Element Vancouver |
| Metals in Stack Samples - Front half (VAN) | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 25, 2020          | 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.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

### Project Information

Project ID: Metro Vancouver WTE  
Project Name: Field Blanks  
Project Location:  
Legal Location:  
PO/AFE#:  
Proj. Acct. Code:  
Quote #:

**Invoice To**  
Company: A. Lanfranco & Associates Inc.  
Address: 101-9488 189 Street  
Surrey BC, V4N 4W7  
Attention:  
Phone: 604-881-2582  
Cell:  
Fax:  
E-mail: mark.lanfranco@alanfranco.com  
Agreement ID:  
Copy of Report: YES / NO

**Report To**  
Company:  
Address:  
Attention:  
Phone:  
Cell:  
Fax:  
E-mail 1:  
E-mail 2:  
Copy of Invoice: YES / NO

**Additional Reports to**  
1) Name:  
E-mail:  
2) Name:  
E-mail:

**Sample Custody**  
Sampled by:  
Company:  
I authorize Element to proceed with the work indicated on this form:  
Signature:  
Date/Time:

### Report Results

### Requirements

- ☐ Same Day (200%)  
☐ Next Day/Two Day (100%)  
☐ Three or Four Days (50%)  
☒ 5 to 7 Days (Regular TAT)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

- ☒ Email ☐ QA/QC  
☐ Online ☒ PDF  
☐ Fax ☐ Excel

- ☐ HCDWORG ☐ SPIGEC  
☐ AB Tier 1 ☐ BCCSR  
Other (list below)

Date Required

Special Instructions/Comments (please include contact information including phone number if different from above).

\*Front and Back ICAP as per EPA Method 29. \*Hg analysis as per EPA Method 29. \*Please report µg/sample.

|    | Site I.D. | Sample Description                                 | Depth<br>start end<br>in cm m | Date/Time<br>sampled | Matrix | Sampling<br>method | Number of Containers<br>↓ | Front ICAP | Back ICAP | Front Hg | Back Hg | 5A Hg | 5B Hg |  |  |  |  |  |  |  |  |
|----|-----------|----------------------------------------------------|-------------------------------|----------------------|--------|--------------------|---------------------------|------------|-----------|----------|---------|-------|-------|--|--|--|--|--|--|--|--|
| 1  |           | Field Blank Unit 1 ('MV Unit 1 Blank' + 4 Bottles) |                               | 17-Nov-20            |        |                    | 5                         | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 2  |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 3  |           | Field Blank Unit 2 ('MV Unit 2 Blank' + 4 Bottles) |                               | 18-Nov-20            |        |                    | 5                         | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 4  |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 5  |           | Field Blank Unit 3 ('MV Unit 3 Blank' + 4 Bottles) |                               | 19-Nov-20            |        |                    | 5                         | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 6  |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 7  |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 8  |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 9  |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 10 |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 11 |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 12 |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 13 |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 14 |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 15 |           |                                                    |                               |                      |        |                    |                           |            |           |          |         |       |       |  |  |  |  |  |  |  |  |

Please indicate any potentially hazardous samples

Submission of this form acknowledges acceptance of Element's Standard of terms and conditions (<https://www.element.com/terms/terms-and-conditions>)

Page \_\_\_\_ of \_\_\_\_ Control #  
ED 120-005

Lot: 1461121 COC



Temp. received: 19.8 °C  
Date/Time stamp: NOV 24 '20 15:50  
Delivery Method:  
Waybill:  
Received by:

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**Report Transmission Cover Page**

|                                                                                                |                                                                                                                                   |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Metals and Hg Samples<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461131</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574984 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                                   |                                                                                                                                   |

---

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

| Delivery                              | Format | Deliverables      |
|---------------------------------------|--------|-------------------|
| Email - Merge Reports                 | PDF    | COC / Test Report |
| Email - Multiple Reports By Agreement | PDF    | COA               |
| Email - Single Report                 | PDF    | COR               |

---

**Notes To Clients:**

## 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: **1461131**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574984

|                                      | Reference Number   | 1461131-1                                      | 1461131-2                                      | 1461131-3                                      |                         |
|--------------------------------------|--------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------|
|                                      | Sample Date        | Nov 16, 2020                                   | Nov 17, 2020                                   | Nov 17, 2020                                   |                         |
|                                      | Sample Time        | NA                                             | NA                                             | NA                                             |                         |
|                                      | Sample Location    |                                                |                                                |                                                |                         |
|                                      | Sample Description | Unit 1 Run 1 (MV<br>Unit 1 R-1 + 4<br>bottles) | Unit 1 Run 2 (MV<br>Unit 1 R-2 + 4<br>bottles) | Unit 1 Run 3 (MV<br>Unit 1 R-3 + 4<br>bottles) |                         |
|                                      | Matrix             | Stack Samples                                  | Stack Samples                                  | Stack Samples                                  |                         |
| Analyte                              | Units              | Results                                        | Results                                        | Results                                        | Nominal Detection Limit |
| <b>Front Half Metals Fraction 1A</b> |                    |                                                |                                                |                                                |                         |
| Aluminum                             | µg                 | 10                                             | 58                                             | 20                                             | 5                       |
| Antimony                             | µg                 | 7                                              | 10                                             | <2                                             | 2.5                     |
| Arsenic                              | µg                 | <1                                             | 10                                             | <1                                             | 1                       |
| Cadmium                              | µg                 | <0.3                                           | 9.1                                            | <0.3                                           | 0.25                    |
| Chromium                             | µg                 | <0.2                                           | 9.20                                           | 0.57                                           | 0.2                     |
| Cobalt                               | µg                 | 0.5                                            | 10.0                                           | <0.3                                           | 0.25                    |
| Copper                               | µg                 | 1                                              | 12                                             | 0.3                                            | 0.25                    |
| Lead                                 | µg                 | 4.8                                            | 10.0                                           | 2                                              | 1.5                     |
| Manganese                            | µg                 | 2                                              | 11                                             | 1                                              | 0.25                    |
| Nickel                               | µg                 | 33.3                                           | 24                                             | 6.0                                            | 0.5                     |
| Phosphorus                           | µg                 | 52                                             | 180                                            | 49                                             | 2.5                     |
| Selenium                             | µg                 | <2                                             | 7.5                                            | 5.2                                            | 1.5                     |
| Tellurium                            | µg                 | <2                                             | 6.0                                            | <2                                             | 2                       |
| Thallium                             | µg                 | 3.5                                            | 15                                             | 2                                              | 1.5                     |
| Vanadium                             | µg                 | <1                                             | 8.6                                            | <1                                             | 1                       |
| Zinc                                 | µg                 | 5.3                                            | 15                                             | 5.5                                            | 0.5                     |
| <b>Back Half Metals Fraction 2A</b>  |                    |                                                |                                                |                                                |                         |
| Aluminum                             | µg                 | 25                                             | 20                                             | 21                                             | 5                       |
| Antimony                             | µg                 | 3                                              | <2                                             | 3                                              | 2.5                     |
| Arsenic                              | µg                 | 1                                              | 1.0                                            | <0.9                                           | 1                       |
| Cadmium                              | µg                 | <0.2                                           | <0.2                                           | <0.2                                           | 0.25                    |
| Chromium                             | µg                 | 1.4                                            | 0.47                                           | 0.2                                            | 0.2                     |
| Cobalt                               | µg                 | <0.2                                           | <0.2                                           | <0.2                                           | 0.25                    |
| Copper                               | µg                 | 2.7                                            | 1                                              | 2.2                                            | 0.25                    |
| Lead                                 | µg                 | 14                                             | 7.5                                            | <1                                             | 1.5                     |
| Manganese                            | µg                 | 2                                              | <0.2                                           | 0.8                                            | 0.25                    |
| Nickel                               | µg                 | 0.8                                            | 4.4                                            | 1                                              | 0.5                     |
| Phosphorus                           | µg                 | 24                                             | 24                                             | 23                                             | 2.5                     |
| Selenium                             | µg                 | 3.8                                            | <1                                             | <1                                             | 1.5                     |
| Tellurium                            | µg                 | <2                                             | <2                                             | <2                                             | 2                       |
| Thallium                             | µg                 | 3.1                                            | 4.9                                            | <1                                             | 1.5                     |
| Vanadium                             | µg                 | <0.9                                           | 0.9                                            | <0.9                                           | 1                       |
| Zinc                                 | µg                 | 4.7                                            | 3.8                                            | 4.9                                            | 0.5                     |
| Volume                               | Sample             | mL                                             | 840                                            | 840                                            |                         |
| Volume                               | aliquot volume     | mL                                             | 790                                            | 790                                            |                         |
| <b>Mercury by CVAA</b>               |                    |                                                |                                                |                                                |                         |
| Mercury                              | As Tested          | µg/L                                           | <0.05                                          | <0.05                                          | 0.05                    |

## 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: **1461131**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574984

|                             |                | Reference Number   | 1461131-1                                      | 1461131-2                                      | 1461131-3                                      |                            |
|-----------------------------|----------------|--------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|----------------------------|
|                             |                | Sample Date        | Nov 16, 2020                                   | Nov 17, 2020                                   | Nov 17, 2020                                   |                            |
|                             |                | Sample Time        | NA                                             | NA                                             | NA                                             |                            |
|                             |                | Sample Location    |                                                |                                                |                                                |                            |
|                             |                | Sample Description | Unit 1 Run 1 (MV<br>Unit 1 R-1 + 4<br>bottles) | Unit 1 Run 2 (MV<br>Unit 1 R-2 + 4<br>bottles) | Unit 1 Run 3 (MV<br>Unit 1 R-3 + 4<br>bottles) |                            |
|                             |                | Matrix             | Stack Samples                                  | Stack Samples                                  | Stack Samples                                  |                            |
| Analyte                     |                | Units              | Results                                        | Results                                        | Results                                        | Nominal Detection<br>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               | 0.32                                           | 0.82                                           | 0.86                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 840                                            | 840                                            | 840                                            |                            |
| Volume                      | aliquot volume | mL                 | 5.0                                            | 5.0                                            | 5.0                                            |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 2B    | µg/sample          | 2.2                                            | 5.5                                            | 5.8                                            |                            |
| Mercury                     | As Tested      | µg/L               | 0.07                                           | 0.09                                           | <0.05                                          | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 175                                            | 245                                            | 175                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3A    | µg/sample          | 0.02                                           | 0.04                                           | <0.01                                          |                            |
| Mercury                     | As Tested      | µg/L               | <0.05                                          | <0.05                                          | <0.05                                          | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 600                                            | 500                                            | 500                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3B    | µg/sample          | <0.05                                          | <0.04                                          | <0.04                                          |                            |
| Mercury                     | As Tested      | µg/L               | 0.16                                           | 0.33                                           | 0.24                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 600                                            | 500                                            | 500                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3C    | µg/sample          | 0.15                                           | 0.27                                           | 0.19                                           |                            |



## 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: **1461131**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574984

|                                      |                | Reference Number   | 1461131-4                                      | 1461131-5                                      | 1461131-6                                      |
|--------------------------------------|----------------|--------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
|                                      |                | Sample Date        | Nov 17, 2020                                   | Nov 18, 2020                                   | Nov 18, 2020                                   |
|                                      |                | Sample Time        | NA                                             | NA                                             | NA                                             |
|                                      |                | Sample Location    |                                                |                                                |                                                |
|                                      |                | Sample Description | Unit 2 Run 1 (MV<br>Unit 2 R-1 + 4<br>bottles) | Unit 2 Run 2 (MV<br>Unit 2 R-2 + 4<br>bottles) | Unit 2 Run 3 (MV<br>Unit 2 R-3 + 4<br>bottles) |
|                                      |                | Matrix             | Stack Samples                                  | Stack Samples                                  | Stack Samples                                  |
| Analyte                              | Units          | Results            | Results                                        | Results                                        | Nominal Detection Limit                        |
| <b>Front Half Metals Fraction 1A</b> |                |                    |                                                |                                                |                                                |
| Aluminum                             | µg             | 7                  | 8                                              | 10                                             | 5                                              |
| Antimony                             | µg             | 9                  | <2                                             | 9                                              | 2.5                                            |
| Arsenic                              | µg             | 1                  | <1                                             | <1                                             | 1                                              |
| Cadmium                              | µg             | <0.3               | <0.3                                           | <0.3                                           | 0.25                                           |
| Chromium                             | µg             | 106                | 1.9                                            | 0.99                                           | 0.2                                            |
| Cobalt                               | µg             | 0.4                | <0.3                                           | <0.3                                           | 0.25                                           |
| Copper                               | µg             | 4.2                | 2                                              | 1                                              | 0.25                                           |
| Lead                                 | µg             | <2                 | 2                                              | <2                                             | 1.5                                            |
| Manganese                            | µg             | 3.7                | 2.9                                            | 1                                              | 0.25                                           |
| Nickel                               | µg             | 76.2               | 16                                             | 7.4                                            | 0.5                                            |
| Phosphorus                           | µg             | 56                 | 57                                             | 48                                             | 2.5                                            |
| Selenium                             | µg             | <2                 | <2                                             | <2                                             | 1.5                                            |
| Tellurium                            | µg             | <2                 | <2                                             | <2                                             | 2                                              |
| Thallium                             | µg             | 5.3                | 3.6                                            | 7.4                                            | 1.5                                            |
| Vanadium                             | µg             | <1                 | <1                                             | <1                                             | 1                                              |
| Zinc                                 | µg             | 7.5                | 4.9                                            | 4.0                                            | 0.5                                            |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                |                                                |                                                |
| Aluminum                             | µg             | 20                 | 10                                             | 20                                             | 5                                              |
| Antimony                             | µg             | 2                  | 2                                              | 6                                              | 2.5                                            |
| Arsenic                              | µg             | <0.9               | 2                                              | <0.9                                           | 1                                              |
| Cadmium                              | µg             | <0.2               | <0.2                                           | <0.2                                           | 0.25                                           |
| Chromium                             | µg             | 1.3                | 1.2                                            | 0.54                                           | 0.2                                            |
| Cobalt                               | µg             | <0.2               | <0.2                                           | <0.2                                           | 0.25                                           |
| Copper                               | µg             | 2                  | 1                                              | <0.2                                           | 0.25                                           |
| Lead                                 | µg             | <1                 | <1                                             | <1                                             | 1.5                                            |
| Manganese                            | µg             | 1                  | 2.6                                            | 0.8                                            | 0.25                                           |
| Nickel                               | µg             | 1                  | 2                                              | 2                                              | 0.5                                            |
| Phosphorus                           | µg             | 24                 | 20                                             | 25                                             | 2.5                                            |
| Selenium                             | µg             | <1                 | <1                                             | 3.5                                            | 1.5                                            |
| Tellurium                            | µg             | <2                 | <2                                             | <2                                             | 2                                              |
| Thallium                             | µg             | 2.4                | <1                                             | <1                                             | 1.5                                            |
| Vanadium                             | µg             | <0.9               | 1                                              | <0.9                                           | 1                                              |
| Zinc                                 | µg             | 2.3                | 7.0                                            | 2                                              | 0.5                                            |
| Volume                               | Sample         | mL                 | 840                                            | 840                                            | 840                                            |
| Volume                               | aliquot volume | mL                 | 790                                            | 790                                            | 790                                            |
| <b>Mercury by CVAA</b>               |                |                    |                                                |                                                |                                                |
| Mercury                              | As Tested      | µg/L               | <0.05                                          | <0.05                                          | 0.05                                           |

## 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: **1461131**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574984

|                             |                | Reference Number   | 1461131-4                                      | 1461131-5                                      | 1461131-6                                      |                            |
|-----------------------------|----------------|--------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|----------------------------|
|                             |                | Sample Date        | Nov 17, 2020                                   | Nov 18, 2020                                   | Nov 18, 2020                                   |                            |
|                             |                | Sample Time        | NA                                             | NA                                             | NA                                             |                            |
|                             |                | Sample Location    |                                                |                                                |                                                |                            |
|                             |                | Sample Description | Unit 2 Run 1 (MV<br>Unit 2 R-1 + 4<br>bottles) | Unit 2 Run 2 (MV<br>Unit 2 R-2 + 4<br>bottles) | Unit 2 Run 3 (MV<br>Unit 2 R-3 + 4<br>bottles) |                            |
|                             |                | Matrix             | Stack Samples                                  | Stack Samples                                  | Stack Samples                                  |                            |
| Analyte                     |                | Units              | Results                                        | Results                                        | Results                                        | Nominal Detection<br>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               | 0.19                                           | 0.22                                           | 0.22                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 840                                            | 840                                            | 840                                            |                            |
| Volume                      | aliquot volume | mL                 | 5.0                                            | 5.0                                            | 5.0                                            |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 2B    | µg/sample          | 1.3                                            | 1.5                                            | 1.5                                            |                            |
| Mercury                     | As Tested      | µg/L               | <0.05                                          | <0.05                                          | <0.05                                          | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 170                                            | 175                                            | 175                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3A    | µg/sample          | <0.01                                          | <0.01                                          | <0.01                                          |                            |
| Mercury                     | As Tested      | µg/L               | <0.05                                          | <0.05                                          | <0.05                                          | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 600                                            | 600                                            | 500                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3B    | µg/sample          | <0.05                                          | <0.05                                          | <0.04                                          |                            |
| Mercury                     | As Tested      | µg/L               | 0.07                                           | 0.14                                           | 0.12                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 600                                            | 600                                            | 500                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3C    | µg/sample          | 0.07                                           | 0.13                                           | 0.094                                          |                            |

## 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: **1461131**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574984

|                                      |                | Reference Number   | 1461131-7                                      | 1461131-8                                      | 1461131-9                                      |
|--------------------------------------|----------------|--------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
|                                      |                | Sample Date        | Nov 18, 2020                                   | Nov 19, 2020                                   | Nov 19, 2020                                   |
|                                      |                | Sample Time        | NA                                             | NA                                             | NA                                             |
|                                      |                | Sample Location    |                                                |                                                |                                                |
|                                      |                | Sample Description | Unit 3 Run 1 (MV<br>Unit 3 R-1 + 4<br>bottles) | Unit 3 Run 2 (MV<br>Unit 3 R-2 + 4<br>bottles) | Unit 3 Run 3 (MV<br>Unit 3 R-3 + 4<br>bottles) |
|                                      |                | Matrix             | Stack Samples                                  | Stack Samples                                  | Stack Samples                                  |
| Analyte                              | Units          | Results            | Results                                        | Results                                        | Nominal Detection Limit                        |
| <b>Front Half Metals Fraction 1A</b> |                |                    |                                                |                                                |                                                |
| Aluminum                             | µg             | 9                  | <5                                             | 9                                              | 5                                              |
| Antimony                             | µg             | 7                  | 5                                              | 3                                              | 2.5                                            |
| Arsenic                              | µg             | 2.8                | <1                                             | <1                                             | 1                                              |
| Cadmium                              | µg             | <0.3               | <0.3                                           | <0.3                                           | 0.25                                           |
| Chromium                             | µg             | 1.6                | 0.37                                           | 2.2                                            | 0.2                                            |
| Cobalt                               | µg             | <0.3               | <0.3                                           | 0.4                                            | 0.25                                           |
| Copper                               | µg             | <0.3               | <0.3                                           | 0.4                                            | 0.25                                           |
| Lead                                 | µg             | <2                 | <2                                             | 3.6                                            | 1.5                                            |
| Manganese                            | µg             | 0.4                | 0.7                                            | 1                                              | 0.25                                           |
| Nickel                               | µg             | 3.8                | 3.4                                            | 8.1                                            | 0.5                                            |
| Phosphorus                           | µg             | 52                 | 41                                             | 55                                             | 2.5                                            |
| Selenium                             | µg             | 4.5                | 5.4                                            | <2                                             | 1.5                                            |
| Tellurium                            | µg             | <2                 | <2                                             | <2                                             | 2                                              |
| Thallium                             | µg             | 2                  | 3.2                                            | 3.9                                            | 1.5                                            |
| Vanadium                             | µg             | <1                 | <1                                             | <1                                             | 1                                              |
| Zinc                                 | µg             | 3.6                | 4.7                                            | 5.6                                            | 0.5                                            |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                |                                                |                                                |
| Aluminum                             | µg             | 8                  | 10                                             | 10                                             | 5                                              |
| Antimony                             | µg             | 3                  | 5                                              | 3                                              | 2.5                                            |
| Arsenic                              | µg             | <0.9               | <0.9                                           | <0.9                                           | 1                                              |
| Cadmium                              | µg             | <0.2               | <0.2                                           | <0.2                                           | 0.25                                           |
| Chromium                             | µg             | <0.2               | 1.8                                            | <0.2                                           | 0.2                                            |
| Cobalt                               | µg             | <0.2               | <0.2                                           | <0.2                                           | 0.25                                           |
| Copper                               | µg             | <0.2               | 0.4                                            | <0.2                                           | 0.25                                           |
| Lead                                 | µg             | <1                 | <1                                             | <1                                             | 1.5                                            |
| Manganese                            | µg             | <0.2               | 0.5                                            | <0.2                                           | 0.25                                           |
| Nickel                               | µg             | <0.4               | 8.9                                            | 2                                              | 0.5                                            |
| Phosphorus                           | µg             | 22                 | 25                                             | 21                                             | 2.5                                            |
| Selenium                             | µg             | 2                  | 4.7                                            | <1                                             | 1.5                                            |
| Tellurium                            | µg             | <2                 | <2                                             | <2                                             | 2                                              |
| Thallium                             | µg             | <1                 | 2                                              | 4.6                                            | 1.5                                            |
| Vanadium                             | µg             | <0.9               | <0.9                                           | <0.9                                           | 1                                              |
| Zinc                                 | µg             | 2.4                | 5.1                                            | 2                                              | 0.5                                            |
| Volume                               | Sample         | mL                 | 820                                            | 820                                            | 820                                            |
| Volume                               | aliquot volume | mL                 | 770                                            | 770                                            | 770                                            |
| <b>Mercury by CVAA</b>               |                |                    |                                                |                                                |                                                |
| Mercury                              | As Tested      | µg/L               | <0.05                                          | <0.05                                          | 0.05                                           |

## 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: **1461131**  
Control Number:  
Date Received: Nov 24, 2020  
Date Reported: Dec 17, 2020  
Report Number: 2574984

|                             |                | Reference Number   | 1461131-7                                      | 1461131-8                                      | 1461131-9                                      |                            |
|-----------------------------|----------------|--------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|----------------------------|
|                             |                | Sample Date        | Nov 18, 2020                                   | Nov 19, 2020                                   | Nov 19, 2020                                   |                            |
|                             |                | Sample Time        | NA                                             | NA                                             | NA                                             |                            |
|                             |                | Sample Location    |                                                |                                                |                                                |                            |
|                             |                | Sample Description | Unit 3 Run 1 (MV<br>Unit 3 R-1 + 4<br>bottles) | Unit 3 Run 2 (MV<br>Unit 3 R-2 + 4<br>bottles) | Unit 3 Run 3 (MV<br>Unit 3 R-3 + 4<br>bottles) |                            |
|                             |                | Matrix             | Stack Samples                                  | Stack Samples                                  | Stack Samples                                  |                            |
| Analyte                     |                | Units              | Results                                        | Results                                        | Results                                        | Nominal Detection<br>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               | 0.34                                           | 0.82                                           | 0.73                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 820                                            | 820                                            | 820                                            |                            |
| Volume                      | aliquot volume | mL                 | 5.0                                            | 5.0                                            | 5.0                                            |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 2B    | µg/sample          | 2.2                                            | 5.4                                            | 4.8                                            |                            |
| Mercury                     | As Tested      | µg/L               | <0.05                                          | <0.05                                          | <0.05                                          | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 175                                            | 175                                            | 175                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3A    | µg/sample          | <0.01                                          | <0.01                                          | <0.01                                          |                            |
| 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                                            | 600                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3B    | µg/sample          | <0.04                                          | <0.04                                          | <0.05                                          |                            |
| Mercury                     | As Tested      | µg/L               | 0.11                                           | 0.13                                           | 0.21                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                              | 1                                              | 1                                              |                            |
| Volume                      | Sample         | mL                 | 500                                            | 500                                            | 600                                            |                            |
| Volume                      | aliquot volume | mL                 | 25                                             | 25                                             | 25                                             |                            |
| Volume                      | Final          | mL                 | 40                                             | 40                                             | 40                                             |                            |
| Mercury                     | Fraction 3C    | µg/sample          | 0.087                                          | 0.10                                           | 0.20                                           |                            |

Approved by:



Max Hewitt  
Operations Manager

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.

## Methodology and Notes

|                                                                                                |                                                                                                                                   |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: Metals and Hg Samples<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1461131</b><br>Control Number:<br>Date Received: Nov 24, 2020<br>Date Reported: Dec 17, 2020<br>Report Number: 2574984 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                                   |                                                                                                                                   |

## Method of Analysis

| Method Name                                | Reference | Method                                         | Date Analysis Started | Location          |
|--------------------------------------------|-----------|------------------------------------------------|-----------------------|-------------------|
| Mercury in Air (VAN) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 30, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 2B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 26, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 3A                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 8, 2020           | Element Vancouver |
| Mercury in Air (VAN) - 3B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 14, 2020          | Element Vancouver |
| Mercury in Air (VAN) - 3C                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 14, 2020          | Element Vancouver |
| Metals in Stack Samples - Back half (VAN)  | EMC       | * Metals Emissions from Stationary Sources, 29 | Dec 2, 2020           | Element Vancouver |
| Metals in Stack Samples - Front half (VAN) | EMC       | * Metals Emissions from Stationary Sources, 29 | Nov 25, 2020          | 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.

The test report shall not be reproduced except in full, without the written approval of the laboratory.



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### Project Information

Project ID: Metro Vancouver WTE  
Project Name: Metals and Hg Samples  
Project Location:  
Legal Location:  
PO/AFE#:  
Proj. Acct. Code:  
Quote #:

### Invoice To

Company: A. Lanfranco & Associates Inc.  
Address: 101-9488 189 Street  
Surrey BC, V4N 4W7  
Attention:  
Phone: 604-881-2582  
Cell:  
Fax:  
E-mail: mark.lanfranco@alanfranco.com  
Agreement ID:  
Copy of Report: YES / NO

### Report To

Company:  
Address:  
Attention:  
Phone:  
Cell:  
Fax:  
E-mail 1:  
E-mail 2:  
Copy of Invoice: YES / NO

### Additional Reports to

1) Name:  
E-mail:  
2) Name:  
E-mail:  
**Sample Custody**  
Sampled by:  
Company:  
I authorize Element to proceed with the work indicated on this form:  
Signature:  
Date/Time:

### Report Results

### Requirements

- ☐ Same Day (200%)  
☐ Next Day/Two Day (100%)  
☐ Three or Four Days (50%)  
☒ 5 to 7 Days (Regular TAT)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

- ☒ Email ☐ QA/QC  
☐ Online ☒ PDF  
☐ Fax ☐ Excel

- ☐ HCDWORG ☐ SPIGEC  
☐ AB Tier 1 ☐ BCCSR  
Other (list below)

Date Required

Special Instructions/Comments (please include contact information including phone number if different from above).

\*Front and Back ICAP as per EPA Method 29. \*Hg analysis as per EPA Method 29. \*Please report µg/sample.

| Site I.D. | Sample Description                         | Depth start end in cm m | Date/Time sampled | Matrix | Sampling method | Number of Containers | Front ICAP | Back ICAP | Front Hg | Back Hg | 5A Hg | 5B Hg |  |  |  |  |  |  |  |  |
|-----------|--------------------------------------------|-------------------------|-------------------|--------|-----------------|----------------------|------------|-----------|----------|---------|-------|-------|--|--|--|--|--|--|--|--|
| 1         | Unit 1 Run 1 ('MV Unit 1 R-1' + 4 Bottles) |                         | 16-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 2         | Unit 1 Run 2 ('MV Unit 1 R-2' + 4 Bottles) |                         | 17-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 3         | Unit 1 Run 3 ('MV Unit 1 R-3' + 4 Bottles) |                         | 17-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 4         |                                            |                         |                   |        |                 |                      |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 5         | Unit 2 Run 1 ('MV Unit 2 R-1' + 4 Bottles) |                         | 17-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 6         | Unit 2 Run 2 ('MV Unit 2 R-2' + 4 Bottles) |                         | 18-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 7         | Unit 2 Run 3 ('MV Unit 2 R-3' + 4 Bottles) |                         | 18-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 8         |                                            |                         |                   |        |                 |                      |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 9         | Unit 3 Run 1 ('MV Unit 3 R-1' + 4 Bottles) |                         | 18-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 10        | Unit 3 Run 2 ('MV Unit 3 R-2' + 4 Bottles) |                         | 19-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 11        | Unit 3 Run 3 ('MV Unit 3 R-3' + 4 Bottles) |                         | 19-Nov-20         |        |                 | 5                    | ✓          | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |  |  |  |  |  |  |
| 12        |                                            |                         |                   |        |                 |                      |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 13        |                                            |                         |                   |        |                 |                      |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 14        |                                            |                         |                   |        |                 |                      |            |           |          |         |       |       |  |  |  |  |  |  |  |  |
| 15        |                                            |                         |                   |        |                 |                      |            |           |          |         |       |       |  |  |  |  |  |  |  |  |

Please indicate any potentially hazardous samples

Submission of this form acknowledges acceptance of Element's Standard of terms and conditions (<https://www.element.com/terms/terms-and-conditions>)

Page \_\_\_\_\_ of \_\_\_\_\_ Control #

ED 120-005

Lot: 1461131 COC



Temp. received: 19.8 °C Date/Time stamp: NOV 24 '20 15:50  
Delivery Method:  
Waybill:  
Received by:

---

**Report Transmission Cover Page**

|                                    |                                 |                             |
|------------------------------------|---------------------------------|-----------------------------|
| Bill To: A. Lanfranco & Associates | Project ID: Metro Vancouver WTE | Lot ID: <b>1460549</b>      |
| #101, 9488 - 189 Street            | Project Name: NH3 Blanks        | Control Number:             |
| Surrey, BC, Canada                 | Project Location:               | Date Received: Nov 20, 2020 |
| V4N 4W7                            | LSD:                            | Date Reported: Nov 24, 2020 |
| Attn: Missy                        | P.O.:                           | Report Number: 2574041      |
| Sampled By:                        | Proj. Acct. code:               |                             |
| Company:                           |                                 |                             |

---

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

| Delivery                              | Format | Deliverables      |
|---------------------------------------|--------|-------------------|
| Email - Merge Reports                 | PDF    | COC / Test Report |
| Email - Multiple Reports By Agreement | PDF    | COA               |
| Email - Single Report                 | PDF    | COR               |

---

**Notes To Clients:**

## 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: **1460549**  
Control Number:  
Date Received: Nov 20, 2020  
Date Reported: Nov 24, 2020  
Report Number: 2574041

|                 |               | Reference Number   | 1460549-1        | 1460549-2        | 1460549-3        |                         |
|-----------------|---------------|--------------------|------------------|------------------|------------------|-------------------------|
|                 |               | Sample Date        | Nov 17, 2020     | Nov 18, 2020     | Nov 19, 2020     |                         |
|                 |               | Sample Time        | NA               | NA               | NA               |                         |
|                 |               | Sample Location    |                  |                  |                  |                         |
|                 |               | Sample Description | Unit 1 NH3 Blank | Unit 2 NH3 Blank | Unit 3 NH3 Blank |                         |
|                 |               | Matrix             | Stack Samples    | Stack Samples    | Stack Samples    |                         |
| Analyte         |               | Units              | Results          | Results          | Results          | Nominal Detection Limit |
| Air Quality     |               |                    |                  |                  |                  |                         |
| Ammonium - N    | As Tested     | µg/L               | 268              | <10.0            | <10.0            | 10                      |
| Dilution Factor | As Tested     |                    | 1.00             | 1.00             | 1.00             |                         |
| Sample Volume   | Sample volume | mL                 | 242              | 218              | 234              |                         |
| Ammonium - N    |               | µg/sample          | 64.7             | <2.2             | <2.3             |                         |

Approved by:



Max Hewitt  
Operations Manager

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.



---

**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: **1460549**  
Control Number:  
Date Received: Nov 20, 2020  
Date Reported: Nov 24, 2020  
Report Number: 2574041

---

**Method of Analysis**

| Method Name                 | Reference | Method                                | Date Analysis Started | Location          |
|-----------------------------|-----------|---------------------------------------|-----------------------|-------------------|
| Ammonium in Impingers (VAN) | APHA      | * Flow Injection Analysis, 4500-NH3 H | Nov 23, 2020          | Element Vancouver |

*\* Reference Method Modified*

**References**

APHA Standard Methods for the Examination of Water and Wastewater

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

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### Project Information

Project ID: Metro Vancouver WTE  
Project Name: NH<sub>3</sub> Blanks  
Project Location:  
Legal Location:  
PO/AFE#:  
Proj. Acct. Code:  
Quote #:

### Invoice To

Company: A. Lanfranco & Associates Inc.  
Address: 101-9488 189 Street  
Surrey BC, V4N 4W7  
Attention:  
Phone: 604-881-2582  
Cell:  
Fax:  
E-mail: mark.lanfranco@alanfranco.com  
Agreement ID:  
Copy of Report: YES / NO

### Report To

Company:  
Address:  
Attention:  
Phone:  
Cell:  
Fax:  
E-mail 1:  
E-mail 2:  
Copy of Invoice: YES / NO

### Additional Reports to

1) Name:  
E-mail:  
2) Name:  
E-mail:  
**Sample Custody**  
Sampled by:  
Company:  
I authorize Element to proceed with the work indicated on this form:  
Signature:  
Date/Time:

### Report Results

### Requirements

- ☐ Same Day (200%)  
☐ Next Day/Two Day (100%)  
☐ Three or Four Days (50%)  
☒ 5 to 7 Days (Regular TAT)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

- ☒ Email ☐ QA/QC  
☐ Online ☒ PDF  
☐ Fax ☐ Excel

- ☐ HCDWORG ☐ SPIGEC  
☐ AB Tier 1 ☐ BCCSR  
Other (list below)

Date Required

Special Instructions/Comments (please include contact information including phone number if different from above).

Please report  $\mu\text{g}/\text{sample}$  and volumes +/- 1 mL

| Site I.D. | Sample Description           | Depth<br>start end<br>in cm m | Date/Time<br>sampled | Matrix | Sampling<br>method | Number of Containers<br>↓ | Enter tests above<br>(✓ relevant samples below) |  |  |  |  |  |  |  |  |  |
|-----------|------------------------------|-------------------------------|----------------------|--------|--------------------|---------------------------|-------------------------------------------------|--|--|--|--|--|--|--|--|--|
| 1         | Unit 1 NH <sub>3</sub> Blank |                               | 17-Nov-20            |        |                    | 1                         | ✓                                               |  |  |  |  |  |  |  |  |  |
| 2         |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 3         | Unit 2 NH <sub>3</sub> Blank |                               | 18-Nov-20            |        |                    | 1                         | ✓                                               |  |  |  |  |  |  |  |  |  |
| 4         |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 5         | Unit 3 NH <sub>3</sub> Blank |                               | 19-Nov-20            |        |                    | 1                         | ✓                                               |  |  |  |  |  |  |  |  |  |
| 6         |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 7         |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 8         |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 9         |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 10        |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 11        |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 12        |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 13        |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 14        |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |
| 15        |                              |                               |                      |        |                    |                           |                                                 |  |  |  |  |  |  |  |  |  |

Please indicate any potentially hazardous samples

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Page \_\_\_\_\_ of \_\_\_\_\_ Control #  
ED 120-005

Lot: 1460549 COC



Temp. received: 19 °C  
Date/Time stamp: NOV 20 2015 25  
Delivery Method:  
Waybill:  
Received by:

**Report Transmission Cover Page**

|                                                                                                |                                                                                                                 |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: NH3<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1460543</b><br>Control Number:<br>Date Received: Nov 20, 2020<br>Date Reported: Nov 24, 2020<br>Report Number: 2574029 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                 |                                                                                                                                   |

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

| Delivery                              | Format | Deliverables      |
|---------------------------------------|--------|-------------------|
| Email - Merge Reports                 | PDF    | COC / Test Report |
| Email - Multiple Reports By Agreement | PDF    | COA               |
| Email - Single Report                 | PDF    | COR               |

**Notes To Clients:**

- Nov 23, 2020 - Reduction of analytical volume was necessary for ammonia to bring results within the analytical range for samples 1460543-1 to 9. Detection limits are adjusted accordingly.

## 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  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1460543**  
Control Number:  
Date Received: Nov 20, 2020  
Date Reported: Nov 24, 2020  
Report Number: 2574029

|                    |               | Reference Number   | 1460543-1        | 1460543-2        | 1460543-3               |
|--------------------|---------------|--------------------|------------------|------------------|-------------------------|
|                    |               | Sample Date        | Nov 17, 2020     | Nov 17, 2020     | Nov 17, 2020            |
|                    |               | Sample Time        | NA               | NA               | NA                      |
|                    |               | Sample Location    |                  |                  |                         |
|                    |               | Sample Description | Unit 1 NH3 Run 1 | Unit 1 NH3 Run 2 | Unit 1 NH3 Run 3        |
|                    |               | Matrix             | Stack Samples    | Stack Samples    | Stack Samples           |
| Analyte            | Units         | Results            | Results          | Results          | Nominal Detection Limit |
| <b>Air Quality</b> |               |                    |                  |                  |                         |
| Ammonium - N       | As Tested     | µg/L               | 1700             | 2510             | 3830                    |
| Dilution Factor    | As Tested     |                    | 10.0             | 10.0             | 10.0                    |
| Sample Volume      | Sample volume | mL                 | 304              | 331              | 456                     |
| Ammonium - N       |               | µg/sample          | 516              | 831              | 1750                    |

## 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  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1460543**  
Control Number:  
Date Received: Nov 20, 2020  
Date Reported: Nov 24, 2020  
Report Number: 2574029

|                    |               | Reference Number   | 1460543-4        | 1460543-5        | 1460543-6               |
|--------------------|---------------|--------------------|------------------|------------------|-------------------------|
|                    |               | Sample Date        | Nov 18, 2020     | Nov 18, 2020     | Nov 18, 2020            |
|                    |               | Sample Time        | NA               | NA               | NA                      |
|                    |               | Sample Location    |                  |                  |                         |
|                    |               | Sample Description | Unit 2 NH3 Run 1 | Unit 2 NH3 Run 2 | Unit 2 NH3 Run 3        |
|                    |               | Matrix             | Stack Samples    | Stack Samples    | Stack Samples           |
| Analyte            | Units         | Results            | Results          | Results          | Nominal Detection Limit |
| <b>Air Quality</b> |               |                    |                  |                  |                         |
| Ammonium - N       | As Tested     | µg/L               | 7870             | 6460             | 5130                    |
| Dilution Factor    | As Tested     |                    | 10.0             | 100              | 100                     |
| Sample Volume      | Sample volume | mL                 | 291              | 329              | 323                     |
| Ammonium - N       |               | µg/sample          | 2290             | 2130             | 1660                    |

## 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  
Project Location:  
LSD:  
P.O.:  
Proj. Acct. code:

Lot ID: **1460543**  
Control Number:  
Date Received: Nov 20, 2020  
Date Reported: Nov 24, 2020  
Report Number: 2574029

|                 |               | Reference Number   | 1460543-7        | 1460543-8        | 1460543-9        |                         |
|-----------------|---------------|--------------------|------------------|------------------|------------------|-------------------------|
|                 |               | Sample Date        | Nov 19, 2020     | Nov 19, 2020     | Nov 19, 2020     |                         |
|                 |               | Sample Time        | NA               | NA               | NA               |                         |
|                 |               | Sample Location    |                  |                  |                  |                         |
|                 |               | Sample Description | Unit 3 NH3 Run 1 | Unit 3 NH3 Run 2 | Unit 3 NH3 Run 3 |                         |
|                 |               | Matrix             | Stack Samples    | Stack Samples    | Stack Samples    |                         |
| Analyte         |               | Units              | Results          | Results          | Results          | Nominal Detection Limit |
| Air Quality     |               |                    |                  |                  |                  |                         |
| Ammonium - N    | As Tested     | µg/L               | 6290             | 6620             | 7060             | 10                      |
| Dilution Factor | As Tested     |                    | 100              | 100              | 10.0             |                         |
| Sample Volume   | Sample volume | mL                 | 316              | 319              | 305              |                         |
| Ammonium - N    |               | µg/sample          | 1990             | 2110             | 2150             |                         |

Approved by:



Max Hewitt  
Operations Manager

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.

---

**Methodology and Notes**

|                                                                                                |                                                                                                                 |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID: Metro Vancouver WTE<br>Project Name: NH3<br>Project Location:<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1460543</b><br>Control Number:<br>Date Received: Nov 20, 2020<br>Date Reported: Nov 24, 2020<br>Report Number: 2574029 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                 |                                                                                                                                   |

---

**Method of Analysis**

| Method Name                 | Reference | Method                                | Date Analysis Started | Location          |
|-----------------------------|-----------|---------------------------------------|-----------------------|-------------------|
| Ammonium in Impingers (VAN) | APHA      | * Flow Injection Analysis, 4500-NH3 H | Nov 23, 2020          | Element Vancouver |

*\* Reference Method Modified***References**

|      |                                                              |
|------|--------------------------------------------------------------|
| APHA | Standard Methods for the Examination of Water and Wastewater |
|------|--------------------------------------------------------------|

**Comments:**

- Nov 23, 2020 - Reduction of analytical volume was necessary for ammonia to bring results within the analytical range for samples 1460543-1 to 9. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.



www.Element.com

### Project Information

Project ID: Metro Vancouver WTE  
Project Name: NH<sub>3</sub>  
Project Location:  
Legal Location:  
PO/AFE#:  
Proj. Acct. Code:  
Quote #:

### Invoice To

Company: A. Lanfranco & Associates Inc.  
Address: 101-9488 189 Street  
Surrey BC, V4N 4W7  
Attention:  
Phone: 604-881-2582  
Cell:  
Fax:  
E-mail: mark.lanfranco@alanfranco.com  
Agreement ID:  
Copy of Report: YES / NO

### Report To

Company:  
Address:  
Attention:  
Phone:  
Cell:  
Fax:  
E-mail 1:  
E-mail 2:  
Copy of Invoice: YES / NO

### Additional Reports to

1) Name:  
E-mail:  
2) Name:  
E-mail:  
**Sample Custody**  
Sampled by:  
Company:  
I authorize Element to proceed with the work indicated on this form:  
Signature:  
Date/Time:

### Report Results

### Requirements

- ☐ Same Day (200%)  
☐ Next Day/Two Day (100%)  
☐ Three or Four Days (50%)  
☒ 5 to 7 Days (Regular TAT)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

- ☒ Email ☐ QA/QC  
☐ Online ☒ PDF  
☐ Fax ☐ Excel

- ☐ HCDWORG ☐ SPIGEC  
☐ AB Tier 1 ☐ BCCSR  
Other (list below)

Date Required

Special Instructions/Comments (please include contact information including phone number if different from above).

Please report µg/sample and volumes +/- 1 mL

|    | Site I.D. | Sample Description           | Depth<br>start end<br>in cm m | Date/Time<br>sampled | Matrix | Sampling<br>method | Number of Containers<br>↓ | Enter tests above<br>(✓ relevant samples below) |
|----|-----------|------------------------------|-------------------------------|----------------------|--------|--------------------|---------------------------|-------------------------------------------------|
| 1  |           | Unit 1 NH <sub>3</sub> Run 1 |                               | 17-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 2  |           | Unit 1 NH <sub>3</sub> Run 2 |                               | 17-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 3  |           | Unit 1 NH <sub>3</sub> Run 3 |                               | 17-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 4  |           |                              |                               |                      |        |                    |                           |                                                 |
| 5  |           | Unit 2 NH <sub>3</sub> Run 1 |                               | 18-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 6  |           | Unit 2 NH <sub>3</sub> Run 2 |                               | 18-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 7  |           | Unit 2 NH <sub>3</sub> Run 3 |                               | 18-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 8  |           |                              |                               |                      |        |                    |                           |                                                 |
| 9  |           | Unit 3 NH <sub>3</sub> Run 1 |                               | 19-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 10 |           | Unit 3 NH <sub>3</sub> Run 2 |                               | 19-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 11 |           | Unit 3 NH <sub>3</sub> Run 3 |                               | 19-Nov-20            |        |                    | 1 ✓                       |                                                 |
| 12 |           |                              |                               |                      |        |                    |                           |                                                 |
| 13 |           |                              |                               |                      |        |                    |                           |                                                 |
| 14 |           |                              |                               |                      |        |                    |                           |                                                 |
| 15 |           |                              |                               |                      |        |                    |                           |                                                 |

### Please indicate any potentially hazardous samples

Submission of this form acknowledges acceptance of Element's Standard of terms and conditions (<https://www.element.com/terms/terms-and-conditions>)

Page \_\_\_\_ of \_\_\_\_ Control #  
ED 120-005

Lot: 1460543<sup>COC</sup>



Temp. received: 19 °C Date/Time stamp: NOV 20 '20 15:15  
Delivery Method:  
Waybill:  
Received by:



## CERTIFICATE OF ANALYSIS

**Work Order** : **VA20C1605**  
**Client** : **A. Lanfranco & Associates Inc.**  
**Contact** : Mark Lanfranco  
**Address** : Unit # 101 9488 - 189 St  
                   Surrey BC Canada V4N 4W7  
**Telephone** : 604 881 2582  
**Project** : Metro Vancouver WTE  
**PO** : HF  
**C-O-C number** : ----  
**Sampler** : A. Lanfranco  
**Site** : ----  
**Quote number** : Standing Offer  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 2  
**Laboratory** : Vancouver - Environmental  
**Account Manager** : Brent Mack  
**Address** : 8081 Lougheed Highway  
                   Burnaby BC Canada V5A 1W9  
**Telephone** : +1 604 253 4188  
**Date Samples Received** : 24-Nov-2020 12:35  
**Date Analysis Commenced** : 26-Nov-2020  
**Issue Date** : 01-Dec-2020 15:02

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| <i>Signatories</i> | <i>Position</i>                            | <i>Laboratory Department</i>          |
|--------------------|--------------------------------------------|---------------------------------------|
| Tracy Harley       | Supervisor - Water Quality Instrumentation | Inorganics, Burnaby, British Columbia |



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

| Unit      | Description           |
|-----------|-----------------------|
| µg/sample | micrograms per sample |
| mL        | millilitre            |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

## Analytical Results

Sub-Matrix: Impinger Solution

Client sample ID

|                             |            |        |     |           | Unit 1 HF Blank | Unit 2 HF Blank | Unit 3 HF Blank | ----  | ----  |
|-----------------------------|------------|--------|-----|-----------|-----------------|-----------------|-----------------|-------|-------|
| (Matrix: Air)               |            |        |     |           |                 |                 |                 |       |       |
| Client sampling date / time |            |        |     |           | 17-Nov-2020     | 18-Nov-2020     | 19-Nov-2020     | ----  | ----  |
| Analyte                     | CAS Number | Method | LOR | Unit      | VA20C1605-001   | VA20C1605-002   | VA20C1605-003   | ----- | ----- |
|                             |            |        |     |           | Result          | Result          | Result          | ----  | ----  |
| <b>Field Tests</b>          |            |        |     |           |                 |                 |                 |       |       |
| volume, impinger            | ----       | EP248  | 0.1 | mL        | 240             | 230             | 250             | ----  | ----  |
| <b>Anions and Nutrients</b> |            |        |     |           |                 |                 |                 |       |       |
| fluoride                    | 16984-48-8 | E248.F | 5.0 | µg/sample | <5.0            | <5.0            | <5.0            | ----  | ----  |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

**Work Order : VA20C1605**

**Client : A. Lanfranco & Associates Inc.**

**Contact : Mark Lanfranco**

**Address : Unit # 101 9488 - 189 St  
Surrey BC Canada V4N 4W7**

**Telephone : 604 881 2582**

**Project : Metro Vancouver WTE**

**PO : HF**

**C-O-C number : ----**

**Sampler : A. Lanfranco**

**Site : ----**

**Quote number : Standing Offer**

**No. of samples received : 3**

**No. of samples analysed : 3**

**Page : 1 of 5**

**Laboratory : Vancouver - Environmental**

**Account Manager : Brent Mack**

**Address : 8081 Lougheed Highway  
Burnaby, British Columbia Canada V5A 1W9**

**Telephone : +1 604 253 4188**

**Date Samples Received : 24-Nov-2020 12:35**

**Issue Date : 01-Dec-2020 15:02**

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

RIGHT SOLUTIONS | RIGHT PARTNER



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Air**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s)            | Method | Sampling Date | Extraction / Preparation |               |        |      | Analysis      |               |        |      |
|-------------------------------------------------------------|--------|---------------|--------------------------|---------------|--------|------|---------------|---------------|--------|------|
|                                                             |        |               | Preparation Date         | Holding Times |        | Eval | Analysis Date | Holding Times |        | Eval |
|                                                             |        |               |                          | Rec           | Actual |      |               | Rec           | Actual |      |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 3 HF Blank                                     | E248.F | 19-Nov-2020   | 26-Nov-2020              | 28 days       | 7 days | ✓    | 26-Nov-2020   | 20 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 2 HF Blank                                     | E248.F | 18-Nov-2020   | 26-Nov-2020              | 28 days       | 8 days | ✓    | 26-Nov-2020   | 19 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 1 HF Blank                                     | E248.F | 17-Nov-2020   | 26-Nov-2020              | 28 days       | 9 days | ✓    | 26-Nov-2020   | 18 days       | 0 days | ✓    |

### Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Air**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

| Quality Control Sample Type          | Method | QC Lot # | Count |         | Frequency (%) |          |            |
|--------------------------------------|--------|----------|-------|---------|---------------|----------|------------|
|                                      |        |          | QC    | Regular | Actual        | Expected | Evaluation |
| Analytical Methods                   |        |          |       |         |               |          |            |
| Laboratory Duplicates (DUP)          |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |
| Laboratory Control Samples (LCS)     |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |
| Method Blanks (MB)                   |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |
| Matrix Spikes (MS)                   |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| Analytical Methods                      | Method / Lab                               | Matrix | Method Reference | Method Descriptions                                                                                                                                                                 |
|-----------------------------------------|--------------------------------------------|--------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fluoride by IC (Impinger, mg/sample)    | E248.F<br><br>Vancouver -<br>Environmental | Air    | EPA 300.1 (mod)  | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. Reported sample volumes are for the bottle/sub-sample submitted for the listed analyses. |
| Preparation Methods                     | Method / Lab                               | Matrix | Method Reference | Method Descriptions                                                                                                                                                                 |
| Preparation of Anions for IC (Impinger) | EP248<br><br>Vancouver -<br>Environmental  | Air    | EPA 300.1 (mod)  | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. Reported sample volumes are for the bottle/sub-sample submitted for the listed analyses. |

## QUALITY CONTROL REPORT

**Work Order** : **VA20C1605**

**Page** : 1 of 3

**Client** : A. Lanfranco & Associates Inc.  
**Contact** : Mark Lanfranco  
**Address** : Unit # 101 9488 - 189 St  
                   Surrey BC Canada V4N 4W7  
**Telephone** : 604 881 2582  
**Project** : Metro Vancouver WTE  
**PO** : HF  
**C-O-C number** : ----  
**Sampler** : A. Lanfranco  
**Site** : ----  
**Quote number** : Standing Offer  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Laboratory** : Vancouver - Environmental  
**Account Manager** : Brent Mack  
**Address** : 8081 Lougheed Highway  
                   Burnaby, British Columbia Canada V5A 1W9  
**Telephone** : +1 604 253 4188  
**Date Samples Received** : 24-Nov-2020 12:35  
**Date Analysis Commenced** : 26-Nov-2020  
**Issue Date** : 01-Dec-2020 15:02

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| Signatories  | Position                                   | Laboratory Department                 |
|--------------|--------------------------------------------|---------------------------------------|
| Tracy Harley | Supervisor - Water Quality Instrumentation | Inorganics, Burnaby, British Columbia |





General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percentage Difference
- # = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

| Sub-Matrix: Air                       |                  |                  |            |        | Laboratory Duplicate (DUP) Report |           |                 |                  |                      |                  |           |
|---------------------------------------|------------------|------------------|------------|--------|-----------------------------------|-----------|-----------------|------------------|----------------------|------------------|-----------|
| Laboratory sample ID                  | Client sample ID | Analyte          | CAS Number | Method | LOR                               | Unit      | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| Anions and Nutrients (QC Lot: 122375) |                  |                  |            |        |                                   |           |                 |                  |                      |                  |           |
| VA20C1605-001                         | Unit 1 HF Blank  | fluoride         | 16984-48-8 | E248.F | 5.00                              | mg/sample | <5.0            | <0.0050          | 0                    | Diff <2x LOR     | ----      |
|                                       |                  | volume, impinger | ----       | EP248  | 0.1                               | mL        | µg/sample 240   | 240              |                      | Diff <2x LOR     | ----      |

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

| Sub-Matrix: Air                      |            |        |       |           |         |           |
|--------------------------------------|------------|--------|-------|-----------|---------|-----------|
| Analyte                              | CAS Number | Method | LOR   | Unit      | Result  | Qualifier |
| Anions and Nutrients (QCLot: 122375) |            |        |       |           |         |           |
| fluoride                             | 16984-48-8 | E248.F | 0.005 | mg/sample | <0.0050 | ----      |
| volume, impinger                     | ----       | EP248  | 0.1   | mL        | 500     | ----      |



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Air

| Laboratory Control Sample (LCS) Report |            |        |       |           |               |              |                     |      |           |
|----------------------------------------|------------|--------|-------|-----------|---------------|--------------|---------------------|------|-----------|
|                                        |            |        |       |           | Spike         | Recovery (%) | Recovery Limits (%) |      |           |
| Analyte                                | CAS Number | Method | LOR   | Unit      | Concentration | LCS          | Low                 | High | Qualifier |
| Anions and Nutrients (QCLot: 122375)   |            |        |       |           |               |              |                     |      |           |
| fluoride                               | 16984-48-8 | E248.F | 0.005 | mg/sample | 0.5 mg/sample | 101          | 90.0                | 110  | ----      |

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Air

| Matrix Spike (MS) Report             |                  |          |            |        |                 |                |              |                     |      |
|--------------------------------------|------------------|----------|------------|--------|-----------------|----------------|--------------|---------------------|------|
|                                      |                  |          |            |        | Spike           |                | Recovery (%) | Recovery Limits (%) |      |
| Laboratory sample ID                 | Client sample ID | Analyte  | CAS Number | Method | Concentration   | Target         | MS           | Low                 | High |
| Anions and Nutrients (QCLot: 122375) |                  |          |            |        |                 |                |              |                     |      |
| VA20C1605-002                        | Unit 2 HF Blank  | fluoride | 16984-48-8 | E248.F | 0.227 mg/sample | 0.23 mg/sample | 98.6         | 75.0                | 125  |

## CERTIFICATE OF ANALYSIS

**Work Order** : **VA20C1607**  
**Client** : **A. Lanfranco & Associates Inc.**  
**Contact** : Mark Lanfranco  
**Address** : Unit # 101 9488 - 189 St  
                   Surrey BC Canada V4N 4W7  
**Telephone** : 604 881 2582  
**Project** : Metro Vancouver WTE  
**PO** : HF  
**C-O-C number** : ----  
**Sampler** : A. Lanfranco  
**Site** : ----  
**Quote number** : Standing Offer  
**No. of samples received** : 9  
**No. of samples analysed** : 9

**Page** : 1 of 3  
**Laboratory** : Vancouver - Environmental  
**Account Manager** : Brent Mack  
**Address** : 8081 Lougheed Highway  
                   Burnaby BC Canada V5A 1W9  
**Telephone** : +1 604 253 4188  
**Date Samples Received** : 24-Nov-2020 12:35  
**Date Analysis Commenced** : 26-Nov-2020  
**Issue Date** : 02-Dec-2020 13:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| Signatories  | Position                                   | Laboratory Department                 |
|--------------|--------------------------------------------|---------------------------------------|
| Tracy Harley | Supervisor - Water Quality Instrumentation | Inorganics, Burnaby, British Columbia |



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

| <i>Unit</i> | <i>Description</i>    |
|-------------|-----------------------|
| µg/sample   | micrograms per sample |
| mL          | millilitre            |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "**Preliminary Report**" are considered authorized for use.

## Qualifiers

| <i>Qualifier</i> | <i>Description</i>                                                                                |
|------------------|---------------------------------------------------------------------------------------------------|
| DLDS             | Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity. |



## Analytical Results

Sub-Matrix: Impinger Solution

Client sample ID

(Matrix: Air)

|                             |            |        |     |           | Unit 1 HF Run 1       | Unit 1 HF Run 2       | Unit 1 HF Run 3       | Unit 2 HF Run 1       | Unit 2 HF Run 2       |
|-----------------------------|------------|--------|-----|-----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Client sampling date / time |            |        |     |           | 17-Nov-2020           | 17-Nov-2020           | 17-Nov-2020           | 18-Nov-2020           | 18-Nov-2020           |
| Analyte                     | CAS Number | Method | LOR | Unit      | VA20C1607-001         | VA20C1607-002         | VA20C1607-003         | VA20C1607-004         | VA20C1607-005         |
|                             |            |        |     |           | Result                | Result                | Result                | Result                | Result                |
| <b>Field Tests</b>          |            |        |     |           |                       |                       |                       |                       |                       |
| volume, impinger            | ----       | EP248  | 0.1 | mL        | 353                   | 273                   | 440                   | 335                   | 367                   |
| <b>Anions and Nutrients</b> |            |        |     |           |                       |                       |                       |                       |                       |
| fluoride                    | 16984-48-8 | E248.F | 5.0 | µg/sample | <17.6 <sup>DLDS</sup> | <13.6 <sup>DLDS</sup> | <22.0 <sup>DLDS</sup> | <33.5 <sup>DLDS</sup> | <36.7 <sup>DLDS</sup> |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: Impinger Solution

Client sample ID

(Matrix: Air)

|                             |            |        |     |           | Unit 2 HF Run 3       | Unit 3 HF Run 1 | Unit 3 HF Run 2 | Unit 3 HF Run 3 | ----  |
|-----------------------------|------------|--------|-----|-----------|-----------------------|-----------------|-----------------|-----------------|-------|
| Client sampling date / time |            |        |     |           | 18-Nov-2020           | 24-Nov-2020     | 19-Nov-2020     | 19-Nov-2020     | ----  |
| Analyte                     | CAS Number | Method | LOR | Unit      | VA20C1607-006         | VA20C1607-007   | VA20C1607-008   | VA20C1607-009   | ----- |
|                             |            |        |     |           | Result                | Result          | Result          | Result          | ----  |
| <b>Field Tests</b>          |            |        |     |           |                       |                 |                 |                 |       |
| volume, impinger            | ----       | EP248  | 0.1 | mL        | 355                   | 360             | 337             | 350             | ----  |
| <b>Anions and Nutrients</b> |            |        |     |           |                       |                 |                 |                 |       |
| fluoride                    | 16984-48-8 | E248.F | 5.0 | µg/sample | <71.0 <sup>DLDS</sup> | <5.0            | <5.0            | <5.0            | ----  |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA20C1607**

Client : **A. Lanfranco & Associates Inc.**

Contact : Mark Lanfranco

Address : Unit # 101 9488 - 189 St  
Surrey BC Canada V4N 4W7

Telephone : 604 881 2582

Project : Metro Vancouver WTE

PO : HF

C-O-C number : ----

Sampler : A. Lanfranco

Site : ----

Quote number : Standing Offer

No. of samples received : 9

No. of samples analysed : 9

Page : 1 of 6

Laboratory : Vancouver - Environmental

Account Manager : Brent Mack

Address : 8081 Lougheed Highway  
Burnaby, British Columbia Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 24-Nov-2020 12:35

Issue Date : 02-Dec-2020 13:07

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: Air

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s)            | Method | Sampling Date | Extraction / Preparation |               |        |      | Analysis      |               |        |      |
|-------------------------------------------------------------|--------|---------------|--------------------------|---------------|--------|------|---------------|---------------|--------|------|
|                                                             |        |               | Preparation Date         | Holding Times |        | Eval | Analysis Date | Holding Times |        | Eval |
|                                                             |        |               |                          | Rec           | Actual |      |               | Rec           | Actual |      |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 3 HF Run 1                                     | E248.F | 24-Nov-2020   | 26-Nov-2020              | 28 days       | 2 days | ✓    | 26-Nov-2020   | 25 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 3 HF Run 2                                     | E248.F | 19-Nov-2020   | 26-Nov-2020              | 28 days       | 7 days | ✓    | 26-Nov-2020   | 20 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 3 HF Run 3                                     | E248.F | 19-Nov-2020   | 26-Nov-2020              | 28 days       | 7 days | ✓    | 26-Nov-2020   | 20 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 2 HF Run 1                                     | E248.F | 18-Nov-2020   | 26-Nov-2020              | 28 days       | 8 days | ✓    | 26-Nov-2020   | 19 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 2 HF Run 2                                     | E248.F | 18-Nov-2020   | 26-Nov-2020              | 28 days       | 8 days | ✓    | 26-Nov-2020   | 19 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 2 HF Run 3                                     | E248.F | 18-Nov-2020   | 26-Nov-2020              | 28 days       | 8 days | ✓    | 26-Nov-2020   | 19 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 1 HF Run 1                                     | E248.F | 17-Nov-2020   | 26-Nov-2020              | 28 days       | 9 days | ✓    | 26-Nov-2020   | 18 days       | 0 days | ✓    |





Matrix: **Air** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

| Analyte Group                                               | Method | Sampling Date | Extraction / Preparation |               |        |      | Analysis      |               |        |      |
|-------------------------------------------------------------|--------|---------------|--------------------------|---------------|--------|------|---------------|---------------|--------|------|
|                                                             |        |               | Preparation Date         | Holding Times |        | Eval | Analysis Date | Holding Times |        | Eval |
|                                                             |        |               |                          | Rec           | Actual |      |               | Rec           | Actual |      |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 1 HF Run 2                                     | E248.F | 17-Nov-2020   | 26-Nov-2020              | 28 days       | 9 days | ✓    | 26-Nov-2020   | 18 days       | 0 days | ✓    |
| Anions and Nutrients : Fluoride by IC (Impinger, mg/sample) |        |               |                          |               |        |      |               |               |        |      |
| HDPE<br>Unit 1 HF Run 3                                     | E248.F | 17-Nov-2020   | 26-Nov-2020              | 28 days       | 9 days | ✓    | 26-Nov-2020   | 18 days       | 0 days | ✓    |

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Air**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

| Quality Control Sample Type          | Method | QC Lot # | Count |         | Frequency (%) |          |            |
|--------------------------------------|--------|----------|-------|---------|---------------|----------|------------|
|                                      |        |          | QC    | Regular | Actual        | Expected | Evaluation |
| Analytical Methods                   |        |          |       |         |               |          |            |
| Laboratory Duplicates (DUP)          |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |
| Laboratory Control Samples (LCS)     |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |
| Method Blanks (MB)                   |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |
| Matrix Spikes (MS)                   |        |          |       |         |               |          |            |
| Fluoride by IC (Impinger, mg/sample) | E248.F | 122375   | 1     | 12      | 8.3           | 5.0      | ✓          |



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| <i>Analytical Methods</i>               | <i>Method / Lab</i>                        | <i>Matrix</i> | <i>Method Reference</i> | <i>Method Descriptions</i>                                                                                                                                                          |
|-----------------------------------------|--------------------------------------------|---------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fluoride by IC (Impinger, mg/sample)    | E248.F<br><br>Vancouver -<br>Environmental | Air           | EPA 300.1 (mod)         | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. Reported sample volumes are for the bottle/sub-sample submitted for the listed analyses. |
| <i>Preparation Methods</i>              | <i>Method / Lab</i>                        | <i>Matrix</i> | <i>Method Reference</i> | <i>Method Descriptions</i>                                                                                                                                                          |
| Preparation of Anions for IC (Impinger) | EP248<br><br>Vancouver -<br>Environmental  | Air           | EPA 300.1 (mod)         | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. Reported sample volumes are for the bottle/sub-sample submitted for the listed analyses. |



## QUALITY CONTROL REPORT

Work Order : **VA20C1607**

Page : 1 of 3

Client : A. Lanfranco & Associates Inc.  
Contact : Mark Lanfranco  
Address : Unit # 101 9488 - 189 St  
Surrey BC Canada V4N 4W7  
Telephone : 604 881 2582  
Project : Metro Vancouver WTE  
PO : HF  
C-O-C number : ----  
Sampler : A. Lanfranco  
Site : ----  
Quote number : Standing Offer  
No. of samples received : 9  
No. of samples analysed : 9

Laboratory : Vancouver - Environmental  
Account Manager : Brent Mack  
Address : 8081 Lougheed Highway  
Burnaby, British Columbia Canada V5A 1W9  
Telephone : +1 604 253 4188  
Date Samples Received : 24-Nov-2020 12:35  
Date Analysis Commenced : 26-Nov-2020  
Issue Date : 02-Dec-2020 13:07

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| Signatories  | Position                                   | Laboratory Department                 |
|--------------|--------------------------------------------|---------------------------------------|
| Tracy Harley | Supervisor - Water Quality Instrumentation | Inorganics, Burnaby, British Columbia |



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percentage Difference
- # = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

| Sub-Matrix: Air                       |                  |                  |            |        | Laboratory Duplicate (DUP) Report |           |                 |                  |                      |                  |           |
|---------------------------------------|------------------|------------------|------------|--------|-----------------------------------|-----------|-----------------|------------------|----------------------|------------------|-----------|
| Laboratory sample ID                  | Client sample ID | Analyte          | CAS Number | Method | LOR                               | Unit      | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| Anions and Nutrients (QC Lot: 122375) |                  |                  |            |        |                                   |           |                 |                  |                      |                  |           |
| VA20C1605-001                         | Anonymous        | fluoride         | 16984-48-8 | E248.F | 5.00                              | mg/sample | <5.0            | <0.0050          | 0                    | Diff <2x LOR     | ----      |
|                                       |                  | volume, impinger | ----       | EP248  | 0.1                               | mL        | µg/sample 240   | 240              |                      | Diff <2x LOR     | ----      |

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

| Sub-Matrix: Air                      |            |        |       |           |         |           |
|--------------------------------------|------------|--------|-------|-----------|---------|-----------|
| Analyte                              | CAS Number | Method | LOR   | Unit      | Result  | Qualifier |
| Anions and Nutrients (QCLot: 122375) |            |        |       |           |         |           |
| fluoride                             | 16984-48-8 | E248.F | 0.005 | mg/sample | <0.0050 | ----      |
| volume, impinger                     | ----       | EP248  | 0.1   | mL        | 500     | ----      |



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Air

| Laboratory Control Sample (LCS) Report |            |        |       |           |               |              |                     |      |           |
|----------------------------------------|------------|--------|-------|-----------|---------------|--------------|---------------------|------|-----------|
|                                        |            |        |       |           | Spike         | Recovery (%) | Recovery Limits (%) |      |           |
| Analyte                                | CAS Number | Method | LOR   | Unit      | Concentration | LCS          | Low                 | High | Qualifier |
| Anions and Nutrients (QCLot: 122375)   |            |        |       |           |               |              |                     |      |           |
| fluoride                               | 16984-48-8 | E248.F | 0.005 | mg/sample | 0.5 mg/sample | 101          | 90.0                | 110  | ----      |

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Air

| Matrix Spike (MS) Report             |                  |          |            |        |                 |                |              |                     |      |
|--------------------------------------|------------------|----------|------------|--------|-----------------|----------------|--------------|---------------------|------|
|                                      |                  |          |            |        | Spike           |                | Recovery (%) | Recovery Limits (%) |      |
| Laboratory sample ID                 | Client sample ID | Analyte  | CAS Number | Method | Concentration   | Target         | MS           | Low                 | High |
| Anions and Nutrients (QCLot: 122375) |                  |          |            |        |                 |                |              |                     |      |
| VA20C1605-002                        | Anonymous        | fluoride | 16984-48-8 | E248.F | 0.227 mg/sample | 0.23 mg/sample | 98.6         | 75.0                | 125  |

**APPENDIX - C**

**COMPUTER GENERATED RESULTS**

**Client:** Metro Vancouver  
**Jobsite:** WTE (Burnaby, BC)  
**Source:** Unit 1

**Date:** 16-Nov-20  
**Run:** 1 - Particulate / Metals  
**Run Time:** 11:33 - 13:35

---

**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 1.49 mg/dscm            | 0.00065 gr/dscf            |
|                    | 0.81 mg/Acm             | 0.00035 gr/Acf             |
|                    | 1.22 mg/dscm (@ 11% O2) | 0.00053 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.090 Kg/hr | 0.198 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1005 dscm/min  | 35492 dscf/min |
|             | 16.75 dscm/sec | 592 dscf/sec   |
|             | 1845 Acfm/min  | 65143 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 12.070 m/sec | 39.60 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 158.0 oC | 316.3 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 16.5 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 8.8 % O2   |
|                     | 10.5 % CO2 |

30.034 Mol. Wt (g/gmole) Dry  
28.049 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.4481 dscm   | 86.456 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 102.1 %       |             |

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



|                 |                   |                  |                          |
|-----------------|-------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver   | <b>Date:</b>     | 16-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, BC) | <b>Run:</b>      | 1 - Particulate / Metals |
| <b>Source:</b>  | Unit 1            | <b>Run Time:</b> | 11:33 - 13:35            |

|                         |        |                          |                        |                        |
|-------------------------|--------|--------------------------|------------------------|------------------------|
| Control Unit (Y)        | 1.0113 | Collection:              | Gas Analysis (Vol. %): | Condensate Collection: |
| Nozzle Diameter (in.)   | 0.3163 | Filter (grams) 0.00005   | CO2 O2                 | Impinger 1 152.0       |
| Pitot Factor            | 0.8328 | Washings (grams) 0.00360 | 10.67 8.83             | Impinger 2 134.0       |
| Baro. Press. (in. Hg)   | 29.96  | Traverse 1               | 10.34 8.83             | Impinger 3 42.0        |
| Static Press. (in. H2O) | -17.00 | Traverse 2               |                        | Impinger 4 12.0        |
| Stack Height (ft)       | 30     |                          |                        | Impinger 5 6.0         |
| Stack Diameter (in.)    | 70.90  |                          |                        | Impinger 6 4.0         |
| Stack Area (sq.ft.)     | 27.417 |                          |                        | Gel 13.0               |
| Minutes Per Reading     | 5.0    |                          |                        |                        |
| Minutes Per Point       | 5.0    |                          |                        |                        |

|                              |                   |                           |
|------------------------------|-------------------|---------------------------|
| <b>Total (grams) 0.00365</b> | <b>10.51 8.83</b> | <b>Gain (grams) 363.0</b> |
|------------------------------|-------------------|---------------------------|

| 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       |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 602.800             | 0.31               | 1.62                 | 55                             | 55                              | 5                | 314              | 1.5              | 101.1       |
| 2                | 10.0        | 609.600             | 0.32               | 1.67                 | 55                             | 55                              | 5                | 315              | 4.7              | 101.3       |
| 3                | 15.0        | 613.430             | 0.40               | 2.09                 | 56                             | 56                              | 6                | 315              | 8.4              | 101.1       |
| 4                | 20.0        | 617.070             | 0.36               | 1.88                 | 56                             | 56                              | 6                | 316              | 12.5             | 101.3       |
| 5                | 25.0        | 620.710             | 0.36               | 1.89                 | 57                             | 57                              | 5.5              | 316              | 17.7             | 101.1       |
| 6                | 30.0        | 624.250             | 0.34               | 1.78                 | 57                             | 57                              | 5.5              | 316              | 25.2             | 101.1       |
| 7                | 35.0        | 628.000             | 0.38               | 1.99                 | 58                             | 58                              | 6                | 317              | 45.6             | 101.3       |
| 8                | 40.0        | 631.500             | 0.33               | 1.74                 | 59                             | 59                              | 6                | 316              | 53.2             | 101.1       |
| 9                | 45.0        | 635.110             | 0.35               | 1.84                 | 59                             | 59                              | 6                | 317              | 58.3             | 101.3       |
| 10               | 50.0        | 638.510             | 0.31               | 1.63                 | 59                             | 59                              | 6                | 315              | 62.5             | 101.2       |
| 11               | 55.0        | 641.790             | 0.29               | 1.52                 | 59                             | 59                              | 5                | 316              | 66.1             | 101.0       |
| 12               | 60.0        | 644.960             | 0.27               | 1.42                 | 60                             | 60                              | 5                | 316              | 69.4             | 101.0       |
| Traverse 2       |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 644.960             |                    |                      |                                |                                 |                  |                  |                  |             |
| 2                | 10.0        | 648.190             | 0.28               | 1.48                 | 59                             | 59                              | 5                | 313              | 1.5              | 101.0       |
| 3                | 15.0        | 651.110             | 0.23               | 1.21                 | 59                             | 59                              | 5                | 317              | 4.7              | 101.0       |
| 4                | 20.0        | 654.090             | 0.24               | 1.26                 | 59                             | 59                              | 4.5              | 318              | 8.4              | 101.0       |
| 5                | 25.0        | 656.950             | 0.22               | 1.15                 | 59                             | 59                              | 4.5              | 318              | 12.5             | 101.2       |
| 6                | 30.0        | 660.680             | 0.25               | 1.27                 | 59                             | 59                              | 6                | 318              | 17.7             | 123.8       |
| 7                | 35.0        | 663.910             | 0.28               | 1.47                 | 60                             | 60                              | 6                | 319              | 25.2             | 101.2       |
| 8                | 40.0        | 668.000             | 0.45               | 2.36                 | 60                             | 60                              | 7.5              | 319              | 45.6             | 101.3       |
| 9                | 45.0        | 671.990             | 0.43               | 2.25                 | 59                             | 59                              | 7.5              | 319              | 53.2             | 101.3       |
| 10               | 50.0        | 675.760             | 0.38               | 2.00                 | 60                             | 60                              | 6                | 316              | 58.3             | 101.4       |
| 11               | 55.0        | 679.320             | 0.34               | 1.79                 | 60                             | 60                              | 6                | 316              | 62.5             | 101.1       |
| 12               | 60.0        | 682.780             | 0.32               | 1.69                 | 60                             | 60                              | 5.5              | 315              | 66.1             | 101.2       |
|                  |             | 686.291             | 0.33               | 1.74                 | 60                             | 60                              | 5.5              | 315              | 69.4             | 101.2       |
| Average:         |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
|                  |             |                     | 0.324              | 1.698                | 58.5                           | 58.5                            | 5.7              | 316.3            |                  | 102.1       |

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

**Date:** 17-Nov-20  
**Run:** 2 - Particulate / Metals  
**Run Time:** 08:58 - 10:59

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.79 mg/dscm            | 0.00035 gr/dscf            |
|                    | 0.42 mg/Acm             | 0.00018 gr/Acf             |
|                    | 0.65 mg/dscm (@ 11% O2) | 0.00028 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.047 Kg/hr | 0.104 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|                     |                              |                |
|---------------------|------------------------------|----------------|
| <b>Flow</b>         | 997 dscm/min                 | 35196 dscf/min |
|                     | 16.61 dscm/sec               | 587 dscf/sec   |
|                     | 1876 Acm/min                 | 66254 Acf/min  |
| <b>Velocity</b>     | 12.276 m/sec                 | 40.28 f/sec    |
| <b>Temperature</b>  | 154.1 oC                     | 309.4 oF       |
| <b>Moisture</b>     | 16.3 %                       |                |
| <b>Gas Analysis</b> | 8.9 % O2                     |                |
|                     | 10.7 % CO2                   |                |
|                     | 30.064 Mol. Wt (g/gmole) Dry |                |
|                     | 28.093 Mol. Wt (g/gmole) Wet |                |

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.4673 dscm   | 87.134 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 103.6 %       |             |

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

|                 |                    |                  |                          |
|-----------------|--------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver    | <b>Date:</b>     | 17-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, B.C) | <b>Run:</b>      | 2 - Particulate / Metals |
| <b>Source:</b>  | Unit 1             | <b>Run Time:</b> | 08:58 - 10:59            |

|                         |        |                          |                        |      |                        |       |
|-------------------------|--------|--------------------------|------------------------|------|------------------------|-------|
| Control Unit (Y)        | 1.0113 | Collection:              | Gas Analysis (Vol. %): |      | Condensate Collection: |       |
| Nozzle Diameter (in.)   | 0.3163 | Filter (grams) 0.00005   | CO2                    | O2   | Impinger 1             | 180.0 |
| Pitot Factor            | 0.8328 | Washings (grams) 0.00190 | 10.45                  | 8.45 | Impinger 2             | 114.0 |
| Baro. Press. (in. Hg)   | 29.16  | Total (grams) 0.00195    | 10.90                  | 9.35 | Impinger 3             | 36.0  |
| Static Press. (in. H2O) | -20.00 |                          |                        |      | Impinger 4             | 10.0  |
| Stack Height (ft)       | 30     |                          |                        |      | Impinger 5             | 6.0   |
| Stack Diameter (in.)    | 70.90  |                          |                        |      | Impinger 6             | 2.0   |
| Stack Area (sq.ft.)     | 27.417 |                          |                        |      | Gel                    | 13.5  |
| Minutes Per Reading     | 5.0    |                          | 10.68                  | 8.90 | Gain (grams)           | 361.5 |
| 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) | Outlet (oF) | Vacuum (in. Hg.) | Stack Temp. (oF) | Wall Dist. (in.) | Isokin. (%) |
|------------------|-------------|---------------------|--------------------|----------------------|--------------------------------|-------------|------------------|------------------|------------------|-------------|
| Traverse 1       | 0.0         | 687.113             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 690.610             | 0.31               | 1.88                 | 55                             | 55          | 6                | 310              | 1.5              | 103.6       |
| 2                | 10.0        | 694.160             | 0.32               | 1.91                 | 55                             | 55          | 6                | 310              | 4.7              | 103.5       |
| 3                | 15.0        | 697.660             | 0.31               | 1.77                 | 56                             | 56          | 5.5              | 310              | 8.4              | 103.5       |
| 4                | 20.0        | 701.280             | 0.33               | 1.96                 | 57                             | 57          | 5.5              | 310              | 12.5             | 103.6       |
| 5                | 25.0        | 704.740             | 0.30               | 2.06                 | 57                             | 57          | 5.5              | 309              | 17.7             | 103.8       |
| 6                | 30.0        | 708.260             | 0.31               | 2.06                 | 58                             | 58          | 5.5              | 308              | 25.2             | 103.6       |
| 7                | 35.0        | 712.170             | 0.38               | 2.25                 | 59                             | 59          | 6.5              | 308              | 45.6             | 103.8       |
| 8                | 40.0        | 715.980             | 0.36               | 2.11                 | 60                             | 60          | 6.5              | 308              | 53.2             | 103.7       |
| 9                | 45.0        | 719.530             | 0.31               | 1.59                 | 61                             | 61          | 5.5              | 306              | 58.3             | 103.6       |
| 10               | 50.0        | 722.960             | 0.29               | 1.52                 | 61                             | 61          | 5.5              | 305              | 62.5             | 103.4       |
| 11               | 55.0        | 725.890             | 0.21               | 0.71                 | 63                             | 63          | 5.5              | 305              | 66.1             | 103.2       |
| 12               | 60.0        | 728.680             | 0.19               | 0.91                 | 63                             | 63          | 5.5              | 305              | 69.4             | 103.4       |
| Traverse 2       | 0.0         | 728.680             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 731.890             | 0.25               | 1.40                 | 65                             | 65          | 5.5              | 305              | 1.5              | 103.4       |
| 2                | 10.0        | 734.900             | 0.22               | 1.23                 | 65                             | 65          | 5.5              | 308              | 4.7              | 103.6       |
| 3                | 15.0        | 738.170             | 0.26               | 1.45                 | 65                             | 65          | 6.5              | 309              | 8.4              | 103.6       |
| 4                | 20.0        | 741.380             | 0.25               | 1.40                 | 66                             | 66          | 6.5              | 310              | 12.5             | 103.6       |
| 5                | 25.0        | 744.460             | 0.23               | 1.29                 | 67                             | 67          | 6                | 310              | 17.7             | 103.4       |
| 6                | 30.0        | 747.800             | 0.27               | 1.51                 | 68                             | 68          | 6                | 311              | 25.2             | 103.4       |
| 7                | 35.0        | 752.080             | 0.44               | 2.47                 | 69                             | 69          | 7.5              | 311              | 45.6             | 103.9       |
| 8                | 40.0        | 756.690             | 0.51               | 2.86                 | 70                             | 70          | 7.5              | 313              | 53.2             | 103.9       |
| 9                | 45.0        | 761.390             | 0.53               | 2.97                 | 71                             | 71          | 7.5              | 314              | 58.3             | 103.9       |
| 10               | 50.0        | 765.870             | 0.48               | 2.69                 | 71                             | 71          | 8.5              | 314              | 62.5             | 103.9       |
| 11               | 55.0        | 770.220             | 0.45               | 2.53                 | 73                             | 73          | 8.5              | 314              | 66.1             | 103.8       |
| 12               | 60.0        | 774.382             | 0.41               | 2.31                 | 73                             | 73          | 8.5              | 313              | 69.4             | 103.9       |
| Average:         |             |                     | 0.330              | 1.868                | 63.7                           | 63.7        | 6.4              | 309.4            |                  | 103.6       |

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

**Date:** 17-Nov-20  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:27 - 13:28

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**Concentrations:**

|                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>Particulate</b> | 0.6 mg/dscm            | 0.0002 gr/dscf            |
|                    | 0.3 mg/Acm             | 0.0001 gr/Acf             |
|                    | 0.5 mg/dscm (@ 11% O2) | 0.0002 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.035 Kg/hr | 0.077 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1033 dscm/min  | 36480 dscf/min |
|             | 17.22 dscm/sec | 608 dscf/sec   |
|             | 1998 Acm/min   | 70563 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.075 m/sec | 42.90 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 159.6 oC | 319.3 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 17.5 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 8.8 % O2   |
|                     | 10.6 % CO2 |

30.039 Mol. Wt (g/gmole) Dry  
27.928 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.5871 dscm   | 91.365 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 104.9 %       |             |

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

|                 |                    |                  |                          |
|-----------------|--------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver    | <b>Date:</b>     | 17-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, B.C) | <b>Run:</b>      | 3 - Particulate / Metals |
| <b>Source:</b>  | Unit 1             | <b>Run Time:</b> | 11:27 - 13:28            |

|                         |        |                          |                        |                        |
|-------------------------|--------|--------------------------|------------------------|------------------------|
| Control Unit (Y)        | 1.0113 | Collection:              | Gas Analysis (Vol. %): | Condensate Collection: |
| Nozzle Diameter (in.)   | 0.3163 | Filter (grams) 0.00005   | CO2 O2                 | Impinger 1 225.0       |
| Pitot Factor            | 0.8328 | Washings (grams) 0.00140 | 10.60 8.96             | Impinger 2 134.0       |
| Baro. Press. (in. Hg)   | 29.16  | Traverse 1               | 10.50 8.60             | Impinger 3 22.0        |
| Static Press. (in. H2O) | -20.00 | Traverse 2               |                        | Impinger 4 8.0         |
| Stack Height (ft)       | 30     |                          |                        | Impinger 5 5.0         |
| Stack Diameter (in.)    | 70.90  |                          |                        | Impinger 6 2.0         |
| Stack Area (sq.ft.)     | 27.417 |                          |                        | Gel 16.8               |
| Minutes Per Reading     | 5.0    |                          |                        | Gain (grams) 412.8     |
| Minutes Per Point       | 5.0    |                          |                        |                        |

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (in. H2O) | Dry Gas Temperature Inlet (oF) | Outlet (oF) | Vacuum (in. Hg.) | Stack Temp. (oF) | Wall Dist. (in.) | Isokin. (%) |
|------------------|-------------|---------------------|--------------------|----------------------|--------------------------------|-------------|------------------|------------------|------------------|-------------|
| Traverse 1       | 0.0         | 774.822             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 778.650             | 0.35               | 1.97                 | 71                             | 71          | 6                | 311              | 1.5              | 104.8       |
| 2                | 10.0        | 782.530             | 0.36               | 2.02                 | 71                             | 71          | 6                | 314              | 4.7              | 105.0       |
| 3                | 15.0        | 786.290             | 0.34               | 1.90                 | 71                             | 71          | 6                | 319              | 8.4              | 105.0       |
| 4                | 20.0        | 790.100             | 0.35               | 1.95                 | 71                             | 71          | 6                | 320              | 12.5             | 104.9       |
| 5                | 25.0        | 794.010             | 0.37               | 2.05                 | 71                             | 71          | 7                | 322              | 17.7             | 104.9       |
| 6                | 30.0        | 797.970             | 0.38               | 2.11                 | 71                             | 71          | 7                | 322              | 25.2             | 104.8       |
| 7                | 35.0        | 802.570             | 0.51               | 2.83                 | 72                             | 72          | 9                | 323              | 45.6             | 105.2       |
| 8                | 40.0        | 807.310             | 0.54               | 3.01                 | 73                             | 73          | 9                | 323              | 53.2             | 105.2       |
| 9                | 45.0        | 812.180             | 0.57               | 3.17                 | 73                             | 73          | 8                | 323              | 58.3             | 105.2       |
| 10               | 50.0        | 816.740             | 0.50               | 2.78                 | 73                             | 73          | 8                | 323              | 62.5             | 105.1       |
| 11               | 55.0        | 821.110             | 0.46               | 2.56                 | 73                             | 73          | 8                | 323              | 66.1             | 105.0       |
| 12               | 60.0        | 825.400             | 0.44               | 2.45                 | 74                             | 74          | 8                | 323              | 69.4             | 105.1       |
| Traverse 2       | 0.0         | 825.400             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 828.940             | 0.30               | 1.68                 | 75                             | 75          | 6                | 323              | 1.5              | 104.6       |
| 2                | 10.0        | 832.610             | 0.32               | 1.79                 | 75                             | 75          | 6                | 321              | 4.7              | 104.9       |
| 3                | 15.0        | 836.340             | 0.33               | 1.85                 | 75                             | 75          | 6                | 319              | 8.4              | 104.9       |
| 4                | 20.0        | 840.070             | 0.33               | 1.86                 | 75                             | 75          | 6                | 318              | 12.5             | 104.8       |
| 5                | 25.0        | 843.630             | 0.30               | 1.69                 | 75                             | 75          | 6                | 318              | 17.7             | 104.9       |
| 6                | 30.0        | 847.310             | 0.32               | 1.81                 | 76                             | 76          | 6                | 317              | 25.2             | 104.8       |
| 7                | 35.0        | 851.380             | 0.39               | 2.21                 | 76                             | 76          | 7                | 314              | 45.6             | 104.9       |
| 8                | 40.0        | 855.220             | 0.35               | 1.97                 | 75                             | 75          | 7                | 318              | 53.2             | 104.8       |
| 9                | 45.0        | 858.840             | 0.31               | 1.74                 | 75                             | 75          | 10               | 318              | 58.3             | 105.0       |
| 10               | 50.0        | 862.210             | 0.27               | 1.52                 | 75                             | 75          | 10               | 318              | 62.5             | 104.6       |
| 11               | 55.0        | 865.260             | 0.22               | 1.24                 | 75                             | 75          | 9                | 317              | 66.1             | 104.8       |
| 12               | 60.0        | 868.020             | 0.18               | 1.01                 | 75                             | 75          | 9                | 316              | 69.4             | 104.7       |
| Average:         |             |                     | 0.366              | 2.049                | 73.6                           | 73.6        | 7.3              | 319.3            |                  | 104.9       |

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

**Date:** 17-Nov-20  
**Run:** 1 - Particulate / Metals  
**Run Time:** 10:04 - 12:08

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**Concentrations:**

|                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>Particulate</b> | 1.4 mg/dscm            | 0.0006 gr/dscf            |
|                    | 0.7 mg/Acm             | 0.0003 gr/Acf             |
|                    | 1.2 mg/dscm (@ 11% O2) | 0.0005 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.093 Kg/hr | 0.204 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1123 dscm/min  | 39660 dscf/min |
|             | 18.72 dscm/sec | 661 dscf/sec   |
|             | 2101 Acmin     | 74201 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.749 m/sec | 45.11 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 155.0 oC | 311.0 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 15.9 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 10.0 % O2  |
|                     | 10.0 % CO2 |

30.000 Mol. Wt (g/gmole) Dry  
28.095 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.7630 dscm   | 97.575 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 107.4 %       |             |

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

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

**Date:** 17-Nov-20  
**Run:** 1 - Particulate / Metals  
**Run Time:** 10:04 - 12:08

|                         |        |                              |         |                        |              |                        |              |
|-------------------------|--------|------------------------------|---------|------------------------|--------------|------------------------|--------------|
| Control Unit (Y)        | 1.0011 | Collection:                  |         | Gas Analysis (Vol. %): |              | Condensate Collection: |              |
| Nozzle Diameter (in.)   | 0.3097 | Filter (grams)               | 0.00160 | CO2                    | O2           | Impinger 1             | 200.0        |
| Pitot Factor            | 0.8525 | Washings (grams)             | 0.00220 | 10.00                  | 10.00        | Impinger 2             | 122.0        |
| Baro. Press. (in. Hg)   | 29.20  |                              |         | 10.00                  | 10.00        | Impinger 3             | 28.0         |
| Static Press. (in. H2O) | -19.50 | <b>Total (grams) 0.00380</b> |         |                        |              | Impinger 4             | 12.0         |
| Stack Height (ft)       | 30     |                              |         |                        |              | Impinger 5             | 7.0          |
| Stack Diameter (in.)    | 70.90  |                              |         |                        |              | Impinger 6             | 3.0          |
| Stack Area (sq.ft.)     | 27.417 |                              |         |                        |              | Cel                    | 19.3         |
| Minutes Per Reading     | 5.0    |                              |         | <b>10.00</b>           | <b>10.00</b> | <b>Gain (grams)</b>    | <b>391.3</b> |
| 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         | 309.750             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 313.160             | 0.27               | 1.57                 | 55                             | 55                              | 5                | 310              | 1.5              | 108.5       |
| 2                | 10.0        | 316.700             | 0.29               | 1.68                 | 56                             | 56                              | 5                | 312              | 4.7              | 108.7       |
| 3                | 15.0        | 320.310             | 0.30               | 1.74                 | 58                             | 58                              | 6                | 312              | 8.4              | 108.6       |
| 4                | 20.0        | 324.030             | 0.32               | 1.86                 | 58                             | 58                              | 6                | 315              | 12.5             | 108.6       |
| 5                | 25.0        | 328.440             | 0.45               | 2.61                 | 59                             | 59                              | 6                | 312              | 17.7             | 108.3       |
| 6                | 30.0        | 333.050             | 0.49               | 2.85                 | 60                             | 60                              | 6                | 310              | 25.2             | 108.2       |
| 7                | 35.0        | 338.240             | 0.52               | 3.02                 | 60                             | 60                              | 8                | 310              | 45.6             | 118.3       |
| 8                | 40.0        | 343.260             | 0.58               | 3.37                 | 61                             | 61                              | 8                | 310              | 53.2             | 108.2       |
| 9                | 45.0        | 347.270             | 0.37               | 2.15                 | 62                             | 62                              | 10               | 309              | 58.3             | 107.7       |
| 10               | 50.0        | 351.160             | 0.35               | 2.03                 | 64                             | 64                              | 10               | 309              | 62.5             | 106.9       |
| 11               | 55.0        | 354.880             | 0.32               | 1.86                 | 65                             | 65                              | 6                | 308              | 66.1             | 106.6       |
| 12               | 60.0        | 358.360             | 0.28               | 1.63                 | 66                             | 66                              | 6                | 306              | 69.4             | 106.2       |
| Traverse 2       | 0.0         | 358.360             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 361.650             | 0.25               | 1.45                 | 67                             | 67                              | 6                | 308              | 1.5              | 106.2       |
| 2                | 10.0        | 365.260             | 0.30               | 1.74                 | 68                             | 68                              | 6                | 310              | 4.7              | 106.4       |
| 3                | 15.0        | 368.980             | 0.32               | 1.86                 | 68                             | 68                              | 6                | 310              | 8.4              | 106.2       |
| 4                | 20.0        | 372.700             | 0.32               | 1.86                 | 69                             | 69                              | 6                | 310              | 12.5             | 106.0       |
| 5                | 25.0        | 376.750             | 0.38               | 2.20                 | 69                             | 69                              | 6                | 312              | 17.7             | 106.1       |
| 6                | 30.0        | 380.910             | 0.40               | 2.32                 | 69                             | 69                              | 6                | 312              | 25.2             | 106.2       |
| 7                | 35.0        | 385.520             | 0.49               | 2.85                 | 70                             | 70                              | 8                | 313              | 45.6             | 106.4       |
| 8                | 40.0        | 390.260             | 0.52               | 3.02                 | 71                             | 71                              | 8                | 312              | 53.2             | 106.0       |
| 9                | 45.0        | 395.130             | 0.55               | 3.20                 | 71                             | 71                              | 8                | 312              | 58.3             | 105.9       |
| 10               | 50.0        | 400.150             | 0.58               | 3.37                 | 72                             | 72                              | 8                | 314              | 62.5             | 106.3       |
| 11               | 55.0        | 404.560             | 0.45               | 2.61                 | 72                             | 72                              | 8                | 314              | 66.1             | 105.8       |
| 12               | 60.0        | 408.500             | 0.36               | 2.09                 | 72                             | 72                              | 8                | 315              | 69.4             | 105.6       |
| Average:         |             |                     | 0.394              | 2.289                | 65.1                           | 65.1                            | 6.9              | 311.0            |                  | 107.4       |

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

**Date:** 18-Nov-20  
**Run:** 2 - Particulate / Metals  
**Run Time:** 09:28 - 11:31

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 1.41 mg/dscm            | 0.00062 gr/dscf            |
|                    | 0.78 mg/Acm             | 0.00034 gr/Acf             |
|                    | 1.21 mg/dscm (@ 11% O2) | 0.00053 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.094 Kg/hr | 0.208 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1112 dscm/min  | 39279 dscf/min |
|             | 18.54 dscm/sec | 655 dscf/sec   |
|             | 2005 Acfm/min  | 70795 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.117 m/sec | 43.04 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 151.3 oC | 304.3 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 14.8 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.4 % O2   |
|                     | 10.7 % CO2 |

30.088 Mol. Wt (g/gmole) Dry  
28.302 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.3747 dscm   | 83.862 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 101.3 %       |             |

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



|                 |                    |                  |                          |
|-----------------|--------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver    | <b>Date:</b>     | 18-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, B.C) | <b>Run:</b>      | 2 - Particulate / Metals |
| <b>Source:</b>  | Unit 2             | <b>Run Time:</b> | 09:28 - 11:31            |

|                         |        |                  |         |                        |      |                        |       |
|-------------------------|--------|------------------|---------|------------------------|------|------------------------|-------|
| Control Unit (Y)        | 1.0011 | Collection:      |         | Gas Analysis (Vol. %): |      | Condensate Collection: |       |
| Nozzle Diameter (in.)   | 0.3050 | Filter (grams)   | 0.00005 | CO2                    | O2   | Impinger 1             | 152.0 |
| Pitot Factor            | 0.8328 | Washings (grams) | 0.00330 | 10.65                  | 9.35 | Impinger 2             | 106.0 |
| Baro. Press. (in. Hg)   | 29.45  |                  |         | 10.75                  | 9.45 | Impinger 3             | 26.0  |
| Static Press. (in. H2O) | -17.00 |                  |         |                        |      | Impinger 4             | 6.0   |
| Stack Height (ft)       | 30.1   |                  |         |                        |      | Impinger 5             | 3.0   |
| Stack Diameter (in.)    | 70.90  |                  |         |                        |      | Impinger 6             | 2.0   |
| Stack Area (sq.ft.)     | 27.417 |                  |         |                        |      | Gel                    | 14.0  |
| Minutes Per Reading     | 5.0    |                  |         |                        |      | Gain (grams)           | 309.0 |
| 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) | Outlet (oF) | Vacuum (in. Hg.) | Stack Temp. (oF) | Wall Dist. (in.) | Isokin. (%) |
|------------------|-------------|---------------------|--------------------|----------------------|--------------------------------|-------------|------------------|------------------|------------------|-------------|
| Traverse 1       | 0.0         | 408.970             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 411.950             | 0.26               | 1.23                 | 50                             | 50          | 4.5              | 305              | 1.5              | 101.7       |
| 2                | 10.0        | 414.860             | 0.25               | 1.18                 | 50                             | 50          | 4.5              | 304              | 4.7              | 101.2       |
| 3                | 15.0        | 417.660             | 0.23               | 1.09                 | 51                             | 51          | 4.5              | 304              | 8.4              | 101.3       |
| 4                | 20.0        | 420.460             | 0.23               | 1.09                 | 52                             | 52          | 4.5              | 304              | 12.5             | 101.1       |
| 5                | 25.0        | 423.330             | 0.24               | 1.14                 | 53                             | 53          | 4                | 304              | 17.7             | 101.3       |
| 6                | 30.0        | 426.700             | 0.33               | 1.57                 | 53                             | 53          | 4                | 304              | 25.2             | 101.5       |
| 7                | 35.0        | 431.160             | 0.58               | 2.76                 | 53                             | 53          | 4.5              | 304              | 45.6             | 101.6       |
| 8                | 40.0        | 435.660             | 0.59               | 2.81                 | 53                             | 53          | 4.5              | 304              | 53.2             | 101.7       |
| 9                | 45.0        | 440.220             | 0.60               | 2.87                 | 55                             | 55          | 7                | 304              | 58.3             | 101.8       |
| 10               | 50.0        | 444.390             | 0.50               | 2.40                 | 55                             | 55          | 7                | 301              | 62.5             | 101.7       |
| 11               | 55.0        | 448.470             | 0.48               | 2.30                 | 56                             | 56          | 7.5              | 304              | 66.1             | 101.5       |
| 12               | 60.0        | 452.430             | 0.45               | 2.16                 | 56                             | 56          | 7.5              | 303              | 69.4             | 101.6       |
| Traverse 2       | 0.0         | 452.430             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 456.930             | 0.58               | 2.79                 | 58                             | 58          | 7.5              | 304              | 1.5              | 101.6       |
| 2                | 10.0        | 461.400             | 0.57               | 2.74                 | 58                             | 58          | 7.5              | 304              | 4.7              | 101.8       |
| 3                | 15.0        | 465.960             | 0.59               | 2.85                 | 59                             | 59          | 8                | 302              | 8.4              | 101.7       |
| 4                | 20.0        | 470.040             | 0.48               | 2.28                 | 60                             | 60          | 8                | 302              | 12.5             | 100.8       |
| 5                | 25.0        | 474.030             | 0.45               | 2.18                 | 60                             | 60          | 5.5              | 302              | 17.7             | 101.6       |
| 6                | 30.0        | 477.790             | 0.40               | 1.94                 | 61                             | 61          | 5.5              | 304              | 25.2             | 101.4       |
| 7                | 35.0        | 481.090             | 0.31               | 1.49                 | 60                             | 60          | 5.5              | 305              | 45.6             | 101.2       |
| 8                | 40.0        | 484.230             | 0.28               | 1.35                 | 60                             | 60          | 5.5              | 305              | 53.2             | 101.3       |
| 9                | 45.0        | 487.310             | 0.28               | 1.30                 | 60                             | 60          | 5.5              | 306              | 58.3             | 99.8        |
| 10               | 50.0        | 490.280             | 0.26               | 1.20                 | 61                             | 61          | 5.5              | 307              | 62.5             | 99.4        |
| 11               | 55.0        | 493.420             | 0.28               | 1.35                 | 61                             | 61          | 5.5              | 308              | 66.1             | 101.3       |
| 12               | 60.0        | 496.332             | 0.24               | 1.15                 | 61                             | 61          | 5.5              | 308              | 69.4             | 101.4       |
| Average:         |             |                     | 0.394              | 1.884                | 56.5                           | 56.5        | 5.8              | 304.3            |                  | 101.3       |

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

**Date:** 18-Nov-20  
**Run:** 3 - Particulate / Metals  
**Run Time:** 12:01 - 14:03

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**Concentrations:**

|                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>Particulate</b> | 2.1 mg/dscm            | 0.0009 gr/dscf            |
|                    | 1.1 mg/Acm             | 0.0005 gr/Acf             |
|                    | 1.8 mg/dscm (@ 11% O2) | 0.0008 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |            |             |
|--------------------|------------|-------------|
| <b>Particulate</b> | 0.13 Kg/hr | 0.295 lb/hr |
|--------------------|------------|-------------|

**Flue Gas Characteristics:**

|                     |                              |                |
|---------------------|------------------------------|----------------|
| <b>Flow</b>         | 1087 dscm/min                | 38399 dscf/min |
|                     | 18.12 dscm/sec               | 640 dscf/sec   |
|                     | 2002 Acm/min                 | 70699 Acf/min  |
| <b>Velocity</b>     | 13.100 m/sec                 | 42.98 f/sec    |
| <b>Temperature</b>  | 153.7 oC                     | 308.7 oF       |
| <b>Moisture</b>     | 16.1 %                       |                |
| <b>Gas Analysis</b> | 9.3 % O2                     |                |
|                     | 11.1 % CO2                   |                |
|                     | 30.149 Mol. Wt (g/gmole) Dry |                |
|                     | 28.195 Mol. Wt (g/gmole) Wet |                |

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.4828 dscm   | 87.679 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 102.8 %       |             |

**\* Standard Conditions:**

|           |                       |
|-----------|-----------------------|
| Metric:   | 20 deg C, 101.325 kPa |
| Imperial: | 68 deg F, 29.92 in.Hg |

|                 |                    |                  |                          |
|-----------------|--------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver    | <b>Date:</b>     | 18-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, B.C) | <b>Run:</b>      | 3 - Particulate / Metals |
| <b>Source:</b>  | Unit 2             | <b>Run Time:</b> | 12:01 - 14:03            |

|                         |        |                      |         |                        |       |                        |              |       |
|-------------------------|--------|----------------------|---------|------------------------|-------|------------------------|--------------|-------|
| Control Unit (Y)        | 1.0011 | Collection:          |         | Gas Analysis (Vol. %): |       | Condensate Collection: |              |       |
| Nozzle Diameter (in.)   | 0.3050 | Filter (grams)       | 0.00130 |                        | CO2   | O2                     | Impinger 1   | 188.0 |
| Pitot Factor            | 0.8328 | Washings (grams)     | 0.00380 | Traverse 1             | 10.80 | 9.40                   | Impinger 2   | 110.0 |
| Baro. Press. (in. Hg)   | 29.45  |                      |         | Traverse 2             | 11.40 | 9.25                   | Impinger 3   | 28.0  |
| Static Press. (in. H2O) | -17.00 | Total (grams) 0.0051 |         |                        |       |                        | Impinger 4   | 8.0   |
| Stack Height (ft)       | 30     |                      |         |                        |       |                        | Impinger 5   | 4.0   |
| Stack Diameter (in.)    | 70.90  |                      |         |                        |       |                        | Impinger 6   | 2.0   |
| Stack Area (sq.ft.)     | 27.417 |                      |         |                        |       |                        | Gel          | 17.2  |
| Minutes Per Reading     | 5.0    |                      |         |                        | 11.10 | 9.33                   | Gain (grams) | 357.2 |
| 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         | 496.816             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 501.320             | 0.58               | 2.78                 | 60                             | 60                              | 7.5              | 309              | 1.5              | 103.0       |
| 2                | 10.0        | 505.750             | 0.56               | 2.69                 | 60                             | 60                              | 7.5              | 308              | 4.7              | 103.0       |
| 3                | 15.0        | 510.250             | 0.58               | 2.78                 | 60                             | 60                              | 7.5              | 311              | 8.4              | 103.0       |
| 4                | 20.0        | 514.350             | 0.48               | 2.30                 | 60                             | 60                              | 7.5              | 311              | 12.5             | 103.1       |
| 5                | 25.0        | 518.320             | 0.45               | 2.15                 | 60                             | 60                              | 8.5              | 311              | 17.7             | 103.0       |
| 6                | 30.0        | 522.110             | 0.41               | 1.96                 | 60                             | 60                              | 8.5              | 310              | 25.2             | 102.9       |
| 7                | 35.0        | 525.510             | 0.33               | 1.58                 | 60                             | 60                              | 6                | 310              | 45.6             | 102.8       |
| 8                | 40.0        | 528.650             | 0.28               | 1.35                 | 61                             | 61                              | 6                | 309              | 53.2             | 102.8       |
| 9                | 45.0        | 531.730             | 0.27               | 1.30                 | 61                             | 61                              | 6                | 309              | 58.3             | 102.7       |
| 10               | 50.0        | 534.760             | 0.26               | 1.25                 | 61                             | 61                              | 6                | 308              | 62.5             | 102.8       |
| 11               | 55.0        | 537.730             | 0.25               | 1.20                 | 61                             | 61                              | 5.5              | 307              | 66.1             | 102.7       |
| 12               | 60.0        | 540.520             | 0.22               | 1.06                 | 61                             | 61                              | 5.5              | 307              | 69.4             | 102.8       |
| Traverse 2       | 0.0         | 540.520             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 543.600             | 0.27               | 1.30                 | 61                             | 61                              | 6                | 308              | 1.5              | 102.6       |
| 2                | 10.0        | 546.570             | 0.25               | 1.20                 | 61                             | 61                              | 6                | 308              | 4.7              | 102.8       |
| 3                | 15.0        | 549.420             | 0.23               | 1.11                 | 62                             | 62                              | 6                | 307              | 8.4              | 102.5       |
| 4                | 20.0        | 552.330             | 0.24               | 1.16                 | 62                             | 62                              | 6                | 307              | 12.5             | 102.5       |
| 5                | 25.0        | 555.240             | 0.24               | 1.16                 | 62                             | 62                              | 6                | 307              | 17.7             | 102.5       |
| 6                | 30.0        | 558.650             | 0.33               | 1.59                 | 62                             | 62                              | 6                | 309              | 25.2             | 102.7       |
| 7                | 35.0        | 563.140             | 0.57               | 2.74                 | 62                             | 62                              | 7.5              | 309              | 45.6             | 103.2       |
| 8                | 40.0        | 567.550             | 0.55               | 2.65                 | 62                             | 62                              | 7.5              | 309              | 53.2             | 103.1       |
| 9                | 45.0        | 572.110             | 0.59               | 2.84                 | 62                             | 62                              | 8.5              | 309              | 58.3             | 103.0       |
| 10               | 50.0        | 576.320             | 0.50               | 2.41                 | 63                             | 63                              | 8.5              | 309              | 62.5             | 103.0       |
| 11               | 55.0        | 580.440             | 0.48               | 2.32                 | 63                             | 63                              | 9                | 309              | 66.1             | 102.9       |
| 12               | 60.0        | 584.250             | 0.41               | 1.98                 | 63                             | 63                              | 9                | 308              | 69.4             | 102.8       |
| Average:         |             |                     | 0.389              | 1.869                | 61.3                           | 61.3                            | 3.0              | 308.7            |                  | 102.8       |

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

**Date:** 18-Nov-20  
**Run:** 1 - Particulate / Metals  
**Run Time:** 12:34 - 14:36

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.55 mg/dscm            | 0.00024 gr/dscf            |
|                    | 0.29 mg/Acm             | 0.00013 gr/Acf             |
|                    | 0.54 mg/dscm (@ 11% O2) | 0.00023 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.037 Kg/hr | 0.081 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1111 dscm/min  | 39238 dscf/min |
|             | 18.52 dscm/sec | 654 dscf/sec   |
|             | 2069 Acm/min   | 73074 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.540 m/sec | 44.42 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 158.9 oC | 318.1 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 15.9 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 10.8 % O2  |
|                     | 10.0 % CO2 |

30.032 Mol. Wt (g/gmole) Dry  
28.119 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.2805 dscm   | 80.535 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 100.6 %       |             |

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

|                 |                    |                  |                          |
|-----------------|--------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver    | <b>Date:</b>     | 18-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, B.C) | <b>Run:</b>      | 1 - Particulate / Metals |
| <b>Source:</b>  | Unit 3             | <b>Run Time:</b> | 12:34 - 14:36            |

|                                |        |                              |                               |                               |
|--------------------------------|--------|------------------------------|-------------------------------|-------------------------------|
| <b>Control Unit (Y)</b>        | 1.0168 | <b>Collection:</b>           | <b>Gas Analysis (Vol. %):</b> | <b>Condensate Collection:</b> |
| <b>Nozzle Diameter (in.)</b>   | 0.2923 | Filter (grams) 0.00005       | CO2 O2                        | Impinger 1 184.0              |
| <b>Pitot Factor</b>            | 0.8525 | Washings (grams) 0.00120     | 10.00 10.83                   | Impinger 2 100.0              |
| <b>Baro. Press. (in. Hg)</b>   | 29.48  |                              | 10.00 10.75                   | Impinger 3 14.0               |
| <b>Static Press. (in. H2O)</b> | -18.00 | <b>Total (grams) 0.00125</b> |                               | Impinger 4 8.0                |
| <b>Stack Height (ft)</b>       | 30     |                              |                               | Impinger 5 3.0                |
| <b>Stack Diameter (in.)</b>    | 70.90  |                              |                               | Impinger 6 2.0                |
| <b>Stack Area (sq.ft.)</b>     | 27.417 |                              |                               | Gel 12.5                      |
| <b>Minutes Per Reading</b>     | 5.0    |                              | <b>10.00 10.79</b>            | <b>Gain (grams) 323.5</b>     |
| <b>Minutes Per Point</b>       | 5.0    |                              |                               |                               |

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ^P (in. H2O) | Orifice ^H (in. H2O) | Dry Gas Temperature Inlet (oF) | Outlet (oF) | Vacuum (in. Hg.) | Stack Temp. (oF) | Wall Dist. (in.) | Isokin. (%) |
|------------------|-------------|---------------------|--------------------|----------------------|--------------------------------|-------------|------------------|------------------|------------------|-------------|
| Traverse 1       | 0.0         | 713.800             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 717.540             | 0.50               | 1.89                 | 55                             | 55          | 6                | 317              | 1.5              | 100.6       |
| 2                | 10.0        | 721.280             | 0.50               | 1.88                 | 55                             | 55          | 6                | 318              | 4.7              | 100.7       |
| 3                | 15.0        | 725.060             | 0.51               | 1.92                 | 55                             | 55          | 6                | 317              | 8.4              | 100.7       |
| 4                | 20.0        | 728.880             | 0.52               | 1.96                 | 55                             | 55          | 6                | 318              | 12.5             | 100.8       |
| 5                | 25.0        | 732.520             | 0.47               | 1.78                 | 56                             | 56          | 5.5              | 317              | 17.7             | 100.8       |
| 6                | 30.0        | 736.230             | 0.49               | 1.85                 | 56                             | 56          | 5.5              | 317              | 25.2             | 100.6       |
| 7                | 35.0        | 739.190             | 0.31               | 1.17                 | 57                             | 57          | 5                | 318              | 45.6             | 100.6       |
| 8                | 40.0        | 741.910             | 0.26               | 0.99                 | 59                             | 59          | 5                | 317              | 53.2             | 100.4       |
| 9                | 45.0        | 744.580             | 0.25               | 0.95                 | 60                             | 60          | 5                | 317              | 58.3             | 100.3       |
| 10               | 50.0        | 747.360             | 0.27               | 1.03                 | 61                             | 61          | 5                | 319              | 62.5             | 100.5       |
| 11               | 55.0        | 749.980             | 0.24               | 0.91                 | 62                             | 62          | 4.5              | 320              | 66.1             | 100.3       |
| 12               | 60.0        | 752.500             | 0.22               | 0.84                 | 63                             | 63          | 4.5              | 320              | 69.4             | 100.5       |
| Traverse 2       | 0.0         | 752.500             |                    |                      |                                |             |                  |                  |                  |             |
| 1                | 5.0         | 755.350             | 0.28               | 1.07                 | 65                             | 65          | 5                | 319              | 1.5              | 100.4       |
| 2                | 10.0        | 758.100             | 0.26               | 1.00                 | 65                             | 65          | 5                | 320              | 4.7              | 100.6       |
| 3                | 15.0        | 760.800             | 0.25               | 0.96                 | 65                             | 65          | 4.5              | 319              | 8.4              | 100.6       |
| 4                | 20.0        | 763.610             | 0.27               | 1.04                 | 66                             | 66          | 4.5              | 318              | 12.5             | 100.6       |
| 5                | 25.0        | 766.310             | 0.25               | 0.96                 | 66                             | 66          | 4.5              | 318              | 17.7             | 100.4       |
| 6                | 30.0        | 769.070             | 0.26               | 1.00                 | 66                             | 66          | 4.5              | 318              | 25.2             | 100.6       |
| 7                | 35.0        | 772.710             | 0.45               | 1.74                 | 67                             | 67          | 6                | 317              | 45.6             | 100.8       |
| 8                | 40.0        | 776.620             | 0.52               | 2.01                 | 67                             | 67          | 6                | 317              | 53.2             | 100.8       |
| 9                | 45.0        | 780.790             | 0.59               | 2.28                 | 68                             | 68          | 6.5              | 317              | 58.3             | 100.8       |
| 10               | 50.0        | 784.860             | 0.56               | 2.17                 | 69                             | 69          | 6.5              | 318              | 62.5             | 100.8       |
| 11               | 55.0        | 789.060             | 0.60               | 2.32                 | 68                             | 68          | 6.5              | 319              | 66.1             | 100.8       |
| 12               | 60.0        | 793.022             | 0.53               | 2.05                 | 69                             | 69          | 6.5              | 319              | 69.4             | 100.9       |
| Average:         |             |                     | 0.390              | 1.490                | 62.3                           | 62.3        | 5.4              | 318.1            |                  | 100.6       |

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

**Date:** 19-Nov-20  
**Run:** 2 - Particulate / Metals  
**Run Time:** 08:57 - 11:00

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.61 mg/dscm            | 0.00027 gr/dscf            |
|                    | 0.34 mg/Acm             | 0.00015 gr/Acf             |
|                    | 0.58 mg/dscm (@ 11% O2) | 0.00025 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.041 Kg/hr | 0.090 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1123 dscm/min  | 39646 dscf/min |
|             | 18.71 dscm/sec | 661 dscf/sec   |
|             | 2033 Acm/min   | 71803 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.304 m/sec | 43.65 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 158.1 oC | 316.5 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 15.6 % |
|-----------------|--------|

|                     |           |
|---------------------|-----------|
| <b>Gas Analysis</b> | 10.6 % O2 |
|                     | 9.7 % CO2 |

29.974 Mol. Wt (g/gmole) Dry  
28.112 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.5480 dscm   | 89.983 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 102.2 %       |             |

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

|                 |                    |                  |                          |
|-----------------|--------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver    | <b>Date:</b>     | 19-Nov-20                |
| <b>Jobsite:</b> | WTE (Burnaby, B.C) | <b>Run:</b>      | 2 - Particulate / Metals |
| <b>Source:</b>  | Unit 3             | <b>Run Time:</b> | 08:57 - 11:00            |

|                                |        |                              |                               |                               |
|--------------------------------|--------|------------------------------|-------------------------------|-------------------------------|
| <b>Control Unit (Y)</b>        | 1.0168 | <b>Collection:</b>           | <b>Gas Analysis (Vol. %):</b> | <b>Condensate Collection:</b> |
| <b>Nozzle Diameter (in.)</b>   | 0.3050 | Filter (grams) 0.00005       | CO2 O2                        | Impinger 1 204.0              |
| <b>Pitot Factor</b>            | 0.8328 | Washings (grams) 0.00150     | 9.75 10.60                    | Impinger 2 92.0               |
| <b>Baro. Press. (in. Hg)</b>   | 30.10  |                              | 9.65 10.50                    | Impinger 3 34.0               |
| <b>Static Press. (in. H2O)</b> | -18.00 | <b>Total (grams) 0.00155</b> |                               | Impinger 4 6.0                |
| <b>Stack Height (ft)</b>       | 30     |                              |                               | Impinger 5 2.0                |
| <b>Stack Diameter (in.)</b>    | 70.90  |                              |                               | Impinger 6 1.0                |
| <b>Stack Area (sq.ft.)</b>     | 27.417 |                              |                               | Gel 13.1                      |
| <b>Minutes Per Reading</b>     | 5.0    |                              | <b>9.70 10.55</b>             | <b>Gain (grams) 352.1</b>     |
| <b>Minutes Per Point</b>       | 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         | 793.873             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 797.150             | 0.33               | 1.48                 | 54                             | 54                              | 4                | 309              | 1.5              | 102.1       |
| 2                | 10.0        | 800.460             | 0.34               | 1.51                 | 54                             | 54                              | 4                | 315              | 4.7              | 102.0       |
| 3                | 15.0        | 803.680             | 0.32               | 1.42                 | 55                             | 55                              | 4.5              | 316              | 8.4              | 102.2       |
| 4                | 20.0        | 806.850             | 0.31               | 1.38                 | 56                             | 56                              | 4.5              | 316              | 12.5             | 102.0       |
| 5                | 25.0        | 809.820             | 0.27               | 1.20                 | 57                             | 57                              | 4                | 317              | 17.7             | 102.2       |
| 6                | 30.0        | 813.000             | 0.31               | 1.38                 | 57                             | 57                              | 4                | 317              | 25.2             | 102.2       |
| 7                | 35.0        | 816.890             | 0.46               | 2.06                 | 59                             | 59                              | 5.5              | 317              | 45.6             | 102.4       |
| 8                | 40.0        | 821.110             | 0.54               | 2.42                 | 60                             | 60                              | 5.5              | 317              | 53.2             | 102.4       |
| 9                | 45.0        | 825.450             | 0.57               | 2.56                 | 61                             | 61                              | 5.5              | 317              | 58.3             | 102.3       |
| 10               | 50.0        | 829.840             | 0.58               | 2.61                 | 62                             | 62                              | 5.5              | 317              | 62.5             | 102.4       |
| 11               | 55.0        | 834.120             | 0.55               | 2.48                 | 63                             | 63                              | 6                | 317              | 66.1             | 102.3       |
| 12               | 60.0        | 838.210             | 0.50               | 2.26                 | 64                             | 64                              | 6                | 318              | 69.4             | 102.4       |
| Traverse 2       | 0.0         | 838.210             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 842.390             | 0.52               | 2.35                 | 65                             | 65                              | 5.5              | 317              | 1.5              | 102.4       |
| 2                | 10.0        | 846.700             | 0.55               | 2.49                 | 66                             | 66                              | 5.5              | 318              | 4.7              | 102.5       |
| 3                | 15.0        | 850.860             | 0.51               | 2.32                 | 68                             | 68                              | 5.5              | 317              | 8.4              | 102.3       |
| 4                | 20.0        | 854.950             | 0.49               | 2.24                 | 69                             | 69                              | 5.5              | 317              | 12.5             | 102.4       |
| 5                | 25.0        | 859.080             | 0.50               | 2.28                 | 69                             | 69                              | 5.5              | 317              | 17.7             | 102.3       |
| 6                | 30.0        | 863.050             | 0.46               | 2.11                 | 70                             | 70                              | 5.5              | 316              | 25.2             | 102.3       |
| 7                | 35.0        | 866.660             | 0.38               | 1.74                 | 70                             | 70                              | 5.5              | 317              | 45.6             | 102.3       |
| 8                | 40.0        | 869.590             | 0.25               | 1.19                 | 71                             | 71                              | 5.5              | 317              | 53.2             | 102.0       |
| 9                | 45.0        | 872.280             | 0.21               | 0.97                 | 71                             | 71                              | 4                | 314              | 58.3             | 101.9       |
| 10               | 50.0        | 875.160             | 0.24               | 1.10                 | 72                             | 72                              | 4                | 317              | 62.5             | 102.1       |
| 11               | 55.0        | 878.030             | 0.24               | 1.10                 | 71                             | 71                              | 4.5              | 318              | 66.1             | 102.0       |
| 12               | 60.0        | 880.780             | 0.22               | 1.00                 | 71                             | 71                              | 4.5              | 319              | 69.4             | 102.2       |
| <b>Average:</b>  |             |                     | 0.402              | 1.819                | 64.0                           | 64.0                            | 5.0              | 316.5            |                  | 102.2       |

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

**Date:** 19-Nov-20  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:11 - 13:12

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.04 mg/dscm            | 0.00002 gr/dscf            |
|                    | 0.02 mg/Acm             | 0.00001 gr/Acf             |
|                    | 0.04 mg/dscm (@ 11% O2) | 0.00002 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.003 Kg/hr | 0.006 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1118 dscm/min  | 39495 dscf/min |
|             | 18.64 dscm/sec | 658 dscf/sec   |
|             | 2039 Acf/min   | 71994 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.340 m/sec | 43.76 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 158.6 oC | 317.4 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 16.0 % |
|-----------------|--------|

|                     |                        |
|---------------------|------------------------|
| <b>Gas Analysis</b> | 10.0 % O2<br>9.9 % CO2 |
|---------------------|------------------------|

29.981 Mol. Wt (g/gmole) Dry  
28.064 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.5646 dscm   | 90.567 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 103.6 %       |             |

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



|                 |                  |                  |                          |
|-----------------|------------------|------------------|--------------------------|
| <b>Client:</b>  | Metro Vancouver  | <b>Date:</b>     | 19-Nov-20                |
| <b>Jobsite:</b> | WTE(Burnaby,B.C) | <b>Run:</b>      | 3 - Particulate / Metals |
| <b>Source:</b>  | Unit 3           | <b>Run Time:</b> | 11:11 - 13:12            |

|                         |        |             |                        |         |                        |       |              |            |       |
|-------------------------|--------|-------------|------------------------|---------|------------------------|-------|--------------|------------|-------|
| Control Unit (Y)        | 1.0168 | Collection: | Gas Analysis (Vol. %): |         | Condensate Collection: |       |              |            |       |
| Nozzle Diameter (in.)   | 0.3048 |             | Filter (grams)         | 0.00005 | CO2                    | O2    | Impinger 1   | 206.0      |       |
| Pitot Factor            | 0.8525 |             | Washings (grams)       | 0.00005 | Traverse 1             | 9.60  | 9.90         | Impinger 2 | 120.0 |
| Baro. Press. (in. Hg)   | 30.10  |             |                        |         | Traverse 2             | 10.15 | 10.15        | Impinger 3 | 14.0  |
| Static Press. (in. H2O) | -18.00 |             | Total (grams) 0.00010  |         |                        |       |              | Impinger 4 | 8.0   |
| Stack Height (ft)       | 30     |             |                        |         |                        |       | Impinger 5   | 3.0        |       |
| Stack Diameter (in.)    | 70.90  |             |                        |         |                        |       | Impinger 6   | 1.0        |       |
| Stack Area (sq.ft.)     | 27.417 |             |                        |         |                        |       | Gel          | 14.6       |       |
| Minutes Per Reading     | 5.0    |             |                        |         | 9.88                   | 10.03 | Gain (grams) | 366.6      |       |
| Minutes Per Point       | 5.0    |             |                        |         |                        |       |              |            |       |

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (in. H2O) | Dry Gas Inlet (oF) | Dry Gas Temperature Outlet (oF) | Vacuum (in. Hg.) | Stack Temp. (oF) | Wall Dist. (in.) | Isokin. (%) |
|------------------|-------------|---------------------|--------------------|----------------------|--------------------|---------------------------------|------------------|------------------|------------------|-------------|
| Traverse 1       | 0.0         | 881.096             |                    |                      |                    |                                 |                  |                  |                  |             |
| 1                | 5.0         | 885.460             | 0.53               | 2.54                 | 72                 | 72                              | 5.5              | 318              | 1.5              | 102.8       |
| 2                | 10.0        | 889.750             | 0.51               | 2.04                 | 71                 | 71                              | 5.5              | 321              | 4.7              | 103.2       |
| 3                | 15.0        | 893.830             | 0.47               | 2.24                 | 71                 | 71                              | 5.5              | 320              | 8.4              | 102.3       |
| 4                | 20.0        | 898.030             | 0.49               | 2.35                 | 71                 | 71                              | 5.5              | 317              | 12.5             | 102.9       |
| 5                | 25.0        | 902.480             | 0.55               | 2.64                 | 72                 | 72                              | 5.5              | 317              | 17.7             | 102.8       |
| 6                | 30.0        | 906.850             | 0.53               | 2.53                 | 72                 | 72                              | 5.5              | 319              | 25.2             | 103.0       |
| 7                | 35.0        | 910.200             | 0.31               | 1.49                 | 72                 | 72                              | 5.5              | 315              | 45.6             | 102.7       |
| 8                | 40.0        | 913.970             | 0.27               | 1.89                 | 73                 | 73                              | 5.5              | 317              | 53.2             | 123.9       |
| 9                | 45.0        | 916.380             | 0.16               | 0.77                 | 73                 | 73                              | 3                | 316              | 58.3             | 102.5       |
| 10               | 50.0        | 919.270             | 0.23               | 1.00                 | 73                 | 73                              | 3                | 316              | 62.5             | 102.6       |
| 11               | 55.0        | 922.090             | 0.22               | 1.06                 | 73                 | 73                              | 3.5              | 318              | 66.1             | 102.5       |
| 12               | 60.0        | 924.780             | 0.20               | 0.96                 | 73                 | 73                              | 3.5              | 317              | 69.4             | 102.4       |
| Traverse 2       | 0.0         | 924.780             |                    |                      |                    |                                 |                  |                  |                  |             |
| 1                | 5.0         | 928.240             | 0.33               | 1.59                 | 73                 | 73                              | 4                | 317              | 1.5              | 102.7       |
| 2                | 10.0        | 931.370             | 0.27               | 1.30                 | 73                 | 73                              | 4                | 315              | 4.7              | 102.5       |
| 3                | 15.0        | 934.570             | 0.28               | 1.35                 | 74                 | 74                              | 4                | 314              | 8.4              | 102.7       |
| 4                | 20.0        | 937.590             | 0.25               | 1.21                 | 74                 | 74                              | 4                | 315              | 12.5             | 102.6       |
| 5                | 25.0        | 940.600             | 0.25               | 1.20                 | 73                 | 73                              | 4                | 315              | 17.7             | 102.5       |
| 6                | 30.0        | 943.950             | 0.31               | 1.49                 | 73                 | 73                              | 4                | 315              | 25.2             | 102.5       |
| 7                | 35.0        | 947.800             | 0.41               | 1.97                 | 73                 | 73                              | 5                | 317              | 45.6             | 102.7       |
| 8                | 40.0        | 952.460             | 0.60               | 2.88                 | 74                 | 74                              | 5                | 319              | 53.2             | 102.9       |
| 9                | 45.0        | 956.950             | 0.56               | 2.60                 | 73                 | 73                              | 6                | 320              | 58.3             | 102.8       |
| 10               | 50.0        | 961.400             | 0.55               | 2.63                 | 73                 | 73                              | 6                | 320              | 62.5             | 102.8       |
| 11               | 55.0        | 965.770             | 0.53               | 2.54                 | 73                 | 73                              | 6.5              | 320              | 66.1             | 102.8       |
| 12               | 60.0        | 970.020             | 0.50               | 2.39                 | 73                 | 73                              | 6.5              | 320              | 69.4             | 102.9       |
| Average:         |             |                     | 0.388              | 1.861                | 72.7               | 72.7                            | 4.8              | 317.4            |                  | 103.6       |

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

**Sample Type:** HF

| Parameter       |                                     | Test 1        | Test 2        | Test 3        |
|-----------------|-------------------------------------|---------------|---------------|---------------|
| Test Date       |                                     | 17-Nov-20     | 17-Nov-20     | 17-Nov-20     |
| Test Time       |                                     | 09:22 - 10:22 | 10:39 - 11:39 | 11:54 - 12:54 |
| Test Duration   | (min.)                              | 60            | 60            | 60            |
| Baro. Press.    | (in. Hg)                            | 29.16         | 29.16         | 29.16         |
| DGM Factor      | (Y)                                 | 0.9777        | 0.9777        | 0.9777        |
| Initial Reading | (m <sup>3</sup> )                   | 462.1830      | 462.9200      | 463.6800      |
| Final Reading   | (m <sup>3</sup> )                   | 462.9140      | 463.6710      | 464.4572      |
| Temp. Outlet    | (Avg. oF)                           | 70.0          | 79.5          | 79.0          |
| Orifice Press.  | (ΔH in.H2O)                         | 0.50          | 0.50          | 0.50          |
| Gas Volume      | (Sm <sup>3</sup> )                  | 0.69          | 0.70          | 0.73          |
| HF              | (mg)                                | 0.009         | 0.007         | 0.012         |
| Oxygen          | (Vol. %)                            | 8.9           | 8.9           | 8.8           |
| <b>HF</b>       | <b>(mg/Sm<sup>3</sup>)</b>          | <b>0.013</b>  | <b>0.010</b>  | <b>0.016</b>  |
| <b>HF</b>       | <b>(mg/Sm<sup>3</sup> @ 11% O2)</b> | <b>0.011</b>  | <b>0.008</b>  | <b>0.013</b>  |
| <b>Moisture</b> | <b>(Vol. %)</b>                     | <b>16.3</b>   | <b>16.3</b>   | <b>17.5</b>   |

Tstd. (oF)

68

Pstd. (in. Hg)

29.92

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

**Sample Type:** NH<sub>3</sub>

| Parameter             |                                     | Test 1       | Test 2       | Test 3        |
|-----------------------|-------------------------------------|--------------|--------------|---------------|
| Test Date             |                                     | 17-Nov-20    | 17-Nov-20    | 17-Nov-20     |
| Test Time             |                                     | 9:22 - 10:22 | 10:39 -11:39 | 11:54 - 12:54 |
| Test Duration         | (min.)                              | 60           | 60           | 60            |
| Baro. Press.          | (in. Hg)                            | 29.16        | 29.16        | 29.16         |
| DGM Factor            | (Y)                                 | 1.1000       | 1.1000       | 1.1000        |
| Initial Reading       | (m <sup>3</sup> )                   | 191.4460     | 191.8720     | 192.3770      |
| Final Reading         | (m <sup>3</sup> )                   | 191.8680     | 192.3706     | 192.8066      |
| Temp. Outlet          | (Avg. oF)                           | 70.5         | 79.0         | 79.5          |
| Orifice Press.        | (ΔH in.H2O)                         | 0.50         | 0.50         | 0.50          |
| Gas Volume            | (Sm <sup>3</sup> )                  | 0.45         | 0.52         | 0.45          |
| NH <sub>3</sub>       | (mg)                                | 0.6          | 1.0          | 2.1           |
| Oxygen                | (Vol. %)                            | 8.9          | 8.9          | 8.8           |
| <b>NH<sub>3</sub></b> | <b>(mg/Sm<sup>3</sup>)</b>          | <b>1.4</b>   | <b>1.9</b>   | <b>4.7</b>    |
| <b>NH<sub>3</sub></b> | <b>(mg/Sm<sup>3</sup> @ 11% O2)</b> | <b>1.1</b>   | <b>1.6</b>   | <b>3.9</b>    |
| <b>Moisture</b>       | <b>(Vol. %)</b>                     | <b>16.3</b>  | <b>16.3</b>  | <b>17.5</b>   |

Tstd. (oF)

68

Pstd. (in. Hg)

29.92

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

**Sample Type:** HF

| Parameter             |                               | Test 1        | Test 2        | Test 3        |
|-----------------------|-------------------------------|---------------|---------------|---------------|
| Test Date             |                               | 18-Nov-20     | 18-Nov-20     | 18-Nov-20     |
| Test Time             |                               | 10:00 - 11:00 | 11:10 - 12:10 | 12:32 - 13:32 |
| Test Duration         | (min.)                        | 60            | 60            | 60            |
| Baro. Press.          | (in. Hg)                      | 29.45         | 29.45         | 29.45         |
| DGM Factor            | (Y)                           | 0.9777        | 0.9777        | 0.9777        |
| Initial Reading       | (m <sup>3</sup> )             | 464.4640      | 465.2394      | 465.9908      |
| Final Reading         | (m <sup>3</sup> )             | 465.2338      | 465.9852      | 466.7435      |
| Temp. Outlet          | (Avg. oF)                     | 63.0          | 64.0          | 66.0          |
| Orifice Press.        | (ΔH in.H2O)                   | 0.50          | 0.50          | 0.50          |
| Gas Volume            | (Sm <sup>3</sup> )            | 0.74883       | 0.72410       | 0.72802       |
| HF                    | (mg)                          | 0.018         | 0.019         | 0.037         |
| Oxygen                | (Vol. %)                      | 9.4           | 9.3           | 9.3           |
| HF                    | (mg/Sm <sup>3</sup> )         | 0.024         | 0.027         | 0.051         |
| HF                    | (mg/Sm <sup>3</sup> @ 11% O2) | 0.020         | 0.023         | 0.044         |
| Moisture (isokinetic) | (Vol. %)                      | 14.8          | 14.8          | 16.1          |

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

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

**Sample Type:** NH<sub>3</sub>

| Parameter             |                               | Test 1        | Test 2        | Test 3        |
|-----------------------|-------------------------------|---------------|---------------|---------------|
| Test Date             |                               | 18-Nov-20     | 18-Nov-20     | 18-Nov-20     |
| Test Time             |                               | 10:00 - 11:00 | 11:10 - 12:10 | 12:32 - 13:32 |
| Test Duration         | (min.)                        | 60            | 60            | 60            |
| Baro. Press.          | (in. Hg)                      | 29.45         | 29.45         | 29.45         |
| DGM Factor            | (Y)                           | 1.1000        | 1.1000        | 1.1000        |
| Initial Reading       | (m <sup>3</sup> )             | 192.8110      | 193.2768      | 193.7211      |
| Final Reading         | (m <sup>3</sup> )             | 193.2714      | 193.7172      | 194.1650      |
| Temp. Outlet          | (Avg. oF)                     | 62.0          | 64.0          | 67.0          |
| Orifice Press.        | (ΔH in.H2O)                   | 0.50          | 0.50          | 0.50          |
| Gas Volume            | (Sm <sup>3</sup> )            | 0.50485       | 0.48107       | 0.48213       |
| NH <sub>3</sub>       | (mg)                          | 2.8           | 2.6           | 2.0           |
| Oxygen                | (Vol. %)                      | 9.4           | 9.3           | 9.3           |
| NH <sub>3</sub>       | (mg/Sm <sup>3</sup> )         | 5.5           | 5.4           | 4.2           |
| NH <sub>3</sub>       | (mg/Sm <sup>3</sup> @ 11% O2) | 4.7           | 4.6           | 3.6           |
| Moisture (isokinetic) | (Vol. %)                      | 14.8          | 14.8          | 16.1          |

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

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

| <b>Sample Type:</b>          |                                     | <b>HF</b>     |                |               |  |
|------------------------------|-------------------------------------|---------------|----------------|---------------|--|
| <b>Parameter</b>             |                                     | <b>Test 1</b> | <b>Test 2</b>  | <b>Test 3</b> |  |
| Test Date                    |                                     | 19-Nov-20     | 19-Nov-20      | 19-Nov-20     |  |
| Test Time                    |                                     | 09:54 - 10:54 | 11:14 - 12:14  | 12:29 - 13:29 |  |
| Test Duration                | (min.)                              | 60            | 60             | 60            |  |
| Baro. Press.                 | (in. Hg)                            | 30.10         | 30.10          | 30.10         |  |
| DGM Factor                   | (Y)                                 | 0.9777        | 0.9777         | 0.9777        |  |
| Initial Reading              | (m <sup>3</sup> )                   | 466.7972      | 467.6142       | 468.3922      |  |
| Final Reading                | (m <sup>3</sup> )                   | 467.5930      | 468.3869       | 469.1540      |  |
| Temp. Outlet                 | (Avg. oF)                           | 56.0          | 62.0           | 66.0          |  |
| Orifice Press.               | (ΔH in.H2O)                         | 0.50          | 0.50           | 0.50          |  |
| Gas Volume                   | (Sm <sup>3</sup> )                  | 0.802         | 0.770          | 0.753         |  |
| HF                           | (mg)                                | 0.003         | 0.003          | 0.003         |  |
| Oxygen                       | (Vol. %)                            | 10.6          | 10.6           | 10.0          |  |
| <b>HF</b>                    | <b>(mg/Sm<sup>3</sup>)</b>          | <b>0.003</b>  | <b>0.003</b>   | <b>0.003</b>  |  |
| <b>HF</b>                    | <b>(mg/Sm<sup>3</sup> @ 11% O2)</b> | <b>0.003</b>  | <b>0.003</b>   | <b>0.003</b>  |  |
| <b>Moisture (isokinetic)</b> | <b>(Vol. %)</b>                     | <b>15.6</b>   | <b>15.6</b>    | <b>16.0</b>   |  |
| Tstd. (oF)                   |                                     | 68            | Pstd. (in. Hg) | 29.92         |  |

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

| <b>Sample Type:</b>          |                                     | <b>NH<sub>3</sub></b> |                |               |  |
|------------------------------|-------------------------------------|-----------------------|----------------|---------------|--|
| <b>Parameter</b>             |                                     | <b>Test 1</b>         | <b>Test 2</b>  | <b>Test 3</b> |  |
| Test Date                    |                                     | 19-Nov-20             | 19-Nov-20      | 19-Nov-20     |  |
| Test Time                    |                                     | 09:54 - 10:54         | 11:14 - 12:14  | 12:29 - 13:29 |  |
| Test Duration                | (min.)                              | 60                    | 60             | 60            |  |
| Baro. Press.                 | (in. Hg)                            | 30.10                 | 30.10          | 30.10         |  |
| DGM Factor                   | (Y)                                 | 1.1000                | 1.1000         | 1.1000        |  |
| Initial Reading              | (m <sup>3</sup> )                   | 194.7582              | 195.2605       | 195.7180      |  |
| Final Reading                | (m <sup>3</sup> )                   | 195.2562              | 195.7155       | 196.1910      |  |
| Temp. Outlet                 | (Avg. oF)                           | 59.3                  | 71.3           | 69.0          |  |
| Orifice Press.               | (ΔH in.H2O)                         | 0.50                  | 0.50           | 0.50          |  |
| Gas Volume                   | (Sm <sup>3</sup> )                  | 0.56098               | 0.50096        | 0.52308       |  |
| NH <sub>3</sub>              | (mg)                                | 2.4                   | 2.6            | 2.6           |  |
| Oxygen                       | (Vol. %)                            | 10.6                  | 10.6           | 10.0          |  |
| <b>NH<sub>3</sub></b>        | <b>(mg/Sm<sup>3</sup>)</b>          | <b>4.3</b>            | <b>5.1</b>     | <b>5.0</b>    |  |
| <b>NH<sub>3</sub></b>        | <b>(mg/Sm<sup>3</sup> @ 11% O2)</b> | <b>4.1</b>            | <b>4.9</b>     | <b>4.5</b>    |  |
| <b>Moisture (isokinetic)</b> | <b>(Vol. %)</b>                     | <b>15.6</b>           | <b>15.6</b>    | <b>16.0</b>   |  |
| Tstd. (oF)                   |                                     | 68                    | Pstd. (in. Hg) | 29.92         |  |

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

**Parameter:** N<sub>2</sub>O

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

| Sample ID      | Date      | Time<br>(hh:mm - hh:mm) | N <sub>2</sub> O<br>(ppm) | N <sub>2</sub> O<br>(mg/Sm <sup>3</sup> ) | N <sub>2</sub> O<br>(mg/Sm <sup>3</sup> @ 11% O <sub>2</sub> ) |
|----------------|-----------|-------------------------|---------------------------|-------------------------------------------|----------------------------------------------------------------|
| <b>Unit #1</b> |           |                         |                           |                                           |                                                                |
| Run 1          | 17-Nov-20 | 09:35 - 10:35           | 3.0                       | 5.5                                       | 6.2                                                            |
| Run 2          | 17-Nov-20 | 10:39 - 11:39           | 4.0                       | 7.3                                       | 8.1                                                            |
| Run 3          | 17-Nov-20 | 11:54 - 12:54           | 10.0                      | 18.3                                      | 20.6                                                           |
| <b>Average</b> |           |                         |                           |                                           | <b>11.6</b>                                                    |
| <b>Unit #2</b> |           |                         |                           |                                           |                                                                |
| Run 1          | 18-Nov-20 | 10:00 - 11:00           | 0.0                       | 0.2                                       | 0.2                                                            |
| Run 2          | 18-Nov-20 | 11:10 - 12:10           | 0.0                       | 0.2                                       | 0.2                                                            |
| Run 3          | 18-Nov-20 | 12:32 - 13:32           | 15.0                      | 27.5                                      | 29.1                                                           |
| <b>Average</b> |           |                         |                           |                                           | <b>9.8</b>                                                     |
| <b>Unit #3</b> |           |                         |                           |                                           |                                                                |
| Run 1          | 19-Nov-20 | 10:20 - 11:20           | 2.0                       | 3.7                                       | 3.4                                                            |
| Run 2          | 19-Nov-20 | 11:30 - 12:30           | 2.0                       | 3.7                                       | 3.4                                                            |
| Run 3          | 19-Nov-20 | 12:40 - 13:40           | 4.0                       | 7.3                                       | 7.2                                                            |
| <b>Average</b> |           |                         |                           |                                           | <b>4.7</b>                                                     |

**APPENDIX - D**

**FIELD DATA SHEETS**

|                                                 |            |                               |                                  |                                    |                                         |       |                             |     |                  |                      |                              |                              |       |            |            |            |  |
|-------------------------------------------------|------------|-------------------------------|----------------------------------|------------------------------------|-----------------------------------------|-------|-----------------------------|-----|------------------|----------------------|------------------------------|------------------------------|-------|------------|------------|------------|--|
| CLIENT <u>MV LITE</u>                           |            |                               |                                  |                                    | NOZZLE <u>6.316</u>                     |       | DIAMETER, IN. <u>0.3163</u> |     | IMPINGER         |                      | INITIAL                      |                              | FINAL |            | TOTAL GAIN |            |  |
| SOURCE <u>WATER</u>                             |            |                               |                                  |                                    | PROBE <u>7H AL GVD</u>                  |       | Cp <u>0.8328</u>            |     | VOLUMES          |                      | (mL)                         |                              | (mL)  |            | (mL)       |            |  |
| PARAMETER / RUN No <u>METALS/Hg/PM2.5 RUN#1</u> |            |                               |                                  |                                    | PORT LENGTH                             |       |                             |     |                  | Imp. #1              |                              | <u>0</u>                     |       | <u>132</u> |            | <u>132</u> |  |
| DATE <u>NOV. 16, 2020</u>                       |            |                               |                                  |                                    | STATIC PRESSURE, IN. H2O <u>7.0</u>     |       |                             |     |                  | Imp. #2              |                              | <u>100</u>                   |       | <u>134</u> |            | <u>134</u> |  |
| OPERATOR <u>21</u>                              |            |                               |                                  |                                    | STACK DIAMETER                          |       |                             |     |                  | Imp. #3              |                              | <u>100</u>                   |       | <u>142</u> |            | <u>42</u>  |  |
| CONTROL UNIT <u>CAE AL I</u>                    |            |                               |                                  |                                    | STACK HEIGHT <u>20'</u>                 |       |                             |     |                  | Imp. #4              |                              | <u>0</u>                     |       | <u>12</u>  |            | <u>12</u>  |  |
|                                                 |            |                               |                                  |                                    |                                         |       |                             |     |                  | Imp. #5              |                              | <u>100</u>                   |       | <u>106</u> |            | <u>6</u>   |  |
|                                                 |            |                               |                                  |                                    |                                         |       |                             |     |                  | Imp. #6              |                              | <u>100</u>                   |       | <u>109</u> |            | <u>9</u>   |  |
| BAROMETRIC PRESSURE, IN. Hg <u>29.96</u>        |            |                               |                                  |                                    | INITIAL LEAK TEST <u>0.002 @ 15" Hg</u> |       |                             |     |                  | Upstream Diameters   |                              |                              |       |            |            |            |  |
| ASSUMED MOISTURE, Bw <u>18%</u>                 |            |                               |                                  |                                    | FINAL LEAK TEST <u>0.002 @ 15" Hg</u>   |       |                             |     |                  | Downstream Diameters |                              |                              |       |            |            |            |  |
|                                                 |            |                               |                                  |                                    |                                         |       |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| Point                                           | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pitot ΔP<br>IN. H <sub>2</sub> O | Orifice ΔH<br>IN. H <sub>2</sub> O | Temperature °F                          |       |                             |     |                  | Pump Vac.<br>IN. Hg  | Fyrites                      |                              |       |            |            |            |  |
|                                                 |            |                               |                                  |                                    | Dry Gas<br>Outlet                       | Stack | Probe                       | Box | Impinger<br>Exit |                      | CO <sub>2</sub> 10<br>Vol. % | O <sub>2</sub> 9.5<br>Vol. % |       |            |            |            |  |
| 1                                               | 11:33      | 602.800                       |                                  |                                    |                                         |       |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 2                                               |            | 606.19                        | .31                              | 1.62                               | 55                                      | 314   | 260                         | 262 | 49               | 5                    | 10.5                         | 9                            |       |            |            |            |  |
| 3                                               | 10         | 609.60                        | .32                              | 1.67                               | 58                                      | 315   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 4                                               |            | 613.43                        | .40                              | 2.09                               | 58                                      | 315   |                             |     | 54               | 6                    |                              |                              |       |            |            |            |  |
| 5                                               | 20         | 617.07                        | .36                              | 1.88                               | 56                                      | 316   | 251                         | 250 |                  |                      |                              |                              |       |            |            |            |  |
| 6                                               |            | 620.71                        | .36                              | 1.89                               | 57                                      | 316   |                             |     | 53               | 5.5                  | 10.5                         | 9                            |       |            |            |            |  |
| 7                                               | 30         | 624.25                        | .34                              | 1.78                               | 57                                      | 316   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 8                                               |            | 628.00                        | .38                              | 1.99                               | 58                                      | 318   | 251                         | 250 | 55               | 6                    |                              |                              |       |            |            |            |  |
| 9                                               | 40         | 631.50                        | .33                              | 1.74                               | 59                                      | 316   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 10                                              |            | 635.11                        | .35                              | 1.84                               | 59                                      | 317   |                             |     |                  | 6                    | 11                           | 8.5                          |       |            |            |            |  |
| 11                                              | 50         | 638.51                        | .31                              | 1.63                               | 59                                      | 315   | 249                         | 248 | 57               |                      |                              |                              |       |            |            |            |  |
| 12                                              |            | 641.79                        | .29                              | 1.52                               | 59                                      | 316   |                             |     |                  | 5                    |                              |                              |       |            |            |            |  |
| 13                                              | 60         | 644.96                        | .27                              | 1.42                               | 60                                      | 316   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 1                                               |            | 648.19                        | .28                              | 1.48                               | 59                                      | 313   | 250                         | 250 | 55               | 5                    | 10.5                         | 9                            |       |            |            |            |  |
| 2                                               | 10         | 651.11                        | .23                              | 1.21                               | 59                                      | 317   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 3                                               |            | 654.09                        | .24                              | 1.26                               | 59                                      | 318   |                             |     | 52               | 4.5                  |                              |                              |       |            |            |            |  |
| 4                                               | 20         | 656.95                        | .22                              | 1.15                               | 59                                      | 318   | 249                         | 250 |                  |                      |                              |                              |       |            |            |            |  |
| 5                                               |            | 660.68                        | .25                              | 1.97                               | 59                                      | 318   |                             |     | 52               | 6                    | 10.5                         | 9.5                          |       |            |            |            |  |
| 6                                               | 30         | 663.91                        | .28                              | 1.47                               | 60                                      | 319   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 7                                               |            | 668.00                        | .45                              | 2.36                               | 60                                      | 319   | 250                         | 251 | 53               | 7.5                  |                              |                              |       |            |            |            |  |
| 8                                               | 40         | 671.99                        | .43                              | 2.25                               | 59                                      | 319   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 9                                               |            | 675.76                        | .38                              | 2.00                               | 60                                      | 316   |                             |     | 54               | 6                    | 10                           | 8.5                          |       |            |            |            |  |
| 10                                              | 50         | 679.32                        | .34                              | 1.79                               | 60                                      | 316   | 250                         | 248 |                  |                      |                              |                              |       |            |            |            |  |
| 11                                              |            | 682.78                        | .32                              | 1.69                               | 60                                      | 318   |                             |     | 53               | 5.5                  |                              |                              |       |            |            |            |  |
| 12                                              | 60         | 686.291                       | .33                              | 1.74                               | 60                                      | 315   |                             |     |                  |                      |                              |                              |       |            |            |            |  |
| 13                                              | 13:35      |                               |                                  |                                    |                                         |       |                             |     |                  |                      |                              |                              |       |            |            |            |  |





5-11

| METRO VANCOUVER WTE - BURNABY B.C.       |            |                               |                                  |                                    | NOZZLE <u>6-3/16</u> DIAMETER, IN. <u>1.3163</u> |            | IMPINGER   |            | INITIAL          |                     | FINAL                     |                          | TOTAL GAIN |  |
|------------------------------------------|------------|-------------------------------|----------------------------------|------------------------------------|--------------------------------------------------|------------|------------|------------|------------------|---------------------|---------------------------|--------------------------|------------|--|
| SOURCE <u>Unit #1</u>                    |            |                               |                                  |                                    | PROBE <u>AL 601212</u> Cp <u>1.8328</u>          |            | VOLUMES    |            | (mL)             |                     | (mL)                      |                          | (mL)       |  |
| PARAMETER / RUN No <u>metals / 123</u>   |            |                               |                                  |                                    | PORT LENGTH                                      |            | Imp. #1    |            | <u>1000</u>      |                     | <u>225</u>                |                          | <u>225</u> |  |
| DATE <u>11.17.20</u>                     |            |                               |                                  |                                    | STATIC PRESSURE, IN. H2O <u>-20</u>              |            | Imp. #2    |            | <u>100</u>       |                     | <u>234</u>                |                          | <u>134</u> |  |
| OPERATOR: <u>JG</u>                      |            |                               |                                  |                                    | STACK DIAMETER <u>70.90</u>                      |            | Imp. #3    |            | <u>100</u>       |                     | <u>120</u>                |                          | <u>22</u>  |  |
| CONTROL UNIT <u>CAE ALI Y 1.0113</u>     |            |                               |                                  |                                    | STACK HEIGHT <u>30</u>                           |            | Imp. #4    |            | <u>1000</u>      |                     | <u>8</u>                  |                          | <u>8</u>   |  |
| <u>ΔH@ 1.846</u>                         |            |                               |                                  |                                    |                                                  |            | Imp. #5    |            | <u>100</u>       |                     | <u>115</u>                |                          | <u>5</u>   |  |
| BAROMETRIC PRESSURE, IN. Hg <u>29.16</u> |            |                               |                                  |                                    | INITIAL LEAK TEST <u>1.001 @ 15"</u>             |            | Imp. #6    |            | <u>1000</u>      |                     | <u>102</u>                |                          | <u>2</u>   |  |
| ASSUMED MOISTURE, Bw <u>16%</u>          |            |                               |                                  |                                    | FINAL LEAK TEST <u>1.001 @ 15"</u>               |            | Imp. #7    |            | <u>1000</u>      |                     |                           |                          |            |  |
|                                          |            |                               |                                  |                                    |                                                  |            | Imp. #8    |            |                  |                     |                           |                          |            |  |
| Point                                    | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pitot ΔP<br>IN. H <sub>2</sub> O | Orifice ΔH<br>IN. H <sub>2</sub> O | Temperature °F                                   |            |            |            |                  | Pump Vac.<br>IN. Hg | Fyrites                   |                          |            |  |
|                                          |            |                               |                                  |                                    | Dry Gas<br>Outlet                                | Stack      | Probe      | Box        | Impinger<br>Exit |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |            |  |
| 1                                        |            | <u>774.822</u>                | <u>1.35</u>                      | <u>1.97</u>                        | <u>71</u>                                        | <u>311</u> | <u>250</u> | <u>250</u> | <u>60</u>        | <u>6.0</u>          |                           |                          |            |  |
| 2                                        | 10         | <u>782.53</u>                 | <u>1.36</u>                      | <u>2.02</u>                        | <u>71</u>                                        | <u>314</u> | <u>250</u> | <u>250</u> | <u>60</u>        |                     | <u>10.5</u>               | <u>8.6</u>               |            |  |
| 3                                        |            | <u>790.29</u>                 | <u>1.34</u>                      | <u>1.90</u>                        | <u>71</u>                                        | <u>319</u> | <u>254</u> | <u>256</u> | <u>60</u>        | <u>6.0</u>          |                           |                          |            |  |
| 4                                        | 20         | <u>790.10</u>                 | <u>1.35</u>                      | <u>1.95</u>                        | <u>71</u>                                        | <u>320</u> | <u>254</u> | <u>256</u> | <u>60</u>        | <u>6.0</u>          |                           |                          |            |  |
| 5                                        |            | <u>794.01</u>                 | <u>1.37</u>                      | <u>2.05</u>                        | <u>71</u>                                        | <u>322</u> | <u>250</u> | <u>252</u> | <u>60</u>        | <u>6.5</u>          |                           |                          |            |  |
| 6                                        | 30         | <u>797.97</u>                 | <u>1.38</u>                      | <u>2.11</u>                        | <u>71</u>                                        | <u>322</u> | <u>250</u> | <u>252</u> | <u>60</u>        | <u>6.5</u>          |                           |                          |            |  |
| 7                                        |            | <u>802.57</u>                 | <u>1.51</u>                      | <u>2.83</u>                        | <u>72</u>                                        | <u>323</u> | <u>251</u> | <u>251</u> | <u>58</u>        | <u>9.0</u>          | <u>10.7</u>               | <u>9.3</u>               |            |  |
| 8                                        | 40         | <u>807.31</u>                 | <u>1.54</u>                      | <u>3.01</u>                        | <u>73</u>                                        | <u>323</u> | <u>251</u> | <u>251</u> | <u>58</u>        | <u>9.0</u>          |                           |                          |            |  |
| 9                                        |            | <u>812.18</u>                 | <u>1.57</u>                      | <u>3.17</u>                        | <u>73</u>                                        | <u>323</u> | <u>250</u> | <u>252</u> | <u>57</u>        | <u>8.0</u>          |                           |                          |            |  |
| 10                                       | 50         | <u>816.74</u>                 | <u>1.50</u>                      | <u>2.78</u>                        | <u>73</u>                                        | <u>323</u> | <u>250</u> | <u>252</u> | <u>57</u>        | <u>8.0</u>          |                           |                          |            |  |
| 11                                       |            | <u>821.11</u>                 | <u>1.46</u>                      | <u>2.56</u>                        | <u>73</u>                                        | <u>323</u> | <u>250</u> | <u>250</u> | <u>58</u>        | <u>7.5</u>          |                           |                          |            |  |
| 12                                       | 60         | <u>825.40</u>                 | <u>1.44</u>                      | <u>2.45</u>                        | <u>74</u>                                        | <u>323</u> | <u>250</u> | <u>250</u> | <u>58</u>        | <u>7.5</u>          |                           |                          |            |  |
| 1                                        |            | <u>828.94</u>                 | <u>1.30</u>                      | <u>1.68</u>                        | <u>75</u>                                        | <u>323</u> | <u>250</u> | <u>252</u> | <u>57</u>        | <u>6.0</u>          |                           |                          |            |  |
| 2                                        | 10         | <u>832.61</u>                 | <u>1.32</u>                      | <u>1.70</u>                        | <u>75</u>                                        | <u>321</u> | <u>250</u> | <u>252</u> | <u>57</u>        | <u>6.0</u>          | <u>10.5</u>               | <u>9.7</u>               |            |  |
| 3                                        |            | <u>836.34</u>                 | <u>1.33</u>                      | <u>1.85</u>                        | <u>75</u>                                        | <u>319</u> | <u>252</u> | <u>251</u> | <u>57</u>        | <u>6.0</u>          |                           |                          |            |  |
| 4                                        | 20         | <u>840.07</u>                 | <u>1.33</u>                      | <u>1.86</u>                        | <u>75</u>                                        | <u>318</u> | <u>252</u> | <u>251</u> | <u>57</u>        | <u>6.0</u>          |                           |                          |            |  |
| 5                                        |            | <u>843.65</u>                 | <u>1.30</u>                      | <u>1.69</u>                        | <u>75</u>                                        | <u>318</u> | <u>250</u> | <u>251</u> | <u>57</u>        | <u>6.0</u>          |                           |                          |            |  |

Client MV VTE Y LMU-A(0.9777)  
 Source UN#1 Cp  
 Parameter HF Pbar 29.16 Static 17.0  
 Date Nov. 17, 2020 Operator SP

| Leak Check | Run 1  | Run 2  | Run 3  |
|------------|--------|--------|--------|
| Initial    | 0.0002 | 0.0002 | 0.0002 |
| Final      | 0.0003 | 0.0002 | 0.0002 |

| Test No. | Time (hhmm) | DGM Volume (cu ft) / (m³) | Temperature (°F) |       | Imp. Vol. (mL) | ΔP IN. H <sub>2</sub> O |    |    |
|----------|-------------|---------------------------|------------------|-------|----------------|-------------------------|----|----|
|          |             |                           | DGM Outlet       | Stack |                | R1                      | R2 | R3 |
| 1        | 9:22        | 462.1830                  |                  | 62    |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 10:22       | 462.9140                  |                  | 78    |                |                         |    |    |
| 2        | 10:39       | 462.9200                  |                  | 75    |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 11:39       | 463.6716                  |                  | 84    |                |                         |    |    |
| 3        | 11:54       | 463.6800                  |                  | 75    |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 12:54       | 464.4572                  |                  | 83    |                |                         |    |    |

Client MV WTE Y LMU-C(1.100)  
 Source UN#1 Cp  
 Parameter Ammonia Pbar 29.16 Static 17.0  
 Date Nov. 17, 2020 Operator SP

| Leak Check | Run 1  | Run 2  | Run 3  |
|------------|--------|--------|--------|
| Initial    | 0.0002 | 0.0002 | 0.0002 |
| Final      | 0.0002 | 0.0002 | 0.0003 |

| Test No. | Time (hhmm) | DGM Volume (cu ft) / (m³) | Temperature (°F) |       | Imp. Vol. (mL) | ΔP IN. H <sub>2</sub> O |    |    |
|----------|-------------|---------------------------|------------------|-------|----------------|-------------------------|----|----|
|          |             |                           | DGM Outlet       | Stack |                | R1                      | R2 | R3 |
| 1        | 9:22        | 191.4460                  |                  | 62    |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 10:22       | 191.8680                  |                  | 79    |                |                         |    |    |
| 2        | 10:39       | 191.8720                  |                  | 77    |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 11:39       | 192.3706                  |                  | 81    |                |                         |    |    |
| 3        | 11:54       | 192.3770                  |                  | 76    |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 12:54       | 192.8066                  |                  | 83    |                |                         |    |    |

N<sub>2</sub>O  
 Run #1  
 9:35 -  
 10:35  
 3ppm  
 Run #2  
 10:39 -  
 11:39  
 4ppm  
 Run #3  
 11:54 -  
 12:54  
 10ppm

V657 5.81214

JH

|                                             |              |                               |                                  |                                        |                   |                             |       |                      |                  |                     |                           |                          |  |            |  |
|---------------------------------------------|--------------|-------------------------------|----------------------------------|----------------------------------------|-------------------|-----------------------------|-------|----------------------|------------------|---------------------|---------------------------|--------------------------|--|------------|--|
| CLIENT <b>MNRD</b>                          |              |                               |                                  | NOZZLE <b>G-310</b>                    |                   | DIAMETER, IN. <b>1.3097</b> |       | IMPINGER             |                  | INITIAL             |                           | FINAL                    |  | TOTAL GAIN |  |
| SOURCE <b>Unit #2</b>                       |              |                               |                                  | PROBE <b>7C</b>                        |                   | Cp <b>8525</b>              |       | VOLUMES              |                  | (mL)                |                           | (mL)                     |  | (mL)       |  |
| PARAMETER / RUN No <b>1 Metals / Partic</b> |              |                               |                                  | PORT LENGTH                            |                   |                             |       | Imp. #1              |                  | <b>0</b>            |                           | <b>200</b>               |  | <b>200</b> |  |
| DATE <b>Nov. 17 / 20</b>                    |              |                               |                                  | STATIC PRESSURE, IN. H2O <b>-19.50</b> |                   |                             |       | Imp. #2              |                  | <b>100</b>          |                           | <b>222</b>               |  | <b>122</b> |  |
| OPERATOR: <b>C.L.</b>                       |              |                               |                                  | STACK DIAMETER <b>70.90</b>            |                   |                             |       | Imp. #3              |                  | <b>100</b>          |                           | <b>128</b>               |  | <b>28</b>  |  |
| CCNTROL UNIT <b>FE 18</b>                   |              |                               |                                  | STACK HEIGHT <b>30'</b>                |                   |                             |       | Imp. #4              |                  | <b>0</b>            |                           | <b>12</b>                |  | <b>12</b>  |  |
| Y <b>1.0011</b>                             |              |                               |                                  | AH@                                    |                   |                             |       | Imp. #5              |                  | <b>100</b>          |                           | <b>107</b>               |  | <b>7</b>   |  |
| BAROMETRIC PRESSURE, IN. Hg <b>29.20</b>    |              |                               |                                  | INITIAL LEAK TEST <b>0.002 @ 15"</b>   |                   |                             |       | Imp. #6              |                  | <b>100</b>          |                           | <b>103</b>               |  | <b>3</b>   |  |
| ASSUMED MOISTURE, Bw <b>12%</b>             |              |                               |                                  | FINAL LEAK TEST <b>0.002 @ 15"</b>     |                   |                             |       | Upstream Diameters   |                  |                     |                           |                          |  |            |  |
|                                             |              |                               |                                  |                                        |                   |                             |       | Downstream Diameters |                  |                     |                           |                          |  |            |  |
| Point                                       | Clock Time   | Dry Gas Meter ft <sup>3</sup> | Pitot ΔP<br>IN. H <sub>2</sub> O | Orifice ΔH<br>IN. H <sub>2</sub> O     | Temperature °F    |                             |       |                      |                  | Pump Vac.<br>IN. Hg | Fyrites                   |                          |  |            |  |
|                                             | <b>10:04</b> | <b>309.750</b>                |                                  |                                        | Dry Gas<br>Outlet | Stack                       | Probe | Box                  | Impinger<br>Exit |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |  |            |  |
| 1                                           |              | 313.16                        | 27                               | 1.57                                   | 55                | 310                         | 250   | 250                  | 52               | 5                   |                           |                          |  |            |  |
| 2                                           |              | 316.70                        | 29                               | 1.68                                   | 56                | 312                         |       |                      |                  | 5                   |                           |                          |  |            |  |
| 3                                           |              | 320.31                        | 30                               | 1.74                                   | 58                | 312                         | 250   | 250                  | 54               | 6                   | 10.0                      | 10.0                     |  |            |  |
| 4                                           |              | 324.03                        | 32                               | 1.86                                   | 58                | 313                         |       |                      |                  |                     |                           |                          |  |            |  |
| 5                                           |              | 328.44                        | 32                               | 1.86                                   | 58                | 313                         | 250   | 250                  | 54               | 6                   |                           |                          |  |            |  |
| 6                                           |              | 333.05                        | 34                               | 2.01                                   | 60                | 310                         | 250   | 250                  | 56               | 8                   |                           |                          |  |            |  |
| 7                                           |              | 338.24                        | 35                               | 2.02                                   | 60                | 310                         | 250   | 250                  | 56               | 8                   |                           |                          |  |            |  |
| 8                                           |              | 343.26                        | 36                               | 2.03                                   | 61                | 310                         | 250   | 250                  | 58               | 10                  | 10.0                      | 10.0                     |  |            |  |
| 9                                           |              | 347.27                        | 37                               | 2.15                                   | 61                | 309                         | 250   | 250                  | 58               | 10                  | 10.0                      | 10.0                     |  |            |  |
| 10                                          |              | 351.16                        | 37                               | 2.03                                   | 61                | 309                         | 250   | 250                  | 58               | 10                  | 10.0                      | 10.0                     |  |            |  |
| 11                                          |              | 354.88                        | 38                               | 1.86                                   | 61                | 308                         | 250   | 250                  | 60               | 6                   |                           |                          |  |            |  |
| 12                                          |              | 358.36                        | 38                               | 1.63                                   | 66                | 306                         |       |                      |                  |                     |                           |                          |  |            |  |
| 1                                           |              | 361.45                        | 35                               | 1.45                                   | 67                | 308                         | 250   | 250                  | 58               | 6                   |                           |                          |  |            |  |
| 2                                           |              | 365.26                        | 30                               | 1.74                                   | 68                | 310                         |       |                      |                  |                     |                           |                          |  |            |  |
| 3                                           |              | 368.28                        | 32                               | 1.86                                   | 68                | 310                         | 250   | 250                  | 60               | 6                   | 10.0                      | 10.0                     |  |            |  |
| 4                                           |              | 372.10                        | 32                               | 1.86                                   | 69                | 310                         |       |                      |                  |                     |                           |                          |  |            |  |
| 5                                           |              | 376.15                        | 38                               | 2.00                                   | 69                | 312                         | 250   | 250                  | 62               | 6                   |                           |                          |  |            |  |
| 6                                           |              | 380.41                        | 40                               | 2.32                                   | 69                | 312                         |       |                      |                  |                     |                           |                          |  |            |  |
| 7                                           |              | 385.52                        | 40                               | 2.85                                   | 70                | 313                         | 250   | 250                  | 60               | 8                   |                           |                          |  |            |  |
| 8                                           |              | 390.26                        | 42                               | 3.02                                   | 71                | 312                         |       |                      |                  |                     |                           |                          |  |            |  |
| 9                                           |              | 395.13                        | 55                               | 3.20                                   | 71                | 312                         | 250   | 250                  | 58               | 8                   | 10.0                      | 10.0                     |  |            |  |
| 10                                          |              | 400.15                        | 58                               | 3.37                                   | 72                | 314                         |       |                      |                  |                     |                           |                          |  |            |  |
| 11                                          |              | 404.57                        | 45                               | 2.61                                   | 72                | 314                         | 250   | 250                  | 58               | 8                   |                           |                          |  |            |  |
| 12                                          | <b>12:08</b> | <b>408.58</b>                 | <b>36</b>                        | <b>2.09</b>                            | <b>72</b>         | <b>315</b>                  |       |                      |                  |                     |                           |                          |  |            |  |

JK

[illegible]



A. Lanfranco and Associates Inc.

Client MU WTE Y LMU-A 09777  
 Source UNIT#2 Cp  
 Parameter HF Pbar 29.45 Static -18.0  
 Date Nov. 18, 2020 Operator SPJ SC

| Leak Check | Run 1  | Run 2  | Run 3  |
|------------|--------|--------|--------|
| Initial    | 0.0002 | 0.0002 | 0.0002 |
| Final      | 0.0002 | 0.0002 | 0.0002 |

| Test No. | Time (hhmm) | DGM Volume (cu ft) / (m³) | Temperature (°F) |       | Imp. Vol. (mL) | ΔP IN. H <sub>2</sub> O |    |    |
|----------|-------------|---------------------------|------------------|-------|----------------|-------------------------|----|----|
|          |             |                           | DGM Outlet       | Stack |                | R1                      | R2 | R3 |
| 1        | 1000        | 464.4640                  | 61               |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 1100        | 465.2338                  | 65               |       |                |                         |    |    |
| 2        | 1110        | 465.2394                  | 62               |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 1210        | 465.9852                  | 66               |       |                |                         |    |    |
| 3        | 1232        | 465.9908                  | 63               |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 1332        | 466.7435                  | 69               |       |                |                         |    |    |

Client MU WTE Y LMU-C 1.100  
 Source UNIT#2 Cp  
 Parameter NH3 Ammonia Pbar 29.45 Static -18.0  
 Date Nov. 18, 2020 Operator SPJ SC

| Leak Check | Run 1  | Run 2  | Run 3  |
|------------|--------|--------|--------|
| Initial    | 0.0002 | 0.0002 | 0.0002 |
| Final      | 0.0002 | 0.0002 | 0.0002 |

| Test No. | Time (hhmm) | DGM Volume (cu ft) / (m³) | Temperature (°F) |       | Imp. Vol. (mL) | ΔP IN. H <sub>2</sub> O |    |    |
|----------|-------------|---------------------------|------------------|-------|----------------|-------------------------|----|----|
|          |             |                           | DGM Outlet       | Stack |                | R1                      | R2 | R3 |
| 1        | 1000        | 192.8110                  | 60               |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 1100        | 193.2714                  | 64               |       |                |                         |    |    |
| 2        | 1110        | 193.2768                  | 62               |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 1210        | 193.7172                  | 66               |       |                |                         |    |    |
| 3        | 1232        | 193.7211                  | 64               |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          | 1332        | 194.1650                  | 70               |       |                |                         |    |    |

NH3  
Run #1  
 1000 -  
 1100  
 0 ppm  
Run #2  
 1110 -  
 1210  
 0 ppm  
Run #3  
 1232 -  
 1332  
 15 ppm

| CLIENT <u>MU WE</u>                            |            |                               |                                  |                                    | NOZZLE <u>6-292</u>                    |       | DIAMETER, IN. <u>0.2923</u> |     | IMPINGER         |                     | INITIAL                      |                             | FINAL |  | TOTAL GAIN |  |  |
|------------------------------------------------|------------|-------------------------------|----------------------------------|------------------------------------|----------------------------------------|-------|-----------------------------|-----|------------------|---------------------|------------------------------|-----------------------------|-------|--|------------|--|--|
| SOURCE <u>ULH3</u>                             |            |                               |                                  |                                    | PROBE <u>7C</u>                        |       | Cp <u>0.8505</u>            |     | VOLUMES          |                     | (mL)                         |                             | (mL)  |  | (mL)       |  |  |
| PARAMETER / RUN No <u>8012C/MUALS/Hg RUN#1</u> |            |                               |                                  |                                    | PORT LENGTH                            |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| DATE <u>Nov. 18, 2020</u>                      |            |                               |                                  |                                    | STATIC PRESSURE, IN. H2O - <u>18.0</u> |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| OPERATOR <u>ST</u>                             |            |                               |                                  |                                    | STACK DIAMETER                         |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| CONTROL UNIT <u>AUS</u>                        |            |                               |                                  |                                    | STACK HEIGHT <u>20'</u>                |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| Y <u>1.0168</u>                                |            |                               |                                  |                                    | Imp. #1 <u>100</u>                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| ΔH@ <u>1.749</u>                               |            |                               |                                  |                                    | Imp. #2 <u>100</u>                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| BAROMETRIC PRESSURE, IN. Hg <u>29.48</u>       |            |                               |                                  |                                    | Imp. #3 <u>100</u>                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| ASSUMED MOISTURE, Bw <u>18%</u>                |            |                               |                                  |                                    | Imp. #4 <u>100</u>                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
|                                                |            |                               |                                  |                                    | Imp. #5 <u>100</u>                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
|                                                |            |                               |                                  |                                    | Imp. #6 <u>100</u>                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
|                                                |            |                               |                                  |                                    | Upstream Diameters                     |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
|                                                |            |                               |                                  |                                    | Downstream Diameters                   |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| Point                                          | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pitot ΔP<br>IN. H <sub>2</sub> O | Orifice ΔH<br>IN. H <sub>2</sub> O | Temperature °F                         |       |                             |     |                  | Pump Vac.<br>IN. Hg | Fyrites                      |                             |       |  |            |  |  |
|                                                |            |                               |                                  |                                    | Dry Gas<br>Outlet                      | Stack | Probe                       | Box | Impinger<br>Exit |                     | CO <sub>2</sub> 10<br>Vol. % | O <sub>2</sub> 11<br>Vol. % |       |  |            |  |  |
| 1                                              |            | 713.800                       |                                  |                                    |                                        |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| 2                                              | 10         | 717.54                        | .50                              | 1.88                               | 55                                     | 317   | 251                         | 259 | 51               | 8                   | 10                           | 10.5                        |       |  |            |  |  |
| 3                                              |            | 721.28                        | .50                              | 1.88                               | 58                                     | 318   |                             |     |                  | 8                   |                              |                             |       |  |            |  |  |
| 4                                              | 20         | 725.06                        | .51                              | 1.92                               | 55                                     | 318   | 251                         | 260 | 53               | 8                   |                              |                             |       |  |            |  |  |
| 5                                              |            | 728.84                        | .52                              | 1.96                               | 55                                     | 318   |                             |     |                  | 8                   |                              |                             |       |  |            |  |  |
| 6                                              | 30         | 732.52                        | .47                              | 1.78                               | 56                                     | 317   |                             |     |                  | 5.5                 | 10                           | 10                          |       |  |            |  |  |
| 7                                              |            | 736.23                        | .49                              | 1.85                               | 56                                     | 317   |                             |     |                  | 5.5                 |                              |                             |       |  |            |  |  |
| 8                                              | 40         | 739.19                        | .31                              | 1.17                               | 57                                     | 318   | 250                         | 263 | 55               | 5                   |                              |                             |       |  |            |  |  |
| 9                                              |            | 741.91                        | .26                              | 0.99                               | 59                                     | 317   |                             |     |                  | 5                   |                              |                             |       |  |            |  |  |
| 10                                             | 50         | 744.58                        | .25                              | 0.95                               | 60                                     | 317   |                             |     |                  | 5                   | 10                           | 11                          |       |  |            |  |  |
| 11                                             |            | 747.36                        | .27                              | 1.03                               | 61                                     | 319   | 251                         | 261 | 55               | 5                   |                              |                             |       |  |            |  |  |
| 12                                             | 60         | 749.98                        | .24                              | 0.91                               | 62                                     | 320   |                             |     |                  | 4.5                 |                              |                             |       |  |            |  |  |
|                                                |            | 752.50                        | .22                              | 0.84                               | 63                                     | 320   |                             |     |                  |                     |                              |                             |       |  |            |  |  |
| 1                                              |            | 755.35                        | .28                              | 1.07                               | 65                                     | 319   | 248                         | 258 | 56               | 5                   | 10                           | 11                          |       |  |            |  |  |
| 2                                              | 10         | 758.10                        | .26                              | 1.00                               | 65                                     | 320   |                             |     |                  | 4.5                 |                              |                             |       |  |            |  |  |
| 3                                              |            | 760.80                        | .25                              | 0.96                               | 65                                     | 319   |                             |     |                  | 4.5                 |                              |                             |       |  |            |  |  |
| 4                                              | 20         | 763.61                        | .27                              | 1.04                               | 66                                     | 318   | 250                         | 261 | 55               | 4.5                 | 10                           | 10.5                        |       |  |            |  |  |
| 5                                              |            | 766.31                        | 0.25                             | 0.96                               | 66                                     | 318   |                             |     |                  | 4.5                 |                              |                             |       |  |            |  |  |
| 6                                              | 30         | 769.07                        | .26                              | 1.00                               | 66                                     | 318   |                             |     |                  | 4.5                 |                              |                             |       |  |            |  |  |
| 7                                              |            | 772.71                        | .45                              | 1.74                               | 67                                     | 317   | 251                         | 260 | 56               | 6                   |                              |                             |       |  |            |  |  |
| 8                                              | 40         | 776.62                        | .52                              | 2.01                               | 67                                     | 317   |                             |     |                  | 6                   |                              |                             |       |  |            |  |  |
| 9                                              |            | 780.79                        | .59                              | 2.28                               | 68                                     | 317   |                             |     |                  | 6.5                 |                              |                             |       |  |            |  |  |
| 10                                             | 50         | 784.86                        | .56                              | 2.17                               | 69                                     | 318   | 250                         | 261 | 55               | 6.5                 |                              |                             |       |  |            |  |  |
| 11                                             |            | 789.06                        | .60                              | 2.3                                |                                        |       |                             |     |                  |                     |                              |                             |       |  |            |  |  |

[illegible]



| METRO VANCOUVER WTE - BURNABY B.C.        |              |                               |                                  |                                    | NOZZLE <i>MV-02</i> DIAMETER, IN. <i>1.3048</i> |            | Cp <i>.8525</i> |            | IMPINGER         | INITIAL             | FINAL                     | TOTAL GAIN               |  |
|-------------------------------------------|--------------|-------------------------------|----------------------------------|------------------------------------|-------------------------------------------------|------------|-----------------|------------|------------------|---------------------|---------------------------|--------------------------|--|
| SOURCE <i>Unit #3</i>                     |              |                               |                                  |                                    | PROBE <i>7c</i>                                 |            |                 |            | VOLUMES          | (mL)                | (mL)                      | (mL)                     |  |
| PARAMETER / RUN No <i>10613 / 123</i>     |              |                               |                                  |                                    | PORT LENGTH                                     |            |                 |            | Imp. #1          | <i>0</i>            | <i>206</i>                | <i>206</i>               |  |
| DATE <i>11.19.20</i>                      |              |                               |                                  |                                    | STATIC PRESSURE, IN. H2O <i>-18.0</i>           |            |                 |            | Imp. #2          | <i>100</i>          | <i>220</i>                | <i>120</i>               |  |
| OPERATOR: <i>SC</i>                       |              |                               |                                  |                                    | STACK DIAMETER <i>70.90</i>                     |            |                 |            | Imp. #3          | <i>100</i>          | <i>114</i>                | <i>14</i>                |  |
| CONTROL UNIT <i>Ru 15</i> Y <i>1.0168</i> |              |                               |                                  |                                    | STACK HEIGHT <i>30</i>                          |            |                 |            | Imp. #4          | <i>0</i>            | <i>8</i>                  | <i>8</i>                 |  |
| ΔH@ <i>1.749</i>                          |              |                               |                                  |                                    |                                                 |            |                 |            | Imp. #5          | <i>100</i>          | <i>103</i>                | <i>3</i>                 |  |
| BAROMETRIC PRESSURE, IN. Hg <i>30.1</i>   |              |                               |                                  |                                    | INITIAL LEAK TEST <i>.002 @ 1.5"</i>            |            |                 |            | Imp. #6          | <i>100</i>          | <i>101</i>                | <i>1</i>                 |  |
| ASSUMED MOISTURE, Bw <i>16%</i>           |              |                               |                                  |                                    | FINAL LEAK TEST <i>1.00 @ 1.5"</i>              |            |                 |            | Imp. #7          | <i>200</i>          |                           |                          |  |
|                                           |              |                               |                                  |                                    |                                                 |            |                 |            | Imp. #8          |                     |                           |                          |  |
| Point                                     | Clock Time   | Dry Gas Meter ft <sup>3</sup> | Pitot ΔP<br>IN. H <sub>2</sub> O | Orifice ΔH<br>IN. H <sub>2</sub> O | Temperature °F                                  |            |                 |            |                  | Pump Vac.<br>IN. Hg | Fyrites                   |                          |  |
|                                           |              |                               |                                  |                                    | Dry Gas<br>Outlet                               | Stack      | Probe           | Box        | Impinger<br>Exit |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |  |
| 1                                         | <i>11:11</i> | <i>481.096</i>                |                                  |                                    |                                                 |            |                 |            |                  |                     |                           |                          |  |
| 2                                         |              | <i>485.96</i>                 | <i>.53</i>                       | <i>2.54</i>                        | <i>72</i>                                       | <i>316</i> | <i>250</i>      | <i>250</i> | <i>51</i>        | <i>5.5</i>          |                           |                          |  |
| 3                                         | 10           | <i>489.73</i>                 | <i>.51</i>                       | <i>2.43</i>                        | <i>71</i>                                       | <i>321</i> |                 |            |                  |                     | <i>9.5</i>                | <i>10.3</i>              |  |
| 4                                         |              | <i>493.82</i>                 | <i>.47</i>                       | <i>2.24</i>                        | <i>71</i>                                       | <i>320</i> | <i>250</i>      | <i>255</i> | <i>51</i>        | <i>5.5</i>          |                           |                          |  |
| 5                                         | 20           | <i>498.03</i>                 | <i>.49</i>                       | <i>2.35</i>                        | <i>71</i>                                       | <i>317</i> |                 |            |                  |                     |                           |                          |  |
| 6                                         |              | <i>502.48</i>                 | <i>.55</i>                       | <i>2.64</i>                        | <i>72</i>                                       | <i>317</i> | <i>251</i>      | <i>254</i> | <i>51</i>        | <i>5.5</i>          |                           |                          |  |
| 7                                         | 30           | <i>506.88</i>                 | <i>.53</i>                       | <i>2.53</i>                        | <i>72</i>                                       | <i>319</i> |                 |            |                  |                     |                           |                          |  |
| 8                                         |              | <i>510.20</i>                 | <i>.51</i>                       | <i>1.49</i>                        | <i>72</i>                                       | <i>315</i> | <i>256</i>      | <i>252</i> | <i>51</i>        | <i>5.5</i>          |                           |                          |  |
| 9                                         | 40           | <i>513.97</i>                 | <i>.27</i>                       | <i>1.89</i>                        | <i>73</i>                                       | <i>317</i> |                 |            |                  |                     | <i>9.5</i>                | <i>9.5</i>               |  |
| 10                                        |              | <i>516.38</i>                 | <i>.16</i>                       | <i>1.77</i>                        | <i>73</i>                                       | <i>316</i> | <i>252</i>      | <i>254</i> | <i>51</i>        | <i>3.0</i>          |                           |                          |  |
| 11                                        | 50           | <i>519.77</i>                 | <i>.23</i>                       | <i>1.11</i>                        | <i>73</i>                                       | <i>316</i> |                 |            |                  |                     |                           |                          |  |
| 12                                        |              | <i>522.09</i>                 | <i>.22</i>                       | <i>1.06</i>                        | <i>73</i>                                       | <i>318</i> | <i>250</i>      | <i>251</i> | <i>51</i>        | <i>3.5</i>          |                           |                          |  |
|                                           | 60           | <i>524.78</i>                 | <i>.20</i>                       | <i>.96</i>                         | <i>73</i>                                       | <i>317</i> |                 |            |                  |                     |                           |                          |  |
| 1                                         |              | <i>528.24</i>                 | <i>.33</i>                       | <i>1.59</i>                        | <i>73</i>                                       | <i>317</i> | <i>253</i>      | <i>251</i> | <i>51</i>        | <i>4.0</i>          |                           |                          |  |
| 2                                         | 10           | <i>531.37</i>                 | <i>.27</i>                       | <i>1.30</i>                        | <i>73</i>                                       | <i>315</i> |                 |            |                  |                     | <i>10.5</i>               | <i>10.3</i>              |  |
| 3                                         |              | <i>534.57</i>                 | <i>.28</i>                       | <i>1.35</i>                        | <i>74</i>                                       | <i>314</i> | <i>250</i>      | <i>251</i> | <i>52</i>        | <i>4.0</i>          |                           |                          |  |
| 4                                         | 20           | <i>537.59</i>                 | <i>.25</i>                       | <i>1.21</i>                        | <i>74</i>                                       | <i>315</i> |                 |            |                  |                     |                           |                          |  |
| 5                                         |              | <i>540.60</i>                 | <i>.25</i>                       | <i>1.20</i>                        | <i>73</i>                                       | <i>315</i> | <i>256</i>      | <i>251</i> | <i>52</i>        | <i>4.0</i>          |                           |                          |  |
| 6                                         | 30           | <i>543.65</i>                 | <i>.31</i>                       | <i>1.49</i>                        | <i>73</i>                                       | <i>315</i> |                 |            |                  |                     |                           |                          |  |
| 7                                         |              | <i>547.80</i>                 | <i>.41</i>                       | <i>1.97</i>                        | <i>73</i>                                       | <i>317</i> | <i>254</i>      | <i>253</i> | <i>52</i>        | <i>5.0</i>          | <i>9.8</i>                | <i>10.0</i>              |  |
| 8                                         | 40           | <i>552.46</i>                 | <i>.60</i>                       | <i>2.58</i>                        | <i>74</i>                                       | <i>319</i> |                 |            |                  |                     |                           |                          |  |
| 9                                         |              | <i>556.95</i>                 | <i>.56</i>                       | <i>2.60</i>                        | <i>73</i>                                       | <i>320</i> | <i>250</i>      | <i>254</i> | <i>51</i>        | <i>6.0</i>          |                           |                          |  |
| 10                                        | 50           | <i>561.46</i>                 | <i>.55</i>                       | <i>2.63</i>                        | <i>73</i>                                       | <i>320</i> |                 |            |                  |                     |                           |                          |  |
| 11                                        |              | <i>565.77</i>                 | <i>.53</i>                       | <i>2.54</i>                        | <i>73</i>                                       | <i>320</i> | <i>255</i>      | <i>253</i> | <i>52</i>        | <i>6.5</i>          |                           |                          |  |
| 12                                        |              | <i>570.020</i>                | <i>.50</i>                       | <i>2.39</i>                        | <i>73</i>                                       | <i>320</i> |                 |            |                  |                     |                           |                          |  |
|                                           | <i>13:12</i> | <i>END test</i>               |                                  |                                    |                                                 |            |                 |            |                  |                     |                           |                          |  |

A. Lanfranco & Associates Inc.

HF

|        |            |                |             |
|--------|------------|----------------|-------------|
| Client | MVRD       | Operator       | C.L         |
| Source | UNT #3     | Control Unit / | γ LMOA-9777 |
| Date   | Nov. 19/20 | Cp             | N/A         |
| Dia.   | Up         | Pbar           | 30.10       |
|        |            | Dwn            | Static      |

| Leak Check    | Run 1  | Run 2  | Run 3  |
|---------------|--------|--------|--------|
| Initial @ 15" | 0.0002 | 0.0002 | 0.0001 |
| Final @ 15"   | 0.0001 | 0.0001 | 0.0001 |

| Test No. | Time (hhmm) | DGM Vol. (m³) | DGM Temp. Out (°F) | Stack Temp. Ts (°F) | ΔP IN. H₂O |    |    |
|----------|-------------|---------------|--------------------|---------------------|------------|----|----|
|          |             |               |                    |                     | R1         | R2 | R3 |
| 1        | 09:54       | 466.7972      | 48                 |                     |            |    |    |
|          |             | 467.0682      | 52                 |                     |            |    |    |
|          | 10:54       | 467.5330      | 68                 |                     |            |    |    |
| 2        | 11:14       | 467.6142      | 62                 |                     |            |    |    |
|          |             |               | 66                 |                     |            |    |    |
|          | 12:14       | 468.3869      | 68                 |                     |            |    |    |
| 3        | 12:29       | 468.3882      | 62                 |                     |            |    |    |
|          |             |               | 66                 |                     |            |    |    |
|          | 13:29       | 469.1540      | 70                 |                     |            |    |    |

NH3

|        |            |                |                |
|--------|------------|----------------|----------------|
| Client | MVRD       | Operator       | C.L            |
| Source | UNT #3     | Control Unit / | γ LMO C-1.1000 |
| Date   | Nov. 19/20 | Cp             |                |
| Dia.   | Up         | Pbar           | 30.10          |
|        |            | Dwn            | Static         |

| Leak Check    | Run 1  | Run 2  | Run 3  |
|---------------|--------|--------|--------|
| Initial @ 15" | 0.0002 | 0.0001 | 0.0002 |
| Final @ 15"   | 0.0001 | 0.0001 | 0.0001 |

| Test No. | Time (hhmm) | DGM Vol. (m³) | DGM Temp. Out (°F) | Stack Temp. Ts (°F) | ΔP IN. H₂O |    |    |
|----------|-------------|---------------|--------------------|---------------------|------------|----|----|
|          |             |               |                    |                     | R1         | R2 | R3 |
| 1        | 09:54       | 194.7582      | 52                 |                     |            |    |    |
|          |             | 194.9350      | 54                 |                     |            |    |    |
|          | 10:54       | 195.2562      | 72                 |                     |            |    |    |
| 2        | 11:14       | 195.2605      | 68                 |                     |            |    |    |
|          |             |               | 74                 |                     |            |    |    |
|          | 12:14       | 195.7155      | 72                 |                     |            |    |    |
| 3        | 12:29       | 195.7180      | 67                 |                     |            |    |    |
|          |             |               | 69                 |                     |            |    |    |
|          | 13:29       | 196.1910      | 71                 |                     |            |    |    |

Client: Metro Vancouver  
Jobsite: WTE (Burnaby, B.C.)  
Parameter: N<sub>2</sub>O

Operator: SF + JC

**Unit #1**

Barometric Pressure: 29.16

| Sample ID | Date          | Time<br>(hh:mm - hh:mm) | N <sub>2</sub> O<br>(ppm) |
|-----------|---------------|-------------------------|---------------------------|
| Run 1     | Nov. 17, 2020 | 09:35 - 10:35           | 3                         |
| Run 2     | ↓             | 10:39 - 11:39           | 4                         |
| Run 3     | ↓             | 11:54 - 12:54           | 10                        |

**Unit #2**

Barometric Pressure: 29.45

| Sample ID | Date          | Time<br>(hh:mm - hh:mm) | N <sub>2</sub> O<br>(ppm) |
|-----------|---------------|-------------------------|---------------------------|
| Run 1     | Nov. 18, 2020 | 10:00 - 11:00           | 0                         |
| Run 2     | ↓             | 11:10 - 12:10           | 0                         |
| Run 3     | ↓             | 12:32 - 13:32           | 15                        |

**Unit #3**

Barometric Pressure: 30.10

| Sample ID | Date          | Time<br>(hh:mm - hh:mm) | N <sub>2</sub> O<br>(ppm) |
|-----------|---------------|-------------------------|---------------------------|
| Run 1     | Nov. 19, 2020 | 10:20 - 11:20           | 2                         |
| Run 2     | ↓             | 11:30 - 12:30           | 2                         |
| Run 3     | ↓             | 12:40 - 13:40           | 4                         |

**APPENDIX – E**

**CALIBRATION SHEETS and**

**TECHNICIAN CERTIFICATES**

# A. LANFRANCO and ASSOCIATES INC.

## ENVIRONMENTAL CONSULTANTS

### GLASS NOZZLE DIAMETER CALIBRATION FORM

Calibrated by: Justin Ching  
Date: June 29th, 2020

Signature: 

| Nozzle I.D. | d1<br>(inch) | d2<br>(inch) | d3<br>(inch) | difference<br>(inch) | average dia.<br>(inch) | average area<br>(ft <sup>2</sup> ) |
|-------------|--------------|--------------|--------------|----------------------|------------------------|------------------------------------|
| A           | 0.1250       | 0.1240       | 0.1245       | 0.0010               | 0.1245                 | 0.0000845                          |
| G-165       | 0.1640       | 0.1655       | 0.1660       | 0.0020               | 0.1652                 | 0.0001488                          |
| G-178       | 0.1780       | 0.1780       | 0.1790       | 0.0010               | 0.1783                 | 0.0001735                          |
| J           | 0.1880       | 0.1880       | 0.1880       | 0.0000               | 0.1880                 | 0.0001928                          |
| E           | 0.1880       | 0.1895       | 0.1882       | 0.0015               | 0.1886                 | 0.0001939                          |
| L           | 0.2112       | 0.2120       | 0.2105       | 0.0015               | 0.2112                 | 0.0002434                          |
| Q           | 0.2190       | 0.2170       | 0.2185       | 0.0020               | 0.2182                 | 0.0002596                          |
| G-218       | 0.2180       | 0.2175       | 0.2190       | 0.0015               | 0.2182                 | 0.0002596                          |
| G-223       | 0.2220       | 0.2230       | 0.2225       | 0.0010               | 0.2225                 | 0.0002700                          |
| G-225       | 0.2245       | 0.2250       | 0.2240       | 0.0010               | 0.2245                 | 0.0002749                          |
| G-2251      | 0.2230       | 0.2260       | 0.2245       | 0.0030               | 0.2245                 | 0.0002749                          |
| P-18        | 0.2375       | 0.2370       | 0.2380       | 0.0010               | 0.2375                 | 0.0003076                          |
| G-247       | 0.2450       | 0.2470       | 0.2470       | 0.0020               | 0.2463                 | 0.0003310                          |
| G-253       | 0.2525       | 0.2520       | 0.2525       | 0.0005               | 0.2523                 | 0.0003473                          |
| G-257       | 0.2570       | 0.2570       | 0.2570       | 0.0000               | 0.2570                 | 0.0003602                          |
| P           | 0.2580       | 0.2570       | 0.2575       | 0.0010               | 0.2575                 | 0.0003616                          |
| G-275       | 0.2750       | 0.2740       | 0.2750       | 0.0010               | 0.2747                 | 0.0004115                          |
| G-278       | 0.2780       | 0.2770       | 0.2780       | 0.0010               | 0.2777                 | 0.0004205                          |
| P-2         | 0.2787       | 0.2790       | 0.2785       | 0.0005               | 0.2787                 | 0.0004237                          |
| G-287       | 0.2870       | 0.2880       | 0.2860       | 0.0020               | 0.2870                 | 0.0004493                          |
| G-292       | 0.2922       | 0.2920       | 0.2926       | 0.0006               | 0.2923                 | 0.0004659                          |
| G-304       | 0.3040       | 0.3050       | 0.3040       | 0.0010               | 0.3043                 | 0.0005052                          |
| MV-02       | 0.3050       | 0.3040       | 0.3055       | 0.0015               | 0.3048                 | 0.0005068                          |
| MV-01       | 0.3050       | 0.3045       | 0.3055       | 0.0010               | 0.3050                 | 0.0005074                          |
| G-3071      | 0.3075       | 0.3070       | 0.3070       | 0.0005               | 0.3072                 | 0.0005146                          |
| G-3072      | 0.3070       | 0.3070       | 0.3080       | 0.0010               | 0.3073                 | 0.0005152                          |
| G-310       | 0.3090       | 0.3105       | 0.3095       | 0.0015               | 0.3097                 | 0.0005230                          |
| G-316       | 0.3160       | 0.3160       | 0.3170       | 0.0010               | 0.3163                 | 0.0005458                          |
| V-06        | 0.3200       | 0.3210       | 0.3210       | 0.0010               | 0.3207                 | 0.0005608                          |
| G-337       | 0.3380       | 0.3365       | 0.3380       | 0.0015               | 0.3375                 | 0.0006213                          |
| P-27        | 0.3387       | 0.3385       | 0.3390       | 0.0005               | 0.3387                 | 0.0006258                          |
| I           | 0.3785       | 0.3785       | 0.3785       | 0.0000               | 0.3785                 | 0.0007814                          |
| P-14        | 0.3910       | 0.3935       | 0.3920       | 0.0025               | 0.3922                 | 0.0008388                          |
| C           | 0.4255       | 0.4225       | 0.4235       | 0.0030               | 0.4238                 | 0.0009798                          |
| G-437       | 0.4350       | 0.4345       | 0.4355       | 0.0010               | 0.4350                 | 0.0010321                          |
| G-468       | 0.4677       | 0.4670       | 0.4670       | 0.0007               | 0.4672                 | 0.0011907                          |
| P-29        | 0.4680       | 0.4680       | 0.4690       | 0.0010               | 0.4683                 | 0.0011963                          |
| P-7         | 0.4965       | 0.4940       | 0.4930       | 0.0035               | 0.4945                 | 0.0013337                          |
| B           | 0.5015       | 0.5030       | 0.5025       | 0.0015               | 0.5023                 | 0.0013763                          |
| G-540       | 0.5405       | 0.5400       | 0.5405       | 0.0005               | 0.5403                 | 0.0015924                          |

Where:

- (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: 29-Jun-20  
Pbar (in.Hg): 29.69

Temp (R): 530  
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) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.050                    | 0.070                 | 14.9                | 0.8367          | 0.0024               |
| 0.100                    | 0.140                 | 21.0                | 0.8367          | 0.0024               |
| 0.150                    | 0.210                 | 25.7                | 0.8367          | 0.0024               |
| 0.350                    | 0.490                 | 39.3                | 0.8367          | 0.0024               |
| 0.590                    | 0.850                 | 51.0                | 0.8248          | 0.0095               |
| Average :                |                       |                     | 0.8343          | 0.0038               |

Pitot ID: **ST 8A**

| Reference Pitot (in H2O) | S-Type Pitot (in H2O) | Air Velocity (ft/s) | Pitot Coeff. Cp | Deviation (absolute) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.040                    | 0.055                 | 13.3                | 0.8443          | 0.0027               |
| 0.080                    | 0.110                 | 18.8                | 0.8443          | 0.0027               |
| 0.180                    | 0.250                 | 28.2                | 0.8400          | 0.0016               |
| 0.300                    | 0.420                 | 36.4                | 0.8367          | 0.0049               |
| 0.500                    | 0.690                 | 47.0                | 0.8427          | 0.0011               |
| Average :                |                       |                     | 0.8416          | 0.0026               |

Pitot ID: **7B**

| Reference Pitot (in H2O) | S-Type Pitot (in H2O) | Air Velocity (ft/s) | Pitot Coeff. Cp | Deviation (absolute) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.030                    | 0.040                 | 11.5                | 0.8574          | 0.0056               |
| 0.120                    | 0.160                 | 23.0                | 0.8574          | 0.0056               |
| 0.200                    | 0.270                 | 29.7                | 0.8521          | 0.0003               |
| 0.380                    | 0.520                 | 41.0                | 0.8463          | 0.0055               |
| 0.730                    | 1.000                 | 56.8                | 0.8459          | 0.0059               |
| Average :                |                       |                     | 0.8518          | 0.0046               |

Pitot ID: **ST 8B**

| Reference Pitot (in H2O) | S-Type Pitot (in H2O) | Air Velocity (ft/s) | Pitot Coeff. Cp | Deviation (absolute) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.060                    | 0.080                 | 16.3                | 0.8574          | 0.0039               |
| 0.090                    | 0.120                 | 19.9                | 0.8574          | 0.0039               |
| 0.190                    | 0.260                 | 29.0                | 0.8463          | 0.0072               |
| 0.320                    | 0.430                 | 37.6                | 0.8540          | 0.0006               |
| 0.630                    | 0.850                 | 52.8                | 0.8523          | 0.0012               |
| Average :                |                       |                     | 0.8535          | 0.0033               |

Pitot ID: **AL GVRD 1**

| Reference Pitot (in H2O) | S-Type Pitot (in H2O) | Air Velocity (ft/s) | Pitot Coeff. Cp | Deviation (absolute) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.060                    | 0.085                 | 16.3                | 0.8318          | 0.0011               |
| 0.090                    | 0.125                 | 19.9                | 0.8400          | 0.0072               |
| 0.145                    | 0.200                 | 25.3                | 0.8430          | 0.0101               |
| 0.290                    | 0.420                 | 35.8                | 0.8226          | 0.0102               |
| 0.530                    | 0.760                 | 48.4                | 0.8267          | 0.0061               |
| Average :                |                       |                     | 0.8328          | 0.0069               |

Pitot ID: **ST 8C**

| Reference Pitot (in H2O) | S-Type Pitot (in H2O) | Air Velocity (ft/s) | Pitot Coeff. Cp | Deviation (absolute) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.050                    | 0.070                 | 14.9                | 0.8367          | 0.0053               |
| 0.085                    | 0.120                 | 19.4                | 0.8332          | 0.0018               |
| 0.190                    | 0.270                 | 29.0                | 0.8305          | 0.0009               |
| 0.420                    | 0.600                 | 43.1                | 0.8283          | 0.0031               |
| 0.630                    | 0.900                 | 52.8                | 0.8283          | 0.0031               |
| Average :                |                       |                     | 0.8314          | 0.0028               |

Pitot ID: **7C**

| Reference Pitot (in H2O) | S-Type Pitot (in H2O) | Air Velocity (ft/s) | Pitot Coeff. Cp | Deviation (absolute) |
|--------------------------|-----------------------|---------------------|-----------------|----------------------|
| 0.030                    | 0.040                 | 11.5                | 0.8574          | 0.0048               |
| 0.060                    | 0.080                 | 16.3                | 0.8574          | 0.0048               |
| 0.110                    | 0.150                 | 22.0                | 0.8478          | 0.0047               |
| 0.210                    | 0.280                 | 30.5                | 0.8574          | 0.0048               |
| 0.500                    | 0.690                 | 47.0                | 0.8427          | 0.0098               |
| Average :                |                       |                     | 0.8525          | 0.0058               |

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: Michael Goods

Signature: 

Date: June 29, 2020

# A.Lanfranco & Associates inc.

EPA Method 5  
Meter Box Calibration  
English Meter Box Units, English K' Factor

Model #: AU 15  
Serial #: 0028SPC-081915-1

Date: 29-Jun-20  
Barometric Pressure: 29.83 (in. Hg)  
Theoretical Critical Vacuum: 14.07 (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)<sup>3</sup>/(deg R)<sup>0.5</sup>/((in.Hg)<sup>0.5</sup>(min)).  
!!!!!!!

| ----- DRY GAS METER READINGS ----- |               |                              |                            |                            |                  |                   |                  |                   | -CRITICAL ORIFICE READINGS-    |                                          |                             |                           |                  |                    |
|------------------------------------|---------------|------------------------------|----------------------------|----------------------------|------------------|-------------------|------------------|-------------------|--------------------------------|------------------------------------------|-----------------------------|---------------------------|------------------|--------------------|
| dH<br>(in H2O)                     | Time<br>(min) | Volume<br>Initial<br>(cu ft) | Volume<br>Final<br>(cu ft) | Volume<br>Total<br>(cu ft) | Initial Temps.   |                   | Final Temps.     |                   | Orifice<br>Serial#<br>(number) | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | -- Ambient Temperature -- |                  |                    |
|                                    |               |                              |                            |                            | Inlet<br>(deg F) | Outlet<br>(deg F) | Inlet<br>(deg F) | Outlet<br>(deg F) |                                |                                          |                             | Initial<br>(deg F)        | Final<br>(deg F) | Average<br>(deg F) |
| 3.60                               | 28.00         | 467.800                      | 496.955                    | 29.155                     | 72.0             | 72.0              | 75.0             | 75.0              | 73                             | 0.8185                                   | 17.5                        | 76.0                      | 78.0             | 77.0               |
| 1.90                               | 21.00         | 507.300                      | 523.306                    | 16.006                     | 76.0             | 76.0              | 78.0             | 78.0              | 63                             | 0.5956                                   | 20.0                        | 82.0                      | 89.0             | 85.5               |
| 1.10                               | 15.00         | 458.000                      | 466.890                    | 8.890                      | 72.0             | 72.0              | 72.0             | 72.0              | 55                             | 0.4606                                   | 21.5                        | 67.0                      | 71.0             | 69.0               |
| 0.63                               | 20.00         | 497.600                      | 506.635                    | 9.035                      | 75.0             | 75.0              | 76.0             | 76.0              | 48                             | 0.3560                                   | 23.0                        | 82.0                      | 84.0             | 83.0               |
| 0.30                               | 16.00         | 523.700                      | 528.679                    | 4.979                      | 78.0             | 78.0              | 79.0             | 79.0              | 40                             | 0.2408                                   | 24.5                        | 82.0                      | 86.0             | 84.0               |

| ***** RESULTS *****                       |                                            |                                            |                                             |                                     |                         |                       |                           |                     |                       |       |               |
|-------------------------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|-------------------------------------|-------------------------|-----------------------|---------------------------|---------------------|-----------------------|-------|---------------|
| --- DRY GAS METER ---                     |                                            |                                            | ----- ORIFICE -----                         |                                     | -- DRY GAS METER --     |                       |                           | ----- ORIFICE ----- |                       |       |               |
| VOLUME<br>CORRECTED<br>Vm(std)<br>(cu ft) | VOLUME<br>CORRECTED<br>Vm(std)<br>(liters) | VOLUME<br>CORRECTED<br>Vcr(std)<br>(cu ft) | VOLUME<br>CORRECTED<br>Vcr(std)<br>(liters) | VOLUME<br>NOMINAL<br>Vcr<br>(cu ft) | CALIBRATION FACTOR<br>Y |                       | CALIBRATION FACTOR<br>dH@ |                     |                       |       | Ko<br>(value) |
|                                           |                                            |                                            |                                             |                                     | Value<br>(number)       | Variation<br>(number) | Value<br>(in H2O)         | Value<br>(mm H2O)   | Variation<br>(in H2O) |       |               |
| 29.011                                    | 821.6                                      | 29.501                                     | 835.5                                       | 30.107                              | 1.017                   | 0.000                 | 1.800                     | 45.72               | 0.051                 |       | 0.713         |
| 15.758                                    | 446.3                                      | 15.975                                     | 452.4                                       | 16.560                              | 1.014                   | -0.003                | 1.811                     | 45.99               | 0.062                 |       | 0.715         |
| 8.817                                     | 249.7                                      | 8.961                                      | 253.8                                       | 9.008                               | 1.016                   | -0.001                | 1.716                     | 43.58               | -0.033                |       | 0.733         |
| 8.892                                     | 251.8                                      | 9.115                                      | 258.1                                       | 9.405                               | 1.025                   | 0.008                 | 1.677                     | 42.60               | -0.071                |       | 0.735         |
| 4.869                                     | 137.9                                      | 4.928                                      | 139.5                                       | 5.094                               | 1.012                   | -0.005                | 1.739                     | 44.18               | -0.009                |       | 0.732         |
| Average Y----->                           |                                            |                                            |                                             |                                     | 1.0168                  | Average dH@----->     | 1.749                     | 44.4                | Average Ko----->      | 0.726 |               |

| TEMPERATURE CALIBRATION                       |                    |                                |                     |                        |
|-----------------------------------------------|--------------------|--------------------------------|---------------------|------------------------|
| Calibration Standard ----->                   |                    | Omega Model CL23A S/N:T-218768 |                     |                        |
| Reference Temperature<br>Set-Point<br>(deg F) | Temperature Device |                                | Results             |                        |
|                                               | Reading<br>(deg F) |                                | Variation<br>(degF) | Percent of<br>Absolute |
| 32                                            | 32                 |                                | 0                   | 0.00%                  |
| 100                                           | 100                |                                | 0                   | 0.00%                  |
| 300                                           | 300                |                                | 0                   | 0.00%                  |
| 500                                           | 500                |                                | 0                   | 0.00%                  |
| 1000                                          | 1000               |                                | 0                   | 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  $\pm 0.02$ .  
For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H2O that equates to 0.75 cm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is  $\pm 0.2$ .  
For Temperature Device, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Scott Ferguson

Signature:



Date: June 29, 2020

# A.Lanfranco & Associates inc.

EPA Method 5  
Meter Box Calibration  
English Meter Box Units, English K' Factor

Model #: CAE AL1  
Serial #: 0028-070611-1

Date: 29-Jun-20  
Barometric Pressure: 29.84 (in. Hg)  
Theoretical Critical Vacuum: 14.08 (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)<sup>3</sup>/(deg R)<sup>0.5</sup>/((in.Hg)<sup>0.5</sup>(min)).  
!!!!!!!

| ----- DRY GAS METER READINGS ----- |               |                              |                            |                            |                  |                   |                  |                   | -CRITICAL ORIFICE READINGS-    |                                          |                             |                           |                  |                    |
|------------------------------------|---------------|------------------------------|----------------------------|----------------------------|------------------|-------------------|------------------|-------------------|--------------------------------|------------------------------------------|-----------------------------|---------------------------|------------------|--------------------|
| dH<br>(in H2O)                     | Time<br>(min) | Volume<br>Initial<br>(cu ft) | Volume<br>Final<br>(cu ft) | Volume<br>Total<br>(cu ft) | Initial Temps.   |                   | Final Temps.     |                   | Orifice<br>Serial#<br>(number) | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | -- Ambient Temperature -- |                  |                    |
|                                    |               |                              |                            |                            | Inlet<br>(deg F) | Outlet<br>(deg F) | Inlet<br>(deg F) | Outlet<br>(deg F) |                                |                                          |                             | Initial<br>(deg F)        | Final<br>(deg F) | Average<br>(deg F) |
| 3.65                               | 22.00         | 357.900                      | 381.128                    | 23.228                     | 69.0             | 69.0              | 72.0             | 72.0              | 73                             | 0.8185                                   | 18.0                        | 74.0                      | 71.0             | 72.5               |
| 1.90                               | 18.00         | 382.200                      | 396.030                    | 13.830                     | 72.0             | 72.0              | 75.0             | 75.0              | 63                             | 0.5956                                   | 21.0                        | 73.0                      | 78.0             | 75.5               |
| 1.15                               | 20.00         | 396.700                      | 408.642                    | 11.942                     | 75.0             | 75.0              | 77.0             | 77.0              | 55                             | 0.4606                                   | 22.5                        | 79.0                      | 81.0             | 80.0               |
| 0.67                               | 21.00         | 409.000                      | 418.509                    | 9.509                      | 77.0             | 77.0              | 79.0             | 79.0              | 48                             | 0.3560                                   | 24.0                        | 83.0                      | 83.0             | 83.0               |
| 0.35                               | 28.00         | 418.600                      | 427.305                    | 8.705                      | 79.0             | 79.0              | 80.0             | 80.0              | 40                             | 0.2408                                   | 25.5                        | 85.0                      | 85.0             | 85.0               |

| ***** RESULTS *****   |                     |  |                     |                      |                   |                         |                       |       |                           |                   |                       |       |  |               |
|-----------------------|---------------------|--|---------------------|----------------------|-------------------|-------------------------|-----------------------|-------|---------------------------|-------------------|-----------------------|-------|--|---------------|
| --- DRY GAS METER --- |                     |  | ----- ORIFICE ----- |                      |                   | -- DRY GAS METER --     |                       |       | ----- ORIFICE -----       |                   |                       |       |  |               |
| VOLUME<br>CORRECTED   | VOLUME<br>CORRECTED |  | VOLUME<br>CORRECTED | VOLUME<br>CORRECTED  | VOLUME<br>NOMINAL | CALIBRATION FACTOR<br>Y |                       |       | CALIBRATION FACTOR<br>dH@ |                   |                       |       |  |               |
| Vm(std)<br>(cu ft)    | Vm(std)<br>(liters) |  | Vcr(std)<br>(cu ft) | Vcr(std)<br>(liters) | Vcr<br>(cu ft)    | Value<br>(number)       | Variation<br>(number) |       | Value<br>(in H2O)         | Value<br>(mm H2O) | Variation<br>(in H2O) |       |  | Ko<br>(value) |
| 23.255                | 658.6               |  | 23.285              | 659.4                | 23.556            | 1.001                   | -0.010                |       | 1.819                     | 46.21             | -0.026                |       |  | 0.716         |
| 13.709                | 388.2               |  | 13.824              | 391.5                | 14.064            | 1.008                   | -0.003                |       | 1.788                     | 45.42             | -0.057                |       |  | 0.719         |
| 11.761                | 333.1               |  | 11.829              | 335.0                | 12.135            | 1.006                   | -0.006                |       | 1.817                     | 46.14             | -0.029                |       |  | 0.716         |
| 9.319                 | 263.9               |  | 9.573               | 271.1                | 9.876             | 1.027                   | 0.016                 |       | 1.775                     | 45.08             | -0.071                |       |  | 0.710         |
| 8.501                 | 240.7               |  | 8.618               | 244.1                | 8.923             | 1.014                   | 0.002                 |       | 2.028                     | 51.52             | 0.183                 |       |  | 0.673         |
| Average Y----->       |                     |  |                     |                      |                   | 1.0113                  | Average dH@----->     | 1.846 | 46.9                      | Average Ko---->   |                       | 0.707 |  |               |

| TEMPERATURE CALIBRATION                       |                                          |                                |                        |  |
|-----------------------------------------------|------------------------------------------|--------------------------------|------------------------|--|
| Calibration Standard ----->                   |                                          | Omega Model CL23A S/N:T-218768 |                        |  |
| Reference Temperature<br>Set-Point<br>(deg F) | Temperature Device<br>Reading<br>(deg F) | Results                        |                        |  |
|                                               |                                          | Variation<br>(degF)            | Percent of<br>Absolute |  |
| 32                                            | 32                                       | 0                              | 0.00%                  |  |
| 100                                           | 100                                      | 0                              | 0.00%                  |  |
| 300                                           | 300                                      | 0                              | 0.00%                  |  |
| 500                                           | 500                                      | 0                              | 0.00%                  |  |
| 1000                                          | 1000                                     | 0                              | 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 H2O that equates to 0.75 cm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +0.2.  
For Temperature Devices, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Scott Ferguson

Signature: 

Date: June 29, 2020



# A.Lanfranco & Associates inc.

EPA Method 5  
Meter Box Calibration  
English Meter Box Units, English K' Factor

Model #: FE 18  
Serial #: 0028-020118-1

Date: 30-Jun-20  
Barometric Pressure: 29.82 (in. Hg)  
Theoretical Critical Vacuum: 14.07 (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)<sup>3</sup>/(deg R)<sup>0.5</sup>((in.Hg)<sup>0.5</sup>(min)).  
!!!!!!!

| ----- DRY GAS METER READINGS ----- |               |                              |                            |                            |                  |                   |                  |                   | -CRITICAL ORIFICE READINGS-    |                                          |                             |                           |                  |                    |
|------------------------------------|---------------|------------------------------|----------------------------|----------------------------|------------------|-------------------|------------------|-------------------|--------------------------------|------------------------------------------|-----------------------------|---------------------------|------------------|--------------------|
| dH<br>(in H2O)                     | Time<br>(min) | Volume<br>Initial<br>(cu ft) | Volume<br>Final<br>(cu ft) | Volume<br>Total<br>(cu ft) | Initial Temps.   |                   | Final Temps.     |                   | Orifice<br>Serial#<br>(number) | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | -- Ambient Temperature -- |                  |                    |
|                                    |               |                              |                            |                            | Inlet<br>(deg F) | Outlet<br>(deg F) | Inlet<br>(deg F) | Outlet<br>(deg F) |                                |                                          |                             | Initial<br>(deg F)        | Final<br>(deg F) | Average<br>(deg F) |
| 3.75                               | 15.00         | 545.100                      | 560.976                    | 15.876                     | 65.0             | 65.0              | 67.0             | 67.0              | 73                             | 0.8185                                   | 15.0                        | 67.0                      | 72.0             | 69.5               |
| 1.95                               | 23.00         | 561.400                      | 579.092                    | 17.692                     | 68.0             | 68.0              | 70.0             | 70.0              | 63                             | 0.5956                                   | 17.5                        | 71.0                      | 75.0             | 73.0               |
| 1.15                               | 18.00         | 580.400                      | 591.116                    | 10.716                     | 64.0             | 64.0              | 65.0             | 65.0              | 55                             | 0.4606                                   | 19.0                        | 65.0                      | 71.0             | 68.0               |
| 0.67                               | 22.00         | 591.700                      | 601.664                    | 9.964                      | 65.0             | 65.0              | 67.0             | 67.0              | 48                             | 0.3560                                   | 20.0                        | 72.0                      | 77.0             | 74.5               |
| 0.33                               | 20.00         | 601.900                      | 608.100                    | 6.200                      | 66.0             | 66.0              | 69.0             | 69.0              | 40                             | 0.2408                                   | 21.0                        | 77.0                      | 78.0             | 77.5               |

| ***** RESULTS *****                       |                                            |                                            |                                             |                                     |                         |                       |                           |                   |                       |                     |  |  |  |  |
|-------------------------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|-------------------------------------|-------------------------|-----------------------|---------------------------|-------------------|-----------------------|---------------------|--|--|--|--|
| --- DRY GAS METER ---                     |                                            |                                            |                                             | ----- ORIFICE -----                 |                         |                       | -- DRY GAS METER --       |                   |                       | ----- ORIFICE ----- |  |  |  |  |
| VOLUME<br>CORRECTED<br>Vm(std)<br>(cu ft) | VOLUME<br>CORRECTED<br>Vm(std)<br>(liters) | VOLUME<br>CORRECTED<br>Vcr(std)<br>(cu ft) | VOLUME<br>CORRECTED<br>Vcr(std)<br>(liters) | VOLUME<br>NOMINAL<br>Vcr<br>(cu ft) | CALIBRATION FACTOR<br>Y |                       | CALIBRATION FACTOR<br>dH@ |                   |                       |                     |  |  |  |  |
|                                           |                                            |                                            |                                             |                                     | Value<br>(number)       | Variation<br>(number) | Value<br>(in H2O)         | Value<br>(mm H2O) | Variation<br>(in H2O) | Ko<br>(value)       |  |  |  |  |
| 16.024                                    | 453.8                                      | 15.911                                     | 450.6                                       | 16.016                              | 0.993                   | -0.008                | 1.876                     | 47.64             | 0.025                 | 0.704               |  |  |  |  |
| 17.677                                    | 500.6                                      | 17.694                                     | 501.1                                       | 17.929                              | 1.001                   | 0.000                 | 1.844                     | 46.83             | -0.007                | 0.706               |  |  |  |  |
| 10.778                                    | 305.2                                      | 10.759                                     | 304.7                                       | 10.800                              | 0.998                   | -0.003                | 1.816                     | 46.14             | -0.034                | 0.714               |  |  |  |  |
| 9.981                                     | 282.7                                      | 10.102                                     | 286.1                                       | 10.265                              | 1.012                   | 0.011                 | 1.788                     | 45.42             | -0.063                | 0.710               |  |  |  |  |
| 6.188                                     | 175.2                                      | 6.194                                      | 175.4                                       | 6.330                               | 1.001                   | 0.000                 | 1.930                     | 49.03             | 0.079                 | 0.691               |  |  |  |  |
| Average Y----->                           |                                            |                                            |                                             |                                     | 1.0011                  | Average dH@----->     | 1.851                     | 47.0              | Average Ko----->      | 0.705               |  |  |  |  |

| TEMPERATURE CALIBRATION                       |                                          |                                |                        |  |
|-----------------------------------------------|------------------------------------------|--------------------------------|------------------------|--|
| Calibration Standard ----->                   |                                          | Omega Model CL23A S/N:T-218768 |                        |  |
| Reference Temperature<br>Set-Point<br>(deg F) | Temperature Device<br>Reading<br>(deg F) | Results                        |                        |  |
|                                               |                                          | Variation<br>(deg F)           | Percent of<br>Absolute |  |
| 32                                            | 32                                       | 0                              | 0.00%                  |  |
| 100                                           | 100                                      | 0                              | 0.00%                  |  |
| 300                                           | 300                                      | 0                              | 0.00%                  |  |
| 500                                           | 500                                      | 0                              | 0.00%                  |  |
| 1000                                          | 1000                                     | 0                              | 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 H2O 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 Device, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Scott Ferguson

Signature: \_\_\_\_\_



Date: June 30, 2020

# A. Lanfranco & Associates inc.

EPA Method 5  
Meter Box Calibration  
English Meter Box Units, English K' Factor

Model #: **LMU-A**  
Serial #: **Kimmon 186**

Date: **2-Jul-20**  
Barometric Pressure: **29.85** (in. Hg)  
Theoretical Critical Vacuum: **14.08** (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.  
The Critical Orifice Coefficient, K', must be entered in English units, (ft)<sup>3</sup>\*(deg R)<sup>0.5</sup>/((in.Hg)\*(min)).

!!!!!!!

| ----- DRY GAS METER READINGS ----- |               |                           |                         |                            |                  |                   |                  |                   | -CRITICAL ORIFICE READINGS-    |                                          |                             |                           |                  |                    |
|------------------------------------|---------------|---------------------------|-------------------------|----------------------------|------------------|-------------------|------------------|-------------------|--------------------------------|------------------------------------------|-----------------------------|---------------------------|------------------|--------------------|
| dH<br>(in H2O)                     | Time<br>(min) | Volume<br>Initial<br>(m³) | Volume<br>Final<br>(m³) | Volume<br>Total<br>(cu ft) | Initial Temps.   |                   | Final Temps.     |                   | Orifice<br>Serial#<br>(number) | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | -- Ambient Temperature -- |                  |                    |
|                                    |               |                           |                         |                            | Inlet<br>(deg F) | Outlet<br>(deg F) | Inlet<br>(deg F) | Outlet<br>(deg F) |                                |                                          |                             | Initial<br>(deg F)        | Final<br>(deg F) | Average<br>(deg F) |
| 0.00                               | 15.00         | 428.4040                  | 428.5397                | 4.792                      | 66.0             | 66.0              | 69.0             | 69.0              | 40                             | 0.2408                                   | 20.0                        | 65.0                      | 74.0             | 69.5               |
| 0.00                               | 15.00         | 428.5430                  | 428.6787                | 4.792                      | 69.0             | 69.0              | 72.0             | 72.0              | 40                             | 0.2408                                   | 20.0                        | 73.0                      | 81.0             | 77.0               |
| 0.00                               | 21.00         | 428.6820                  | 428.8729                | 6.742                      | 72.0             | 72.0              | 74.0             | 74.0              | 40                             | 0.2408                                   | 20.0                        | 80.0                      | 80.0             | 80.0               |

| ***** RESULTS *****   |                     |  |                     |                      |                   |                         |                       |                   |                           |                   |                       |
|-----------------------|---------------------|--|---------------------|----------------------|-------------------|-------------------------|-----------------------|-------------------|---------------------------|-------------------|-----------------------|
| --- DRY GAS METER --- |                     |  | ----- ORIFICE ----- |                      |                   | -- DRY GAS METER --     |                       |                   | ----- ORIFICE -----       |                   |                       |
| VOLUME<br>CORRECTED   | VOLUME<br>CORRECTED |  | VOLUME<br>CORRECTED | VOLUME<br>CORRECTED  | VOLUME<br>NOMINAL | CALIBRATION FACTOR<br>Y |                       |                   | CALIBRATION FACTOR<br>dH@ |                   |                       |
| Vm(std)<br>(cu ft)    | Vm(std)<br>(liters) |  | Vcr(std)<br>(cu ft) | Vcr(std)<br>(liters) | Vcr<br>(cu ft)    | Value<br>(number)       | Variation<br>(number) |                   | Value<br>(in H2O)         | Value<br>(mm H2O) | Variation<br>(in H2O) |
| 4.784                 | 135.5               |  | 4.686               | 132.7                | 4.712             | 0.979                   | 0.002                 |                   | 0.000                     | 0.00              | 0.000                 |
| 4.757                 | 134.7               |  | 4.653               | 131.8                | 4.745             | 0.978                   | 0.001                 |                   | 0.000                     | 0.00              | 0.000                 |
| 6.660                 | 188.6               |  | 6.496               | 184.0                | 6.662             | 0.975                   | -0.002                |                   | 0.000                     | 0.00              | 0.000                 |
| Average Y----->       |                     |  |                     |                      |                   | 0.9777                  |                       | 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 H2O 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: Justin Ching

Signature: 

Date: July 2, 2020

# A. Lanfranco & Associates inc.

EPA Method 5  
Meter Box Calibration  
English Meter Box Units, English K' Factor

Model #: **LMU-C**  
Serial #: **Wizit 6274**

Date: **2-Jul-20**  
Barometric Pressure: **29.85** (in. Hg)  
Theoretical Critical Vacuum: **14.08** (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)<sup>3</sup>\*(deg R)<sup>0.5</sup>/((in.Hg)\*(min)).  
!!!!!!!

| ----- DRY GAS METER READINGS ----- |               |                           |                         |                            |                  |                   |                  |                   | -CRITICAL ORIFICE READINGS-    |                                          |                             |                           |                  |                    |
|------------------------------------|---------------|---------------------------|-------------------------|----------------------------|------------------|-------------------|------------------|-------------------|--------------------------------|------------------------------------------|-----------------------------|---------------------------|------------------|--------------------|
| dH<br>(in H2O)                     | Time<br>(min) | Volume<br>Initial<br>(m³) | Volume<br>Final<br>(m³) | Volume<br>Total<br>(cu ft) | Initial Temps.   |                   | Final Temps.     |                   | Orifice<br>Serial#<br>(number) | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | -- Ambient Temperature -- |                  |                    |
|                                    |               |                           |                         |                            | Inlet<br>(deg F) | Outlet<br>(deg F) | Inlet<br>(deg F) | Outlet<br>(deg F) |                                |                                          |                             | Initial<br>(deg F)        | Final<br>(deg F) | Average<br>(deg F) |
| 0.00                               | 16.00         | 186.6410                  | 186.7711                | 4.594                      | 68.0             | 68.0              | 68.0             | 68.0              | 40                             | 0.2408                                   | 18.0                        | 70.0                      | 71.0             | 70.5               |
| 0.00                               | 15.00         | 186.7740                  | 186.8947                | 4.262                      | 68.0             | 68.0              | 69.0             | 69.0              | 40                             | 0.2408                                   | 18.0                        | 71.0                      | 71.0             | 71.0               |
| 0.00                               | 15.00         | 186.8980                  | 187.0183                | 4.248                      | 66.0             | 66.0              | 65.0             | 65.0              | 40                             | 0.2408                                   | 18.0                        | 62.0                      | 62.0             | 62.0               |

\*\*\*\*\* RESULTS \*\*\*\*\*

| --- DRY GAS METER --- |                     |  | ----- ORIFICE ----- |                      |                   | -- DRY GAS METER --     |                       |                   | ----- ORIFICE -----       |                   |                       |
|-----------------------|---------------------|--|---------------------|----------------------|-------------------|-------------------------|-----------------------|-------------------|---------------------------|-------------------|-----------------------|
| VOLUME<br>CORRECTED   | VOLUME<br>CORRECTED |  | VOLUME<br>CORRECTED | VOLUME<br>CORRECTED  | VOLUME<br>NOMINAL | CALIBRATION FACTOR<br>Y |                       |                   | CALIBRATION FACTOR<br>dH@ |                   |                       |
| Vm(std)<br>(cu ft)    | Vm(std)<br>(liters) |  | Vcr(std)<br>(cu ft) | Vcr(std)<br>(liters) | Vcr<br>(cu ft)    | Value<br>(number)       | Variation<br>(number) |                   | Value<br>(in H2O)         | Value<br>(mm H2O) | Variation<br>(in H2O) |
| 4.582                 | 129.8               |  | 4.993               | 141.4                | 5.031             | 1.090                   | -0.010                |                   | 0.000                     | 0.00              | 0.000                 |
| 4.247                 | 120.3               |  | 4.679               | 132.5                | 4.718             | 1.102                   | 0.002                 |                   | 0.000                     | 0.00              | 0.000                 |
| 4.257                 | 120.6               |  | 4.719               | 133.6                | 4.678             | 1.109                   | 0.009                 |                   | 0.000                     | 0.00              | 0.000                 |
| Average Y----->       |                     |  |                     |                      |                   | 1.1000                  |                       | Average dH@-----> | 0.0001                    | 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 H2O 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: Justin Ching

Signature: 

Date: July 2, 2020

## TEMPERATURE CALIBRATION FORM

Signature:

6-Jul-20

Paula G. [Signature]

| Reference Device<br>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 |
| Omega HH11A                                                                          | 3     | 300132     | 33                               | 0.20%     | 101     | 0.18%     | 200     | 0.00%     | 300     | 0.00%     | 499     | -0.10%    | 800     | 0.00%     | 1700    | 0.00%     |
| Omega HH11A                                                                          | 4     | 200167     | 33                               | 0.20%     | 101     | 0.18%     | 200     | 0.00%     | 301     | 0.13%     | 500     | 0.00%     | 801     | 0.08%     | 1699    | -0.05%    |
| Omega HH11A                                                                          | 6     | 600059     | 32                               | 0.00%     | 100     | 0.00%     | 199     | -0.15%    | 299     | -0.13%    | 501     | 0.10%     | 799     | -0.08%    | 1699    | -0.05%    |
| TPI 341K                                                                             | 7     | 2.0315E+10 | 29.8                             | -0.45%    | 98      | -0.36%    | 197     | -0.45%    | 297     | -0.39%    | 496.4   | -0.38%    | 796     | -0.32%    | 1693    | -0.32%    |
| TPI 341K                                                                             | 8     | 2.0313E+10 | 31                               | -0.20%    | 98      | -0.36%    | 200     | 0.00%     | 300     | 0.00%     | 500     | 0.00%     | 800     | 0.00%     | 1697    | -0.14%    |
| Cont Cmpny                                                                           | 10    | 102008464  | 32                               | 0.00%     | 99      | -0.18%    | 199     | -0.15%    | 299     | -0.13%    | 498.6   | -0.15%    | 796     | -0.32%    | 1698    | -0.09%    |
| Omega HH11                                                                           | 14    | 409426     | 33                               | 0.20%     | 100     | 0.00%     | 202     | 0.30%     | 302     | 0.26%     | 500     | 0.00%     | 799     | -0.08%    | 1699    | -0.05%    |
| TPI 341K                                                                             | 16    | 400120029  | 32                               | 0.00%     | 99      | -0.18%    | 200     | 0.00%     | 301     | 0.13%     | 500     | 0.00%     | 800     | 0.00%     | 1700    | 0.00%     |
| TPI 341K                                                                             | 18    | 2.0329E+10 | 32                               | 0.00%     | 101     | 0.18%     | 200     | 0.00%     | 300     | 0.00%     | 501     | 0.10%     | 799     | -0.08%    | 1699    | -0.05%    |
| TPI 341K                                                                             | 20    | 2.0329E+10 | 30                               | -0.41%    | 98      | -0.36%    | 198     | -0.30%    | 298     | -0.26%    | 497.1   | -0.30%    | 797     | -0.24%    | 1695    | -0.23%    |
| Reference device is a NIST certified digital thermocouple calibrator                 |       |            |                                  |           |         |           |         |           |         |           |         |           |         |           |         |           |
| Variation expressed as a percentage of the absolute temperature must be within 1.5 % |       |            |                                  |           |         |           |         |           |         |           |         |           |         |           |         |           |

# 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     | July 6, 2020 | 101.8           | 30.07          | 29.94                 | 30.01               | 0.05                 |
| DS     | July 6, 2020 | 101.8           | 30.07          | 29.94                 | 30.01               | 0.05                 |
| CL     | July 6, 2020 | 101.8           | 30.07          | 29.96                 | 30.03               | 0.03                 |
| ML     | July 6, 2020 | 101.8           | 30.07          | 29.92                 | 29.99               | 0.07                 |
| SB     | July 6, 2020 | 101.8           | 30.07          | 29.94                 | 30.01               | 0.05                 |
| SH     | July 6, 2020 | 101.8           | 30.07          | 29.95                 | 30.02               | 0.04                 |
| JB     | July 6, 2020 | 101.8           | 30.07          | 29.99                 | 30.06               | 0.00                 |
| SF     | July 6, 2020 | 101.8           | 30.07          | 29.92                 | 29.99               | 0.07                 |
| JG     | July 6, 2020 | 101.8           | 30.07          | 29.96                 | 30.03               | 0.03                 |
|        |              |                 |                |                       |                     |                      |

Calibrated by: Louis Agassiz

Signature:



Date:

July 6, 2020

## 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.

[http://www.weatheroffice.gc.ca/city/pages/bc-74\\_metric\\_e.html](http://www.weatheroffice.gc.ca/city/pages/bc-74_metric_e.html)

# CERTIFICATION OF CALIBRATION



Date Of Calibration: 15-Jul-2020

Certificate Number: IN12898\_11/39605

Issued by: QED Environmental Systems Inc.

**Customer:** Diamond Scientific  
PO Box 348 Mims, FL 32754 USA

**Description:** Medical Gas Analyser

**Model:** G200

**Serial Number:** IN12898

| Nitrous Oxide (N2O) |                          |
|---------------------|--------------------------|
| Certified Gas (ppm) | Instrument Reading (ppm) |
| 0.0                 | 0.0                      |
| 101.5               | 96.0                     |
| 507.5               | 489.8                    |
| 913.5               | 888.2                    |

| Barometer (mbar)      |                       |
|-----------------------|-----------------------|
| Reference             | Instrument Reading    |
| 0986 mbar / 29.11 "Hg | 0985 mbar / 29.09 "Hg |

N2O readings recorded at:

30.1 °C/86.2 °F

Barometric Pressure:

0986"Hg/29.11 "Hg

Method of Test: The analyzer is calibrated in a temperature controlled chamber using reference gases.

Calibration Passed: Reported calibration readings are within the manufacturer's specification.

Date of Issue : 20 Jul 2020

Approved By Signatory

Jake Aughton

Laboratory Inspection

# Calibration Certificate

**Date:** 07-Jul-20  
**Calibrated by:** Louis Agassiz  
**Authorizing Signature:** 

**Insrtument Calibrated:** Testo 1 (330-2LL)  
**Serial #:** 03101345  
**Customer:** ALA

**Ambient Conditions:** Temperature: 15 °C Barometric Pressure: 101.7 kPa Relative Humidity: 63%  
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 <sub>2</sub><br>Gas | Initial Evaluation            |                     |           |              | After Calibration             |                     |           |       | Certified Value<br>(vol %) |
|-----------------------|-------------------------------|---------------------|-----------|--------------|-------------------------------|---------------------|-----------|-------|----------------------------|
|                       | Instrument<br>Reading (vol %) | % Calibration Error | Pass/Fail | Notes        | Instrument<br>Reading (vol %) | % Calibration Error | Pass/Fail | Notes |                            |
| Zero                  | 0.1                           | 0.10                | Pass      | Recal on Amb | 0                             | 0.00                | Pass      |       | 0                          |
| O <sub>2</sub>        | 11.2                          | 0.23                | Pass      |              | 11.0                          | 0.03                | Pass      |       | 10.97                      |
| Ambient               | 21.1                          | 0.14                | Pass      |              | 21.0                          | 0.04                | Pass      |       | 20.96                      |

Performance Specification: +/- 1% O<sub>2</sub> (absolute diff)

| CO<br>Gas | Initial Evaluation          |                     |           |               | After Calibration           |                     |           |       | Certified Value<br>(ppm) |
|-----------|-----------------------------|---------------------|-----------|---------------|-----------------------------|---------------------|-----------|-------|--------------------------|
|           | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes         | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes |                          |
| Zero      | 0                           | 0.0%                | Pass      | Recal w 3 gas | 0                           | 0.0%                | Pass      |       | 0                        |
| 1 Gas     | 1940                        | 1.9%                | Pass      |               | 1904                        | 0.0%                | Pass      |       | 1904                     |
| 2 Gas     | 1950                        | 1.9%                | Pass      |               | 1910                        | 0.2%                | Pass      |       | 1914                     |
| 3 Gas     | 470                         | 4.9%                | Pass      |               | 449                         | 0.2%                | Pass      |       | 448                      |
| 4 Gas     | 258                         | 2.7%                | Pass      |               | 251                         | 0.1%                | Pass      |       | 251                      |

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

| NO<br>Gas | Initial Evaluation          |                     |           |               | After Calibration           |                     |           |       | Certified Value<br>(ppm) |
|-----------|-----------------------------|---------------------|-----------|---------------|-----------------------------|---------------------|-----------|-------|--------------------------|
|           | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes         | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes |                          |
| Zero      | 0                           | 0.0%                | Pass      | Recal w 3 gas | 0                           | 0.0%                | Pass      |       | 0                        |
| 1 Gas     | 247                         | 4.3%                | Pass      |               | 258                         | 0.0%                | Pass      |       | 258                      |
| 2 Gas     | 103                         | 3.9%                | Pass      |               | 99                          | 0.1%                | Pass      |       | 99.13                    |
| 3 Gas     | 448                         | 3.4%                | Pass      |               | 465                         | 0.2%                | Pass      |       | 464                      |
| 4 Gas     | 47.5                        | 4.1%                | Pass      |               | 46                          | 0.9%                | Pass      |       | 45.61                    |

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

## NIST Traceable Calibration Gases:

| Cylinder                        | Cylinder ID<br>Number | Certification Date | Expiration<br>Date | Cylinder<br>Pressure<br>(PSI) | O <sub>2</sub><br>(Vol. %) | CO<br>(ppm) | NO<br>(ppm) |
|---------------------------------|-----------------------|--------------------|--------------------|-------------------------------|----------------------------|-------------|-------------|
| Zero Gas (N <sub>2</sub> )      | 340943                | 21-Jan-2020        | 20-Jan-2025        | 2150                          | 0                          | 0           | 0           |
| 1 Gas                           | CC320634              | 23-Mar-2018        | 23-Mar-2026        | 1420                          | -                          | 1904        | 258         |
| 2 Gas                           | CC336011              | 24-Feb-2020        | 25-Feb-2028        | 1480                          | -                          | 1914        | 99.13       |
| 3 Gas                           | CC222743              | 13-Jan-2017        | 13-Jan-2025        | 5400                          | -                          | 448         | 464         |
| 4 Gas                           | CC14093               | 5-Aug-2019         | 6-Aug-2027         | 1850                          | -                          | 251.3       | 45.61       |
| O <sub>2</sub> /CO <sub>2</sub> | CC28009               | 5-Dec-2018         | 5-Dec-2026         | 580                           | 10.97                      | -           | -           |

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

# Calibration Certificate

**Date:** 07-Jul-20  
**Calibrated by:** Louis Agassiz  
**Authorizing Signature:** 

**Insrtument Calibrated:** Testo 2 (330-2LX)  
**Serial #:** 03282252  
**Customer:** ALA

**Ambient Conditions:** Temperature: 17 °C Barometric Pressure: 101.7 kPa Relative Humidity: 93%  
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 <sub>2</sub><br>Gas | Initial Evaluation            |                     |           |             | After Calibration             |                     |           |       | Certified Value<br>(vol %) |
|-----------------------|-------------------------------|---------------------|-----------|-------------|-------------------------------|---------------------|-----------|-------|----------------------------|
|                       | Instrument<br>Reading (vol %) | % Calibration Error | Pass/Fail | Notes       | Instrument<br>Reading (vol %) | % Calibration Error | Pass/Fail | Notes |                            |
| Zero                  | 0.1                           | 0.10                | Pass      | Recal w Amb | 0                             | 0.00                | Pass      |       | 0                          |
| O <sub>2</sub>        | 10.9                          | 0.07                | Pass      |             | 11.1                          | 0.13                | Pass      |       | 10.97                      |
| Ambient               | 20.7                          | 0.26                | Pass      |             | 21.0                          | 0.04                | Pass      |       | 20.96                      |

Performance Specification: +/- 1% O<sub>2</sub> (absolute diff)

| CO<br>Gas | Initial Evaluation          |                     |           |               | After Calibration           |                     |           |       | Certified Value<br>(ppm) |
|-----------|-----------------------------|---------------------|-----------|---------------|-----------------------------|---------------------|-----------|-------|--------------------------|
|           | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes         | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes |                          |
| Zero      | 0                           | 0.0%                | Pass      | Recal w 3 Gas | 0                           | 0.0%                | Pass      |       | 0                        |
| 1 Gas     | 1921                        | 0.9%                | Pass      |               | 1914                        | 0.5%                | Pass      |       | 1904                     |
| 2 Gas     | 1925                        | 0.6%                | Pass      |               | 1920                        | 0.3%                | Pass      |       | 1914                     |
| 3 Gas     | 465                         | 3.8%                | Pass      |               | 448                         | 0.0%                | Pass      |       | 448                      |
| 4 Gas     | 258                         | 2.7%                | Pass      |               | 251                         | 0.1%                | Pass      |       | 251                      |

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

| NO<br>Gas | Initial Evaluation          |                     |           |               | After Calibration           |                     |           |       | Certified Value<br>(ppm) |
|-----------|-----------------------------|---------------------|-----------|---------------|-----------------------------|---------------------|-----------|-------|--------------------------|
|           | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes         | Instrument<br>Reading (ppm) | % Calibration Error | Pass/Fail | Notes |                          |
| Zero      | 0                           | 0.0%                | Pass      | Recal w 3 Gas | 0                           | 0.0%                | Pass      |       | 0                        |
| 1 Gas     | 246                         | 4.7%                | Pass      |               | 258                         | 0.0%                | Pass      |       | 258                      |
| 2 Gas     | 100                         | 0.9%                | Pass      |               | 99                          | 0.1%                | Pass      |       | 99.13                    |
| 3 Gas     | 451                         | 2.8%                | Pass      |               | 464                         | 0.0%                | Pass      |       | 464                      |
| 4 Gas     | 47                          | 3.0%                | Pass      |               | 46                          | 0.9%                | Pass      |       | 45.61                    |

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

## NIST Traceable Calibration Gases:

| Cylinder                        | Cylinder ID<br>Number | Certification Date | Expiration<br>Date | Cylinder<br>Pressure<br>(PSI) | O <sub>2</sub><br>(Vol. %) | CO<br>(ppm) | NO<br>(ppm) |
|---------------------------------|-----------------------|--------------------|--------------------|-------------------------------|----------------------------|-------------|-------------|
| Zero Gas (N <sub>2</sub> )      | 340943                | 21-Jan-2020        | 20-Jan-2025        | 2150                          | 0                          | 0           | 0           |
| 1 Gas                           | CC320634              | 23-Mar-2018        | 23-Mar-2026        | 1420                          | -                          | 1904        | 258         |
| 2 Gas                           | CC336011              | 24-Feb-2020        | 25-Feb-2028        | 1480                          | -                          | 1914        | 99.13       |
| 3 Gas                           | CC222743              | 13-Jan-2017        | 13-Jan-2025        | 5400                          | -                          | 448         | 464         |
| 4 Gas                           | CC14093               | 5-Aug-2019         | 6-Aug-2027         | 1850                          | -                          | 251.3       | 45.61       |
| O <sub>2</sub> /CO <sub>2</sub> | CC28009               | 5-Dec-2018         | 5-Dec-2026         | 580                           | 10.97                      | -           | -           |

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





# **MOUNT ROYAL COLLEGE**

**Faculty of Continuing Education and Extension**

**Carter Lanfranco**

has successfully completed

**Stack Sampling**

**May 2009**

Date

Dean  
Faculty of Continuing Education and Extension



### 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<sup>1</sup>, 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

Carter Lanfanco

Title

Chief operations officer / caretaker

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:

\_\_\_\_\_  
\_\_\_\_\_

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:

X

Print Name: Carter Lanfanco

Witnessed by:

X

Print Name: Shawn Harrington

Date signed: Dec. 7/2020

<sup>1</sup>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.

### Conflict of Interest Disclosure Statement

A qualified professional<sup>1</sup> 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 Carter Lanfranco, 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):

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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:

---

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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: Carter Lanfranco

Witnessed by:

X

Print name: Mark Lanfranco

Date: Dec. 16, 2020

<sup>1</sup>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.

***Shawn Harrington***

*has met the requirements of*

***Stack Testing for Pollutants***  
***( CHSC 7760 )***

*School of Process, Energy and Natural Resources*  
*Chemical Sciences Program*

*Endorsed by:*

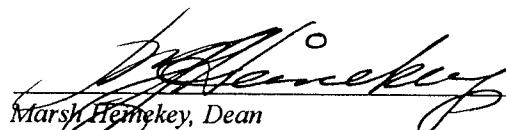


Environment  
Canada

Environnement  
Canada



Province of  
British Columbia  
Ministry of  
Environment,  
Lands and Parks

  
Marsh Hemekey, Dean  
School of Process, Energy and Natural Resources

JUNE 21, 2001  
Dated



### 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<sup>1</sup>, 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 Shawn Harrington  
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:

x Shawn Harrington  
Print Name: Shawn Harrington

Witnessed by:

x Mark Lanfranco  
Print Name: Mark Lanfranco

Date signed: November 26, 2020

<sup>1</sup>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 UNIVERSITY

Faculty of Continuing Education and Extension

**Scott Ferguson**

has successfully completed

**Stack Sampling**

2016

May 16, 2016

*Date*



*Dean*

*Faculty of Continuing Education and Extension*



# MOUNT ROYAL UNIVERSITY

Faculty of Continuing Education and Extension

**Jeremy Shawn Gibbs**

has successfully completed

**Stack Sampling**

35 Hours / 2019

May 22, 2019

*Date*

*BUM*  
Dean

*Faculty of Continuing Education and Extension*

